



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

Ref: PSER:SCT:NKP-E2053:7977

Date: 17-06-2020

NOTICE INVITING TENDER

NOTE: INTENDING BIDDER TO PARTICIPATE MAY DOWNLOAD FROM WEB SITES

Sealed offers in two part bid system are invited from reputed & experienced bidders meeting PRE QUALIFICATION CRITERIA as mentioned in Annexure-1 through E-Procurement Portal <https://bhel.abcpocure.com> only, for the subject job by the undersigned on the behalf of BHARAT HEAVY ELECTRICALS LIMITED as per the tender document. Issue/ forwarding intimation regarding tender to any bidder shall not construe that the bidder is considered to be qualified. Consideration of their offer is subject to compliance of loading criteria as per clause no. 8.0 of NIT etc. specified below. Following points relevant to the tender may please be noted and complied with.

1.0 Salient Features of NIT

SL NO	ISSUE	DESCRIPTION
i	TENDER NUMBER	PSER:SCT:NKP-E2053:20
ii	Broad Scope of job	ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND.
iii	DETAILS OF TENDER DOCUMENT	
a	Volume-IA	General conditions of contract (Supply) Not Applicable.
b	Volume-IB	General conditions of contract (Service) Applicable.
c	Volume-IC	Special conditions of contract (Supply) Not Applicable.
d	Volume-ID	Special conditions of contract (Service) Applicable.
e	Volume-IE	Forms and Procedures etc. Applicable.
f	Volume-IF	Technical Conditions of Contract (TCC) - CML Applicable.
g	Volume-III	Price Schedule (Absolute value) – Rev-00 Applicable.
iv	ISSUE OF TENDER DOCUMENTS	This is an E-tender floated online through our E-Procurement Site https://bhel.abcpocure.com . Start date of the tender: 17-06-2020. Applicable.
v	DUE DATE & TIME OF OFFER SUBMISSION	Date: 08-07-2020, Time: 15-00 Hrs. The bidder should respond by submitting their offer online in our e-Procurement platform at https://bhel.abcpocure.com only. Offers are invited in two-parts only. Hard copy bid or bids through email/fax shall not be accepted. Applicable.
vi	OPENING OF TENDER	Date: 08-07-2020 1 hour after the latest due date and time of Offer submission Notes: (1) In case the due date of opening of tender becomes a non-working day, tenders shall be opened on next working day at the same time. (2) Bidder may depute representative to witness the opening of tender. Applicable.
vii	EMD AMOUNT	Rs. 15,87,576/- Applicable. (Exemption)

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

			<i>allowed only for MSE vendors in line with clause no 27.0 of NIT)</i>
viii	COST OF TENDER	Rs. 5,000/-.	<i>Applicable. (Exemption allowed only for MSE vendors in line with clause no 27.0 of NIT)</i>
ix	LAST DATE FOR SEEKING CLARIFICATION	<i>Date: 01-07-2020 Along with soft version also, addressing to undersigned & to others as per contact address given below</i>	<i>Applicable.</i>
x	SCHEDULE OF Pre Bid Discussion (PBD)	--	<i>Not Applicable (In case BHEL decides to conduct PBD, date, time & venue of PBD will be intimated suitably thru TCN.)</i>
xi	INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)	<i>IEM DETAILS: Refer Clause No 34.0 below.</i>	<i>Applicable.</i>
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) ; CPP portal & E-Procurement Site https://bhel.abcpocure.com only. Bidders to keep themselves updated with all such information.	<i>Shall be intimated to bidder.</i>

- 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 & stamped 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 (non-refundable) and courier charges if applicable, in the form of Demand Draft drawn in favour of Bharat Heavy Electricals Ltd, payable at Kolkata, issuing the Tender, along with techno-commercial offer.
- 4.0 Unless specifically stated otherwise, bidder shall have to deposit EMD through Demand Draft/Pay Order in favour of Bharat Heavy Electricals Ltd, payable at Kolkata. For other details please refer General Conditions of Contract.
Bidders may please be noted that "OEMD" provision stands deleted. Hence, bidders who have deposited Rs. 2 Lakh as OEMD are also requested to submit fresh EMD as mentioned in sl no vii under clause no 1.0 of NIT.
- 5.0 Procedure for Submission of Tenders: The Tenderers must submit their Tenders as detailed below:

DOCUMENTS TO BE UPLOADED & MODALITY OF UPLOADING

Sl no	Description	Remarks
PART-I A	(TECHNO COMMERCIAL BID)	
	CONTAINING THE FOLLOWING:-	
i.	Covering letter/Offer forwarding letter of Tenderer. (To be attached in relevant Attachment section)	
ii.	Duly filled-in 'No Deviation Certificate' as per prescribed format. (To be attached in relevant Attachment section) <u>Note:</u> a. In case of any deviation, the same should be submitted separately for technical & commercial parts, indicating respective clauses of tender against which deviation is taken by bidder. The list of such deviation shall be attached in relevant attachment section of the e-procurement portal. It shall be specifically noted that deviation recorded elsewhere shall not be entertained. b. BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding. i). In case of acceptance of the deviations, appropriate loading shall be done by BHEL ii). In case of unacceptable deviations, BHEL reserves the right to reject the tender	
iii.	Supporting documents/ annexures / schedules/ drawing etc as required in line with Pre-Qualification criteria. It shall be specifically noted that all documents as per above shall be attached in relevant attachment section and credential certificates issued by clients shall distinctly bear the name of organization, contact ph no, FAX no, etc.	
iv.	All Amendments/Correspondences/Corrigenda/Clarifications/Changes/ Errata etc pertinent to this NIT. (To be attached in relevant Attachment section)	
v.	Integrity Pact Agreement (Duly signed by the authorized signatory)	Not Applicable.
vi.	Duly filled-in annexures, formats etc as required under this Tender Specification/NIT (To be attached in relevant Attachment section)	
vii.	Notice inviting Tender (NIT) (To be attached in relevant Attachment section)	
viii.	Volume – I F: Technical Conditions of Contract (TCC) (To be attached in relevant Attachment section)	
ix.	Volume – I D: Special Conditions of Contract (SCC)-Service (To be attached in relevant Attachment section)	
x.	Volume – I B: General Conditions of Contract (GCC)-Service (To be attached in relevant Attachment section)	
xii.	Volume – I E: Forms & Procedures etc. (To be attached in relevant Attachment section)	
xiii.	Volume–III - (UNPRICED – without disclosing rates/price, but mentioning only 'QUOTED' or 'UNQUOTED' against each item. (To be attached in Unpriced Bid Attachment section)	
xiv.	Any other details preferred by bidder with proper indexing. (To be attached in relevant Attachment section)	

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फ़ोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

PART-I B	EMD/ COST OF TENDER (To be submitted offline within due date of offer submission)	
	CONTAINING THE FOLLOWING:-	
i.	1. Earnest Money Deposit (EMD) in the form as indicated in this Tender 2. Cost of Tender (Demand Draft or copy of Cash Receipt as the case may be)	

PART-II	PRICE BID (TO BE ATTACHED IN PRICE BID ATTACHMENT SECTION)	
	CONTAINING THE FOLLOWING:-	
i	Covering letter/Offer forwarding letter of Tenderer enclosed in Part-I	
ii	Volume III – PRICE BID (Duly Filled in Schedule of Rates – rate/price to be entered in words as well as figures) Any other document uploaded in the price bid, apart from above tender format, shall not be taken into cognizance for evaluation of offer.	

SPECIAL NOTE:

- A) Your offer & documents submitted along with offer shall be digitally signed & stamped in each page by your authorised representative. No overwriting/ correction in tender documents by bidders shall be allowed. However, if correction is unavoidable, the same may be signed by authorized signatory.
- B) The credentials/ documents submitted towards compliance of Pre-qualification requirement shall be physically signed by the authorized signatory & stamped before uploading/submission with the offer in the e-procurement portal.
- C) All documents/ annexures submitted with the offer shall be properly attached in the respective sections. BHEL shall not be responsible for any missing documents.

6.0 No Deviation with respect to tender clauses and no additional clauses/ suggestions/ in Techno-commercial bid/ Price bid shall normally be considered by BHEL. Bidders are requested to positively comply with the same.

7.0 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).

8.0 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:

- $P_1, P_2, P_3, P_4, P_5, \dots, P_N$ 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. $P_T = P_1 + P_2 + P_3 + P_4 + \dots + P_N$)
- 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. $T_T = T_1 + T_2 + T_3 + T_4 + \dots + T_N$)
- 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. ' $S_T = S_1 + S_2 + S_3 + S_4 + S_5 + \dots + S_N$ ')
- 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

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

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

- 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.
- 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)

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)
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-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

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

4	> 70 and $\leq$ 75	0.25
5	> 75 and < 80	0.2
6	$\geq$ 80	NA

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:

- 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
- For $R_{BHEL} = 60$, $P_{Max} = '1'$
- 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:

- 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.

- 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 viii). Turbo Blower (including Steam Turbine) ix). Material Management x). Others (Mechanical)

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फ़ोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

- 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:
- 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

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

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 8 above is applicable to Prime bidder and Consortium partner (or Technical tie up partner) for their respective scope of work.
- 9.0 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.
- 10.0 For any clarification on the tender document, the bidder may seek the same in writing, through e-mail or through E-Procurement Site <https://bhel.abcpurchase.com>, 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 any delay. Any clarification / query received after last date for seeking clarification may not be normally entertained by BHEL and no time extension will be given.
- 11.0 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.
- 12.0 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.
- 13.0 Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender including PBD.
- 14.0 Bidders shall submit Integrity Pact Agreement (Duly 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 (xi) of 1 above.
- 15.0 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

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

satisfying the Pre Qualification Criteria specified in this NIT as per Annexure-1 (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.

16.0 In case BHEL decides on a 'Public Opening', the date & time of opening of the PRICE BID shall be intimated to the qualified bidders and in such as case, price bid (Volume-III) uploaded in E-procurement Site <https://bhel.abcpocure.com> will be opened.

17.0 Validity of the offer shall be for six months from the latest due date of offer submission (including extension, if any) unless specified otherwise.

18.0 BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among all the techno-commercially qualified bidders.

Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.

19.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.

20.0 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.

21.0 The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.

22.0 Consortium Bidding (or Technical Tie up) shall be allowed only if specified in Pre Qualifying Requirement (PQR) criteria, and in such a case the details to be complied with is enclosed herewith as per Annexure-5 UNLESS SPECIFIED OTHERWISE IN PQR.

23.0 The bidder shall submit documents in support of possession of 'Qualifying Requirements' duly self certified and stamped/ digitally signed (as applicable) by the authorized signatory, indexed and properly linked in the format for PQR. In case BHEL requires any other documents/proofs, these shall be submitted immediately.

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

25.0 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 Website (www.bhel.com).

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

a) 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.

b) Commitment by Bidder/ Supplier/ Contractor:

b.i) 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.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

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

b.iii) 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 includes 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.

26.0 It may please be noted that Guidelines/Rules in respect of Suspension of business dealings (Hold- 12 to 24 Months/ Banning – 3 years etc), Vendor Evaluation formats, quality, safety and HSE guidelines, standard T&P hire charges of BHEL etc may undergo change from time to time and the latest one shall be followed. Latest "Guidelines for Vendor Evaluation" is web based, quality, safety & HSE"; standard T&P hire charges shall be available at site and shall be given to the successful vendors/ subcontractors during execution.

27.0 MSE suppliers can avail the intended benefits in respect of the procurements related to the Goods and Services only (Definition of Goods and Services as enumerated by Govt. of India vide Office Memorandum F. No. 21(8)/2011-MA dtd. 09/11/2016 office of AS & DC, MSME) if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or Udyog Aadhar Memorandum (UAM) & Acknowledgement or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure – C 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 such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are 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. Documents should be notarized or attested by a Gazetted officer.

Any Bidder falling under MSME category, shall furnish the following details & submit documentary evidence/Govt. Certificate etc. in support of the same along with their techno-commercial offer: -

Type under MSME	SC/ST owned	Women owned	Others
Micro			
Small			
Medium			

Note: - If the bidder does not furnish the above, offer shall be processed construing that the bidder is not falling under MSME category.

28.0 The bidder along with its associates/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website 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.

29.0 Annexure-A -Amendment to GCC/SCC shall be read in conjunction with GCC-Volume-IB & SCC-Volume-ID. This Annexure-A (Amendment to GCC/SCC) of NIT shall not be considered as part of the NIT but addendum/corrigendum to the GCC/SCC only.

30.0 Annexure-B - Terms & conditions of Reverse Auction is enclosed herewith.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

- 31.0 Annexure-D – Specific Clause w.r.t. BOCW Act & Cess Act is enclosed herewith.
- 32.0 Annexure-E- Statewise GST Registration nos. is enclosed herewith.
- 33.0 Duly filled & signed Annexure- CPP-GST/I to be submitted by bidders along with their techno-commercial offer.
- 34.0 Integrity Pact (IP) –

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

Sl	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 the bidding. In other words, entering into this Pact would be a preliminary qualification.
- (c) Please refer Section-8 of 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 above 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	Anish kumar	Subrata Sen
Dept	SCT Dept, BHEL PSER, Kolkata	SCT Dept, BHEL PSER, Kolkata
Address	DJ-9/1, Sector – II, Salt Lake, Kolkata – 700091	DJ-9/1, Sector – II, Salt Lake, Kolkata – 700091
Phone	033-2339 8235	033-2339 8226
Email	k.anish@bhel.in	subrata.sen@bhel.in
FAX	033-2321 1960	033-2321 1960

- 35.0 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.

36.0 Bidders are requested to submit their best price as per latest price schedule of the tender.

37.0 It may please be noted that Bid should be free from correction, overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid, else bid shall be liable for rejection.

All overwriting/ cutting, etc will be numbered by bid opening officials and announced during bid opening.

38.0 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-III
- d. Technical Conditions of Contract (TCC) -- Volume-IF
- e. Special Conditions of Contract (SCC) —Volume-ID
- f. General Conditions of Contract (GCC) —Volume-IB
- g. Forms and Procedures —Volume-IE

for BHARAT HEAVY ELECTRICALS LTD

Dy. Mgr (SCT)

Agency	Contact details	
BHEL, PSER, Kolkata	Address	DJ-9/1, Sector – II, Salt Lake, Kolkata – 700 091
	Phone no	033-2339 8231/ 8000
	FAX no	033-23211960
	E-mail	k.anish@bhel.in / malini@bhel.in / subrata.sen@bhel.in

Enclosure

01. Annexure-1: Pre Qualification Criteria.
02. Annexure-2: Format for No Deviation Certificate.
03. Annexure-3: Format for seeking clarification.
04. Annexure-4: Check List.
05. Annexure-5: Conditions for consortium/tie up.
06. Annexure –A- Amendment to GCC/SCC.
07. Annexure -B- Terms & conditions of Reverse Auction.
08. Annexure –C- CA certificate Format.
09. Annexure-D – Specific Clause w.r.t. BOCW Act & Cess Act.
10. Annexure-E- Statewise GST Registration nos.
11. Annexure– CPP-GST/I.
12. Other Tender documents as per this NIT.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फ़ोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

ANNEXURE-1PRE QUALIFICATION CRITERIA

JOB	ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND.
TENDER NO	PSER:SCT:NKP-E2053:20

SL NO	CRITERIA
1.0 (a)	BIDDER SHOULD HAVE AVERAGE MINIMUM ANNUAL FINANCIAL TURNOVER RS. 238.14 LAKHS DURING LAST 3 (THREE) YEARS, ENDING ON 31.03.2019 AND HAVING POSITIVE NET WORTH AS ON LATEST AUDITED ACCOUNTS AS SUBMITTED FOR PARA 1(C).
(b)	BIDDER MUST HAVE EARNED PROFIT IN ANY ONE OF THE LAST THREE FINANCIAL YEARS ENDING ON 31.03.2019. AUDITED BALANCE SHEET AND PROFIT & LOSS ACCOUNT OF THE COMPANY FOR LAST 3 (THREE) FINANCIAL YEARS, ENDING ON 31.03.2019 NEED TO BE SUBMITTED IN SUPPORT OF ABOVE.
(c)	IN CASE AUDITED BALANCE SHEET AND PROFIT & LOSS ACCOUNT HAS NOT BEEN SUBMITTED FOR ALL THREE YEARS INDICATED ABOVE THEN THE APPLICABLE FINANCIAL AUDITED STATEMENTS SUBMITTED BY THE BIDDERS AGAINST THE REQUISITE THREE YEARS WILL BE AVERAGED FOR THREE YEARS.
(d)	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.
2.1	BIDDER SHOULD HAVE EXECUTED ELECTRICAL OR C&I OR ELECTRICAL AND C&I WORK DURING LAST 7 (SEVEN) YEARS, ENDING ON THE LATEST DUE DATE OF SUBMISSION OF OFFER, VALUE OF WHICH SHOULD NOT BE LESS THAN EITHER OF THE FOLLOWING. A) 1 (SINGLE) WORK OF VALUE NOT LESS THAN INR 635.03 LAKH OR B) 2 (TWO) WORK OF VALUE NOT LESS THAN INR 396.89 LAKH EACH OR C) 3 (THREE) WORK OF VALUE NOT LESS THAN INR 317.52 LAKH EACH RELEVANT DOCUMENTS IN SUPPORT OF ABOVE SHALL BE SUBMITTED.
2.2	BIDDER SHOULD HAVE EXECUTED ATLEAST THE FOLLOWING WORKS DURING LAST SEVEN (7) YEARS , ENDING ON THE LATEST DUE DATE OF SUBMISSION OF OFFER. ELECTRICAL WORKS CONSISTING OF- A. POWER TRANSFORMERS OF 200 MVA OR HIGHER. B. HT BUSDUCTS C. HT SWITCHGEARS RELEVANT DOCUMENTS IN SUPPORT OF ABOVE SHALL BE SUBMITTED.
3.0	BIDDER SHOULD HAVE VALID PAN. RELEVANT DOCUMENTS IN SUPPORT OF ABOVE SHALL BE SUBMITTED.
4.0	CONSORTIUM / JV BIDDING IS NOT ALLOWED.

NOTE:

A	"EXECUTED " MEANS THE BIDDER SHOULD HAVE ACHIEVED THE TECHNICAL CRITERIA SPECIFIED ABOVE EVEN IF THE CONTRACT HAS NOT BEEN COMPLETED OR CLOSED.
B	UNLESS OTHERWISE SPECIFIED, "EXECUTED" MEANS CHARGING IN RESPECT OF POWER TRANSFORMERS, HT BUSDUCTS, HT SWITCHGEARS.
C	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.
D	BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.
E	AFTER SATISFACTORY FULFILLMENT OF ALL THE ABOVE CRITERIA, OFFER SHALL BE CONSIDERED FOR FURTHER EVALUATION AS PER NIT AND ALL OTHER TERMS OF THE TENDER.

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

1. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as indicated along with all annexures.
2. In case audited Financial statements have not been submitted for all the three years as indicated, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years i.e total divided by three.
3. Net Worth (Only in case of companies) of the bidder should be positive. Net worth shall be calculated based on the latest Audited Accounts as furnished. Net worth = Paid up share capital + Reserves.
4. PROFIT shall be PBT earned during any one year of last three financial years.
5. 'Additional' Criteria in respect of 'Technical' criteria of PQR for Civil, Electrical, CI, unless otherwise specified:
 - i) 'Similar' work means
 - a. 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 shall be considered similar works for all packages mentioned under 'CIVIL WORKS'
 - b. Electrical or C&I or 'Electrical and C&I' shall be considered similar works for all packages mentioned under 'ELECTRICAL AND C&I WORKS'
6. For evaluation of PQR, in case Bidder alone does not meet the pre-qualifying technical criteria B1 above, bidder may utilize the experience of its Parent/ Subsidiary Company along with its own experience, subject to following:
 - a. The parent company shall have a controlling stake of $\geq 50\%$ in the subsidiary company (as per Format-1).
 - b. The Parent Company/ Subsidiary Company of which experience is being utilized for bidding shall submit Security Deposit(SD) equivalent to 1% of the total contract value.
 - c. The parent/ subsidiary company and bidder shall provide an undertaking that they are jointly or severally responsible for successful performance of the contract (as per Format-2).
 - d. In case Bidder is submitting bid as a Consortium Partner, option of utilizing experience of parent/subsidiary Company can be availed by Prime Bidder only.
 - e. Parent Company/ Subsidiary Company of which experience is being used for bidding, cannot participate as a 'Standalone Bidder' or as a 'Consortium bidder'.
7. 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.
8. 'EXECUTED' means the bidder should have achieved the criteria specified in the Technical criteria of PQR even if the Contract has not been completed or closed
9. 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.
10. Unless otherwise specified, for the purpose of "Technical Criteria" of PQR, the word 'EXECUTED' means achievement of milestones as defined below -
 - "ACHIEVEMENT OF PHYSICAL QUANTITIES" as per PQRs.
 - "READINESS FOR COAL FILLING" of at least one Bunker, in respect of Mill Bunker Structure.
 - "CHARGING" in respect of Power Transformers/ Bus Ducts/ "HT/LT Switchgears" / "HT/LT Cabling".
 - For C&I works: "SYNCHRONISATION" in case of power project / "WORK EXECUTION of the value as defined in PQR" in case of industry.
 - "BOILER LIGHT UP" in respect of Boiler / CFBC / ESP.
 - "CHARGING OF ATLEAST ONE PASS" in respect of ESP(R&M)
 - "GAS IN" in respect of HRSG.
 - "STEAM BLOWING" in respect of Power Cycle Piping.
 - "HYDRAULIC TEST"/ ANY OTHER EQUIVALENT TEST LIKE "100% RT/UT OF WELDED JOINTS" of the system in respect

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

- of Pressure parts/ LP Piping/CW Piping.
- "FULL LOAD OPERATION OF THE UNIT" in respect of Insulation work.
 - "SYNCHRONISATION" in respect of STG / GTG.
 - "SPINNING" in respect of HTG.
 - "GAS IN" in respect of FGD
11. Boiler means HRSG or WHRB or any other types of Steam Generator
 12. Power Cycle piping means Main Steam, Hot Reheat, Cold Reheat, HP Bypass
 13. 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, where ever 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.
 14. 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-

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

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'2016 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 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'2016 shall be considered).
 Y₀ = Monthly Whole Sale Price Index for All Commodities for last month of work execution
 15. 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.

ANNEXURE - 2**FORMAT FOR NO DEVIATION CERTIFICATE**
(To be submitted in the bidder's letter head)

BHARAT HEAVY ELECTRICALS LIMITED,
Power Sector - Eastern Region,
Plot no 9/1, DJ Block, Sector – II, Salt Lake City,
Kolkata – 700 091

Sub	No Deviation Certificate.	
Job	ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND.	
Ref	1.0	Tender no PSER:SCT:NKP-E2053:20
	2.0	BHEL's NIT, vide reference no Ref: PSER:SCT:NKP-E2053:7977, Date: 17-06-2020.
	3.0	All other pertinent issues till date.

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed/ modified the tender documents as appeared in the website/ issued by you and in case of such observance at any stage, it shall be treated as null and void.

We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT. We hereby confirm our unqualified acceptance to all terms & conditions, unqualified compliance to technical specification, integrity pact (if applicable) and acceptance to reverse auctioning process.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted/uploaded offer/documents in accordance with tender instructions with acceptance of the terms & conditions of the tender by us and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized
representative of the bidder)

ANNEXURE - 3**FORMAT FOR SEEKING CLARIFICATION**

JOB	ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND.
TENDER NO	PSER:SCT:NKP-E2053:20

SI no	Reference clause of tender document	Existing provision	Bidder's query	BHEL's clarification

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फ़ोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

ANNEXURE - 4**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: Please tick (✓) whichever applicable:- 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	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 Authorised Signatory	Applicable/Not Applicable	YES/NO
12	No Deviation Certificate	Applicable/Not Applicable	YES/NO
13	Declaration confirming knowledge about Site Conditions	Applicable/Not Applicable	YES/NO
14	Declaration for relation in BHEL	Applicable/Not Applicable	YES/NO
15	Non Disclosure Certificate	Applicable/Not Applicable	YES/NO
16	Bank Account Details for E-Payment	Applicable/Not Applicable	YES/NO
17	Capacity Evaluation of Bidder for current Tender	Applicable/Not Applicable	YES/NO
18	Tie Ups/Consortium Agreement are submitted as per format	Applicable/Not Applicable	YES/NO
19	Power of Attorney for Submission of Tender/Signing Contract Agreement	Applicable/Not Applicable	YES/NO
20	Analysis of Unit rates	Applicable/Not Applicable	YES/NO
21	Bankruptcy Code Proceedings (IBC) by NCLT or under Liquidation / BIFR (Undertaking to be enclosed if not applicable)	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)

ANNEXURE-5CONDITIONS TO BE COMPLIED WITH FOR CONSORTIUM BIDDING (TECHNICAL TIE UP)

- 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. The Prime Bidder and Consortium Partner(s) shall certify to BHEL regarding existence and validity of their consortium agreement on six monthly basis.
- 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.
- 3 Number of partners for a consortium Bidding (or Technical Tie up) shall be as specified in the PQR.
- 4 Prime Bidder shall be as specified in the Pre Qualification Requirement, else the bidder who has the major share of work.
- 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 8.0
- 6 Prime Bidder shall comply with additional 'Technical' criteria of PQR as defined in 'Explanatory Notes for the PQR'
- 7 Prime Bidder shall comply with all other Pre Qualifying criteria for the Tender unless otherwise specified
- 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.
- 9 Prime Bidder shall be responsible for the overall execution of the contract
- 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.
- 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.
- 12 In case the prime Bidder withdraws, the whole contract shall be considered cancelled and short closed.
- 13 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.
- 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.
- 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.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

Annexure - AAmendment to GCC/SCC

1. Introduction of Clause No 1.15.13 in GCC as below:

Clause No 1.15.13: Additional security deposit (SD) has to be submitted by the successful bidder with value as follows:

"If the final price of successful bidder is lesser by 'more than 20%' of BHEL's estimate - 'Additional Security Deposit' will be required to be submitted by the successful bidder with value as follows:

Additional Security Deposit = 30 % of (A-B) limited to a maximum of 10% of the 'Total Price/Contract Value', where,

A = 80% of BHEL estimate

B = The final offered price of successful bidder through RA (In case of RA)

OR

Sealed paper price bid of successful bidder (in case of paper bid)

This 'Additional Security Deposit' shall have the same validity as that of the 'Security Deposit' and shall be revalidated/released in the manner as spelt out for the 'Security Deposit' as per relevant clause of GCC.

The BHEL's estimated value shall be disclosed to the successful bidder (on their request) at appropriate juncture in case 'Additional Security Deposit' is applicable."

2. Clause no. 1.9.1(ii) of GCC shall be read as below:

The EMD may be accepted only in the following forms:

(a) Cash deposit as permissible under the extant Income Tax Act (before tender opening)

(b) Electronic Fund Transfer credited in BHEL account (before tender opening)

(c) Banker's cheque/ Pay order/ Demand draft, in favour of BHEL (along with offer)

(d) Fixed Deposit Receipt (FDR) issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL).

In addition to above, the EMD amount in excess of Rs. 2 Lakh may also be accepted in the form of Bank Guarantee from scheduled bank. The Bank Guarantee in such cases shall be valid for atleast six months. EMD of successful tenderer will be retained as part of Security Deposit.

Clause no. 1.9.1(iv) & (v) of GCC stands deleted.

3. Clause no. 1.10.1 of GCC shall be read as below:

The total amount of Security Deposit will be 5% of the contract value. EMD of the successful tenderer shall be converted and adjusted towards the required amount of Security Deposit.

4. Clause no. 1.10.2 of GCC shall be read as below:

At least 50% of the required Security Deposit, including the EMD, should be furnished before start of the work. Balance of the Security Deposit can be deposited by deducting 10% of the gross amount progressively

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

from each of the running bills of the Contractor till the total amount of the required Security Deposit is collected.

The recoveries made from running bills (cash deduction towards balance SD amount) can be released against submission of equivalent Bank Guarantee in acceptable form, but only once, before completion of work, with the approval of competent authorities.

5. Clause no. 1.10.3 of GCC shall be read as below:

The balance amount to make up the required Security Deposit of 5% of the contract value may be accepted in the following forms:

- a) Cash (as permissible under the extant Income Tax Act)
- b) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL
- c) Bank Guarantee from Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL
- d) Fixed Deposit Receipt issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL)
- e) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL)

(Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith)

6. Introduction of Clause No. 1.10.8 in GCC as below:

Clause No 1.10.8: SDBG to be furnished by the vendor before start of work. No payment will be released till SDBG is submitted by the vendor.

If requested by the vendor, cash recovery equivalent to SDBG value to be made from bills submitted by the vendor.

Also 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).

In case of delay in extension of SDBG, in case of validity expiry, SDBG shall be invoked. However if the vendor submits a new BG after invocation of the previous BG then, it shall be refunded and recovery for the gap period, i.e. the duration for which BG is not available shall be made as stated above.

7. Clause no. 1.11 of GCC shall be read as below:

Security Deposit shall be refunded/Bank Guarantee(s) released to the Contractor along with the 'Final Bill' after deducting all expenses / other amounts due to BHEL under the contract / other contracts entered into with them by BHEL upon fulfilment of contractual obligations as per terms of the contract.

8. Clause no. 2.8.3, 2.8.4 and 2.8.5 of GCC shall be read as below:

Clause no. 2.8.3: The contractor shall comply with all applicable State and Central Laws, Statutory Rules, Regulations, Notifications, etc. such as Payment of Wages Act, Minimum Wages Act, Workmen Compensation Act, Employer's Liability Act, Industrial Disputes Act, Employers Provident Act, Employees State Insurance Scheme, Contract Labour (Regulation and Abolition) Act, 1970, Payment of Bonus & Gratuity Act, Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996, The Building and Other Construction Workers' Welfare Cess Act, 1996 and other Acts, Rules, and Regulations for labour/workers as applicable and as may be enacted by the State Government and Central Govt. during the tenure of the Contract and having force or jurisdiction at Site. The Contractor shall also comply with provisions of and give all such

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फ़ोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

notices to the local Governing Body, Police and other relevant Authorities as may be required by the Law.

Clause no. 2.8.4: The Contractor shall obtain independent License under the Contract Labour (Regulations and Abolition) Act, 1970 for engaging contract labour as required from the concerned Authorities based on the certificate (Form- V) issued by the Principal Employer/Customer.

Clause no. 2.8.5: The contractor shall pay and bear all taxes, fees, license charges, Cess, duties, deposits, tolls, royalties, commission or other charges which may be leviable on account of his operations in executing the contract.

9. Clause 2.12 of GCC (Overrun Compensation)

2.12 OVERRUN COMPENSATION (ORC)

2.12.1 ORC during original contract period: No ORC shall be applicable during the original contract period.

2.12.2 ORC during extended period for the reasons solely attributable to contractor: No ORC shall be applicable during the extended period granted for the reasons solely attributable to contractor and work executed during this period shall be paid as per original contract rates.

2.12.3 ORC during extended period for the reasons not attributable to contractor: ORC shall be payable as per following procedure:

2.12.3.1 For initial period of twelve months of extended period, ORC rate applicable over executed value shall be 5%. For every subsequent period of twelve months, ORC rate shall be further increased by 5% over the previous rate. For example, ORC rates applicable for initial period of 12 months and subsequent period of 12 months are given below.

Sl. No.	Extended Period for the reasons attributable to BHEL	ORC rate applicable over executed value
1	First 12 months	5%
2	13th-24th month and so on	10.25% $\{[(1.05 \times 1.05) - 1] \times 100\}$

This process of increasing ORC rate for each subsequent period of 12 months shall continue till applicability of ORC.

2.12.3.2 On completion of original contract period as well as on completion of each subsequent period of twelve months i.e. at the time of change in applicable ORC rate, Delay Analysis shall be carried out and percentage shortfall attributable to both BHEL & Contractor shall be calculated.

2.12.3.3 For the purpose of calculation of ORC, executed value of work in the month shall be divided in Part-1 and Part-2 in proportion of percentage shortfall attributable to BHEL and contractor respectively, based on the last delay analysis as worked out in 2.12.3.2.

ORC shall be payable only on Part-1 and no ORC shall be payable on Part-2.

Value of Part-1 shall be further limited to the value of actual inputs provided by BHEL i.e. "Plan - Shortfall attributable to BHEL" for the month, as per Form-14 for calculation of ORC.

2.12.3.4 Payment of ORC amount shall be further regulated as follows:

- (i) 50% of the ORC is allocated for deployment of matching resources (with weightages) agreed as per the joint programme drawn vide 2.11.4. ORC Payment against resources shall be calculated in proportion to percentage of resources actually deployed w.r.t. planned resources, as per Form-14.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फ़ोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

- (ii) 50% of ORC is allocated for achieving of planned progress agreed as per the joint programme drawn vide 2.11.4. ORC Payment shall be reduced in proportion to percentage shortfall attributable to contractor w.r.t. "Plan - Shortfall attributable to BHEL" for the month, as per Form-14.

2.12.3.5 The maximum amount of ORC payable for the month shall be limited to Rs. 5,00,000/-.

2.12.3.6 In case, there is no shortfall attributable to contractor for the month and also contractor has deployed the resources as agreed in Form-14 but ORC amount payable for the month worked out as per procedure mentioned in clause 2.12.3.3, 2.12.3.4 and 2.12.3.5, is less than Rs.1,00,000/-, then ORC amount payable for the month shall be Rs.1,00,000/- otherwise ORC amount payable for the month shall remain same.

2.12.3.7 In case execution is on HOLD (Other than Force Majeure), ORC shall be payable as per following:

- i). Contractor has not been permitted by BHEL to de-mobilize
 - a) ORC amount of Rs. 1,00,000/- per month shall be applicable during the period of HOLD provided resources as planned are deployed (not demobilised) during the period of hold.
 - b) Subsequent to lifting of HOLD, Period of HOLD shall not be excluded in calculation of period for deciding applicable ORC rate as per clause 2.12.3.1.
- ii). Contractor has been permitted to demobilize and to remobilize after lifting of HOLD
 - a) No ORC shall be payable to contractor for the period of HOLD.
 - b) Subsequent to lifting of HOLD, Period of HOLD shall not be excluded in calculation of period for deciding applicable ORC rate as per clause 2.12.3.1.

2.12.3.8 In case Force Majeure is invoked:

- (i) No ORC shall be applicable during the period of Force Majeure.
- (ii) Subsequent to revocation of Force Majeure, period of Force Majeure shall be excluded in calculation of period for deciding applicable ORC rate as per clause 2.12.3.1.

2.12.4 Applicability of ORC: ORC shall not be applicable for following activities.

- (i) Area cleaning, removal of temporary structures and return of scrap.
- (ii) Punch list points / pending points liquidation pending due to reasons attributable to contractor
- (iii) Submission of "As built Drawing"
- (iv) Material Reconciliation
- (v) Completion of Contract Closure formalities like HR Clearance/ No dues from various dept./ Statutory Authorities etc.

2.12.5 Total Over Run Compensation shall be limited to 10% of the cumulatively executed contract value till the month (excluding Taxes and Duties if payable extra). For this purpose, executed contract value excludes PVC, ORC and Extra/Supplementary Works.

10. Clause 2.14 of GCC (Quantity Variation)

- a) Existing Clause 2.14.1 of GCC stands revised as follows:

"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 (-) 15% of awarded contract value"

- b) Existing Clause 2.14.2 ii). of GCC stands revised as follows:

"In case the finally executed contract value increases above the awarded Contract Value due to quantity variation, there will be no upward revision in the rates for the individual items and also contractor is not eligible for any compensation."

11. Clause 2.17 of GCC (Price Variation Compensation) stands revised as follows:

2.17 PRICE VARIATION COMPENSATION

2.17.1 In order to take care of variation in cost of execution of work on either side, due to variation in the index of LABOUR, HIGH SPEED DIESEL OIL, WELDING ROD, CEMENT, STEEL, MATERIALS, Price Variation Formula as described herein shall be applicable (only for works executed during extended period, if any, subject to other conditions as described in this section)

2.17.2 85% component of Contract Value shall be considered for PVC calculations and remaining 15% shall be treated as fixed component. The basis for calculation of price variation in each category, their component, Base Index shall be as under:

SL NO	CATEGORY	BASE INDEX	PERCENTAGE COMPONENT ('K')				
			CIVIL PACKAGES (See Note AB/C)			MECHANICAL PACKAGES	Electrical, C&I Material Management/Handling and other labour oriented packages
			A	B	C		
i)	LABOUR (ALL CATEGORIES)	'MONTHLY ALL-INDIA AVERAGE CONSUMER PRICE INDEX NUMBERS FOR INDUSTRIAL WORKERS' published by Labour Bureau, Ministry of Labour and Employment, Government of India. (Website: labourbureau.nic.in)	40	25	30	65	80
ii)	HIGH SPEED DIESEL OIL	Name of Commodity: HSD Commodity Code: 1202000005 (See Note E)	5	3	5	5	5
iii)	WELDING ROD	Name of Commodity: MANUFACTURE OF BASIC METALS Commodity Code: 1314000000 (See Note E)				15	
iv)	CEMENT	Name of Commodity: ORDINARY PORTLAND CEMENT Commodity Code: 1313050003 (See Note E)		20	30		
v)	STEEL (Structural and Reinforcement Steel)	Name of Commodity: MILD STEEL: LONG PRODUCTS Commodity Code: 1314040000 (See Note E)		25			
vi)	All OTHER MATERIALS (Other than Cement & Steel)	Name of Commodity: ALL COMMODITIES Commodity Code: 1000000000 (See Note E)	40	12	20		

Note: A) Cement & Steel: Free Issue (BHEL Scope)
 B) Cement & Steel : In Contractor Scope
 C) Cement in Contractor Scope, and Steel is Free Issue (BHEL Scope)
 D) For Composite packages (i.e. Civil+Mechanical+Electrical and/or CI or Civil+Mechanical or Mechanical+Electrical and/or CI), the COMPONENT ('K') for various categories shall be as per respective packages as above.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फ़ोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

E) As per the 'MONTHLY WHOLE SALE PRICE INDEX' for the respective Commodity and Type, published by Office of Economic Adviser, Ministry of Commerce and Industry, Government of India. (Website: <http://eaindustry.nic.in/home.asp>). Revisions in the index or commodity will be re adjusted accordingly.

217.3 #

2.17.4 Payment/recovery due to variation in index shall be determined on the basis of the following notional formula in respect of the identified COMPONENT ('K') viz LABOUR, HIGH SPEED DIESEL OIL, WELDING ROD, CEMENT, STEEL, MATERIALS.

$$P = K \times R \times \frac{(X_N - X_0)}{X_0}$$

Where

P =Amount to be paid/recovered due to variation in the Index for Labour, High Speed Diesel Oil, Welding Rod, Cement, Steel and Materials

K = Percentage COMPONENT ('K') applicable for Labour, High Speed Diesel Oil, Welding Rod, Cement, Steel and Materials

R=Value of work done for the billing month (Excluding Taxes and Duties if payable extra)

X_N = Revised Index for Labour, High Speed Diesel Oil, Welding Rod, Cement, Steel and Materials for the billing month under consideration

X₀ = Index for Labour, High Speed Diesel Oil, Welding Rod, Cement, Steel and Materials as on the Base date

2.17.5 Base date shall be the calendar month of the schedule completion date (i.e. Actual start date+ Scheduled Contractual completion period as per Letter of Intent/award and/or work order).

2.17.6 PVC shall not be payable for the ORC amount, Supplementary/Additional Items, Extra works.

However, PVC will be payable for items executed under quantity variation of BOQ items under originally awarded contract.

2.17.7 The contractor shall furnish necessary monthly bulletins in support of the requisite indices from the relevant websites along with his Bills.

2.17.8 The contractor will be required to raise the bills for price variation payments on a monthly basis along with the running bills irrespective of the fact whether any increase/decrease in the index for relevant categories has taken place or not. In case there is delay in publication of bulletins (final figure), the provisional values as published can be considered for payments and arrears shall be paid/recovered on getting the final values.

2.17.9 PVC shall be applicable only, during the extended period of contract (if any) after the scheduled completion period and for the portion of work delayed / backlog for the reasons not attributable to the Contractor.

However total quantum of Price Variation amount payable/recoverable shall be regulated as follows:

- i. For the portion of shortfall / backlog not attributable to contractor, PVC shall be worked out on the basis of indices applicable for the respective month in which work is done. Base index shall be applicable as defined in clause 2.17.5
- ii. In case of Force majeure, PVC shall be regulated as per (a) or (b) below:
 - a) Force majeure is invoked before "base date"/ "revised base date" (as explained below) OR immediately after "base date"/ "revised base date" in continuation (i.e. during the period when PVC is not applicable):
 1. Base date shall be revised: Revised base date =Previous base date+ duration of Force majeure.
No PVC will be applicable for the work done till revised base date.
 2. PVC will be applicable for the work done after "base date"/ "revised base date" as the case may be (during extended period when delay is not attributable to contractor). PVC shall be worked out on the basis of

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

indices applicable for the respective month in which work is done with base index as on "base date"/"revised base date" as the case may be.

b) Force majeure is invoked after "base date"/ "revised base date" as the case may be (during extended period when delay is not attributable to contractor) -

1. PVC shall be applicable for the work done after revocation of force majeure.
2. PVC for the work done after revocation of force majeure shall be worked out on the basis of indices applicable for the respective month in which work is done excluding the effect of change in indices during total period of Force majeure(s) invoked after "base date"/ "revised base date" as the case may be. Base index shall be taken as on "base date"/ "revised base date" as the case may be.

iii. The total amount of PVC shall not exceed 15% of the cumulatively executed contract value. Executed contract value for this purpose is exclusive of PVC, ORC, Supplementary/Additional Items and Extra works except extra items due to quantity variation.

12. Clause 2.2 of GCC (Law governing the contract and court jurisdiction) stands revised as follows:

"The contract shall be governed by the Law for the time being in force in the Republic of India. Subject to Clause 2.21.1 or 2.21.2 of this Contract, the Civil Court having original Civil Jurisdiction at Delhi for PSNR, at Kolkata for PSER, at Nagpur for PSWR and at Chennai for PSSR, shall alone have exclusive jurisdiction in regard to all matters in respect of the Contract."

13. Existing Clause 2.21 "ARBITRATION" of GCC has been amended as follows:

2.21 ARBITRATION & CONCILIATION

2.21.1 ARBITRATION:

2.21.1.1 Except as provided elsewhere in this Contract, in case Parties are unable to reach amicable settlement (whether by Conciliation to be conducted as provided in Clause 2.21.2 herein below or otherwise) in respect of any dispute or difference; arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the Parties; or, in relation to interpretation of any provision of the Contract; or, in any manner touching upon the Contract (hereinafter referred to as the 'Dispute'), then, either Party may, commence arbitration in respect of such Dispute by issuance of a notice in terms of section 21 of the Arbitration & Conciliation Act, 1996 (hereinafter referred to as the 'Notice'). The Notice shall contain the particulars of all claims to be referred to arbitration in sufficient detail and shall also indicate the monetary amount of such claim. The arbitration shall be conducted by a sole arbitrator to be appointed by the Head of the BHEL Power Sector Region issuing the Contract within 60 days of receipt of the complete Notice. The language of arbitration shall be English.

The Arbitrator shall pass a reasoned award.

Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) or statutory modifications or re-enactments thereof and the rules made thereunder as in force from time to time shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be Kolkata (the place from where the contract is Issued). The Contract shall be governed by and be construed as per provisions of the laws of India. Subject to this provision 2.21.1.1 regarding ARBITRATION, the principal civil court exercising ordinary civil jurisdiction over the area where the seat of arbitration is located shall have exclusive jurisdiction over any DISPUTE to the exclusion of any other court.

2.21.1.2 In case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/ Port Trusts inter se and also between CPSEs and Government Departments/Organizations (excluding disputes concerning Railways, Income Tax, Customs & Excise Departments), such dispute or difference shall be taken up by either party for resolution through AMRCD (Administrative Mechanism for Resolution of CPSEs Disputes) as mentioned in DPE OM No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22-05-2018 as amended from time to time.

2.21.1.3 The cost of arbitration shall initially be borne equally by the Parties subject to the final allocation thereof as per the award/order passed by the Arbitrator.

2.21.1.4 Notwithstanding the existence of any dispute or differences and/or reference for the arbitration, the Contractor shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and expedition in a professional manner unless the dispute inter-alia relates to cancellation, termination or short-closure of the Contract by BHEL.

2.21.2 CONCILIATION:

If at any time (whether before, during or after the arbitral or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the agreement, contract), which the Parties are unable to settle mutually, arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee (IEC) to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators.

Notes:

1. No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators.
2. Any other person(s) can be appointed as Conciliator(s) who is/are mutually agreeable to both the parties from outside the BHEL Panel of Conciliators.

The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided in Procedure 2.3 to this GCC. The Procedure 2.3 together with its Formats will be treated as if the same is part and parcel hereof and shall be as effectual as if set out herein in this GCC.

The Contractor hereby agrees that BHEL may make any amendments or modifications to the provisions stipulated in the Procedure 2.3 to this GCC from time to time and confirms that it shall be bound by such amended or modified provisions of the Procedure 2.3 with effect from the date as intimated by BHEL to it.

2.21.3 No Interest payable to Contractor

Notwithstanding anything to the contrary contained in any other document comprising in the Contract, no interest shall be payable by BHEL to Contractor on any moneys or balances including but not limited to the Security Deposit, EMD, Retention Money, RA Bills or the Final Bill, or any amount withheld and/or appropriated by BHEL etc., which becomes or as the case may be, is adjudged to be due from BHEL to Contractor whether under the Contract or otherwise.

14. Clause no. 2.7.2 and 2.7.3 of Volume-IB-GCC shall be revised as follows:

2.7.2.1 To terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor after due notice of a period of 14 days' by BHEL in any of the following cases:

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

- i). Contractor's poor progress of the work vis-à-vis execution timeline as stipulated in the Contract, backlog attributable to contractor including unexecuted portion of work does not appear to be executable within balance available period considering its performance of execution.
- ii). Withdrawal from or abandonment of the work by contractor before completion of the work as per contract.
- iii). Non-completion of work by the Contractor within scheduled completion period as per Contract or as extended from time to time, for the reasons attributable to the contractor.
- iv). Termination of Contract on account of any other reason (s) attributable to Contractor.
- v). Assignment, transfer, subletting of Contract without BHEL's written permission.
- vi). Non-compliance to any contractual condition or any other default attributable to Contractor.

Risk & Cost Amount against Balance Work:

Risk & Cost amount against balance work shall be calculated as follows: Risk & Cost Amount= [(A-B) + (A x H/100)]

Where,

A= Value of Balance scope of Work (*) as per rates of new contract

B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

* Balance scope of work (in case of termination of contract):

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount. Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose. Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: Incase portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

LD against delay in executed work in case of Termination of Contract:

LD against delay in executed work shall be calculated in line with LD clause no. 2.7.9 of GCC, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

Method for calculation of "LD against delay in executed work in case of termination of contract" is given below.

- i). Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1
- ii) Let the value of executed work till the time of termination of contract= X
- iii) Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were planned for execution till termination of contract = Y
- iv) Delay in executed work attributable to contractor i.e. $T2 = [1 - (X/Y)] \times T1$
- v) LD shall be calculated in line with LD clause (clause 2.7.9) of the Contract for the delay attributable to

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

- 2.7.2.2 In case Contractor fails to deploy the resources as per requirement, BHEL can deploy own/hired/otherwise arranged resources at the risk and cost of the contractor and recover the expenses incurred from the dues payable to contractor. Recoveries shall be actual expenses incurred plus 5% overheads or as defined in TCC.

2.7.3 Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor

Following sequence shall be applicable for recoveries from contractor:

- a) Dues available in the form of Bills payable to contractor, SD, BGs against the same contract.
- b) Demand notice for deposit of balance recovery amount shall be sent to contractor, if funds are insufficient to effect complete recovery against dues indicated in (a) above.
- c) If contractor fails to deposit the balance amount to be recovered within the period as prescribed in demand notice, following action shall be taken for balance recovery:
 - i) Dues payable to contractor against other contracts in the same Region shall be considered for recovery.
 - ii) If recovery cannot be made out of dues payable to the contractor as above, balance amount to be recovered, shall be informed to other Regions/Units for making recovery from the Unpaid Bills/Running Bills/SD/BGs/Final Bills of contractor.
 - iii) In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

15. Clause 2.24 of GCC (Performance Guarantee for Workmanship)

Term "Special Conditions of Contract" appearing in 3rd line of the current clause 2.24.1, is replaced by "Technical Conditions of Contract"

16. Clause 4.2.1.7 of Special Condition of Contract (SCC)

At the end of Clause 4.2.1.7 (i.e. after the line "Decision of BHEL shall be final and binding on the contractor") following para is to be added

"It is not obligatory on the part of BHEL to provide any tools and tackles or other materials other than those specifically agreed to do so by BHEL. However, depending upon the availability, BHEL /BHEL's Customer handling equipment and other plants may be made available to the contractor on payment of hire charges as fixed, subject to the conditions laid down by BHEL/Customer from time to time. Unless paid in advance, such hire charges, if applicable, shall be recovered from contractor's bill / security deposit or any other due payment in one installment."

17. Clause 9.61 of SCC (NON-COMPLIANCE)

Under NON-COMPLIANCE, at the end of Clause 9.61 (i.e. after the line "Also the amount will be spent for purchasing the safety appliances and supporting the safety activity at site.") following para is to be added:

"In case of any financial deduction made by Customer for lapses of safety other than what is provided above or 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"

18. Clause 2.15 of GCC (EXTRA WORKS)

Existing Clause 2.15.5 of GCC stands revised as follows:

"After eligibility of extra works is established and finally accepted by BHEL engineer/designer, payment will be released on competent authority's approval at the following rate.

MAN-HOUR RATE FOR ELIGIBLE EXTRA WORKS: Single composite average labour man-hour rate, including overtime if any, supervision, use of tools and tackles and other site expenses and incidentals, consumables for carrying out any major rework/ repairs/ rectification/ modification/ fabrication as certified by site as may arise during the course of erection, testing, commissioning or extra works arising out of transit, storage and erection damages, payment, if found due will be at Rs 108/- per man hour."

19. Clause 9.1 & 9.2 to 9.62 of SCC (HSE & OHSAS Obligations)

Cl. no. 9.0	No change
Cl. no. 9.1	HSE (Health, safety & Environment): Contractor will comply with HSE (Health, safety & Environment) requirements of BHEL as per "HSE Plan for Site Operations by Sub-contractors" (Document no. HSEP:14, Rev.00) attached with this tender.
Cl. no. 9.2 to 9.62	Deleted

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फ़ोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

Annexure -BTerms & Conditions of Reverse Auction

Against this enquiry for the subject item/ system with detailed scope of supply/service as per tender specifications, BHEL shall be resorting to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA.
3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained for participation in the reverse auction.
5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
6. Bidders have to fax /e-mail the Compliance form (annexure III) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" which is inclusive of all cost elements in line with terms & conditions of the tender for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
8. Reverse auction will be conducted on scheduled date & time.
9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.
10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure IV) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
11. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the "Business Rules of Reverse Auction", which will be communicated before the Reverse Auction.
12. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as *per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
13. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
14. In case of more than four techno commercially qualified bidders, H1 bidder (whose quote is highest in sealed envelope price bid) shall not be allowed to participate in RA. However, there will be no H1 removal in case H1 happens to be MSE or qualifying under PPP-MII, Order 2017 irrespective of the number of bidders qualifying techno-commercially. In case of multiple H1 bidders, all H1 bidders (excluding MSEs and bidders qualifying under PPP-MII, Order 2017) shall be removed provided minimum three bidders remain in fray, else no H1 removal.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

Annexure -C**Certificate by Chartered Accountant on letter head**

This is to 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 (i.e. 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.....Lacs
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.....Lacs

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs 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

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

Annexure –D**Specific Clause w.r.t. BOCW Act & Cess Act**

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. In case where the contractor has been accorded written approval by the Construction Manager and the contractor is required to furnish information in Form I and deposit the Cess under the Building and other Construction Workers' Welfare Cess Act, 1996, fails to do so, BHEL reserves right to impose penalty at the rate of 30% of Cess Amount.
6. 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.
7. 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.
8. 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.
9. It shall be responsibility of the Contractor to furnish BHEL on monthly basis, Receipts/ Challans towards Deposit of the Cess 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
10. 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.
11. 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

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

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.

12. If 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 withhold a reasonable amount from the payables to discharge any obligations on behalf of Contractors. The reasonable amount shall be decided by the Construction Manager in consultation with Resident Accounts Officer & Head HR and shall be final.
13. 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.

ANNEXURE-E**Statewise GST Registration nos.**

Sl. No.	State / UT	GST Reg. No.
1	Andhra Pradesh	37AAACB4146P7Z8
2	Assam	18AAACB4146P1ZE
3	Bihar	10AAACB4146P1ZU
4	Chandigarh	04AAACB4146P1ZN
5	Chattishgarh	22AAACB4146P1ZP
6	Daman & Diu	25AAACB4146P1ZJ
7	Delhi	07AAACB4146P1ZH
8	Gujarat	24AAACB4146P1ZL
9	Haryana	06AAACB4146P1ZJ
10	HP	02AAACB4146P1ZR
11	Jharkhand	20AAACB4146P5ZP
12	Karnataka	29AAACB4146P1ZB
13	Kerala	32AAACB4146P1ZO
14	Maharashtra	27AAACB4146P1ZF
15	MP	23AAACB4146P1ZN
16	Punjab	03AAACB4146P2ZO
17	Rajasthan	08AAACB4146P1ZF
18	Tamil Nadu	33AAACB4146P2ZL
19	Telangana	36AAACB4146P1ZG
20	Tripura	16AAACB4146P1ZI
21	UP	09AAACB4146P2ZC
22	Uttarakhand	05AAACB4146P1ZL
23	West Bengal	19AAACB4146P1ZC
24	Mizoram	15AAACB4146P1ZK
25	Orissa	21AAACB4146P1ZR
26	Arunachal Pradesh	12AAACB4146P1ZQ

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

Annexure- CPP-GST/I**Please arrange to submit this filled-up format along with Tender**

Name of the Company	
Address of Company*	
Company Registration Number*	
Name of Partners / Directors	
ALL THE STATES WHERE BIDDER HAS A PLACE OF BUSINESS*	
ALL ADDRESS OF VENDOR MENTIONING THEIR PIN AS PER THE LATEST GST REGISTRATION*	
GSTN OF ALL THE ABOVE NOTED PLACES OF VENDOR*	
Bidder Type: Indian/ Foreign*	
City*	
State*	
Country*	
Postal Code*	
PAN/TAN Number*	
Company's Establishment Year	
Company's Nature of Business*	
Company's Legal Status* {limited /undertaking/joint venture/partnership/other}	
Company Category* {micro unit as per MSME/small unit as per MSME/medium unit as per MSME/ UAN as per Udyog Aadhaar Memorandum/ Ancillary unit/project affected person of this company/ssi/ other}	
Relevant documents to be submitted as applicable.	
Enter Company's Contact Person Details	
Title(Mr. / Mrs. / Ms. / Dr. / Shri)*	
Contact Name*	
Date Of Birth*	
Correspondence Email*	
(Correspondence Email ID can be same as your Login ID. All the mail correspondence will be sent only to the Correspondence Email ID.)	
Designation	
Phone*	
Fax*	
Mobile*	

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

Format for Self Certification regarding Local content (LC) for Services or Works

Date:

_____, S/o, D/o, W/o _____, Resident of _____ do hereby solemnly affirm and declare as under:

That I agree to abide by terms and conditions of Department of Industrial Policy & Promotion issued vide Notification No :P-45021/2/2017-B.E-II date : 15-06-2017, & P-45021/2/2017-B.E-II date : 28-05-2018.

That the information furnished hereinafter is correct to best of my knowledge and belief and I undertake to produce relevant records before the procuring entity or any other authority so nominated by the Government of India for the purpose of assessing the LC.

That the LC for all inputs which constitute the said Product/ Services/ Works has been verified by me and I am responsible for the correctness of the claims made therein

That in the event of the LC of the Product/ Services/ Works mentioned herein is found to be incorrect and not meeting the prescribed LC norms, based on the assessment of an authority so nominated by the Government of India and I will be liable as under clause 9 (f) of Public Procurement (Preference to Make in India) order 2017.

I agree to maintain all information regarding my claim for LC in the Company's record for a period of 2 years and shall make this available for verification to any statutory authorities

- i. Name and details of the Local supplier (registered Office, Manufacturing and location, nature of legal entity)
- ii. Date on which this certificate is issued
- iii. Product / Services/ Works for which the certificate is produced
- iv. Procuring agency to whom the certificate is furnished
- v. Percentage of LC claimed.
- vi. Name and contract details of the unit of the manufacturer
- vii. Sale Price of the product
- viii. Ex-Factory Price of the product
- ix. Freight, insurance and handling
- x. Total Bill of Material
- xi. List and total cost value of inputs used for manufacture of the Products/ Services/ Works
- xii. List and total cost of inputs which are locally sourced. Please attach LC certificates from local suppliers, if the input is not in-house.
- xiii. List and cost of inputs which are imported, directly or indirectly

For and behalf of _____ (Name of Firm/ entity)

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contract No and date>

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691/ 23398000

BHEL-IP

AA:SSP:IP:R02 dtd 10.07.2018

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 or 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-IP

AA:SSP:IP:R02 dtd 10.07.2018

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)/ Contractor(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 Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(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.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion 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 the 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 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

BHEL-IP

AA:SSP:IP:R02 dtd 10.07.2018

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.

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 this 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 /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, 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)/ Contractor(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) / Sub-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 meetings 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.

BHEL-IP

AA:SSP:IP:R02 dtd 10.07.2018

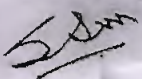
- 8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants 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.
- 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 organisation.
- 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 bidders 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 remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 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)

Place-----

Date-----

Witness:_____

(Name & Address) _____

For & On behalf of the Bidder/

Contractor

(Office Seal)

Witness:_____

(Name & Address) _____

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 1 OF 30

TABLE OF CONTENTS

1. Chapter-1 : General Instructions to Tenderers

- 1.1. Despatch Instructions
- 1.2. Submission of Tenders
- 1.3. Language
- 1.4. Price Discrepancy
- 1.5. Qualification of Tenderers
- 1.6. Evaluation of Bids
- 1.7. Data to be enclosed
- 1.8. Authorisation and Attestation
- 1.9. Earnest Money Deposit
- 1.10. Security Deposit
- 1.11. Return of Security Deposit
- 1.12. Bank Guarantee
- 1.13. Validity of offer
- 1.14. Execution of Contract Agreement
- 1.15. Rejection of Tender and other Conditions

2. Chapter-2

- 2.1. Definitions
- 2.2. Law Governing Contract and Court Jurisdiction
- 2.3. Issue of Notice
- 2.4. Use of land
- 2.5. Commencement of Work

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 2 OF 30

- 2.6. Measurement of Work and Mode of Payment
- 2.7. Rights of BHEL
- 2.8. Responsibilities of Contractor in respect of Local Laws, Employment of Workers etc
- 2.9. Progress Monitoring, Monthly Review and Performance Evaluation
- 2.10. Time of Completion
- 2.11. Extension of Time for Completion
- 2.12. Over Run Compensation
- 2.13. Interest Bearing Recoverable Advances
- 2.14. Quantity Variation
- 2.15. Extra Works
- 2.16. Supplementary Items
- 2.17. Price Variation Clause
- 2.18. Insurance
- 2.19. Strikes & Lockout
- 2.20. Force Majeure
- 2.21. Arbitration and Reconciliation
- 2.22. Retention Amount
- 2.23. Payments
- 2.24. Performance Guarantee for Workmanship
- 2.25. Closing of Contracts
- 2.26. Reverse Auction
- 2.27. Suspension of Business Dealings
- 2.28. Other Issues

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 3 OF 30

CHAPTER -1

1. GENERAL INSTRUCTION TO TENDERERS

1.1. DESPATCH INSTRUCTION

- i) The General Conditions of Contract form part of the Tender specifications. All pages of the tender documents shall be duly signed, stamped and submitted along with the offer in token of complete acceptance thereof. The information furnished shall be complete by itself. The tenderer is required to furnish all the details and other documents as required in the following pages
- ii) Tenderers are advised to study all the tender documents carefully. Any submission of tender by the tenderer shall be deemed to have been done after careful study and examination of the tender documents and with the full understanding of the implications thereof. Should the tenderers have any doubt about the meaning of any portion of the Tender Specification or find discrepancies or omissions in the drawings or the tender documents issued are incomplete or shall require clarification on any of the technical aspect, the scope of work etc., he shall at once, contact the authority inviting the tender well in time (so as not to affect last date of submission) for clarification before the submission of the tender. Tenderer's request for clarifications shall be with reference to Sections and Clause numbers given in the tender documents. The specifications and terms and conditions shall be deemed to have been accepted by the tenderer in his offer. Non compliance with any of the requirements and instructions of the tender enquiry may result in the rejection of the tender.
- iii) Integrity pact (IP) shall be applicable for all tenders / contracts if indicated in NIT. This integrity pact shall be issued as part of the Tender documents and shall be returned by the bidder along with Techno-commercial bid duly filled, signed and stamped by the authorized signatory who signs the bid. Only those vendors / bidders who have entered into such an IP with BHEL shall be considered qualified to participate in the bidding. Entering into this pact shall be a preliminary qualification.

1.2. SUBMISSION OF TENDERS

- 1.2.1 The tenderers must submit their tenders to Officer inviting tender as per instructions in the NIT
- 1.2.2 Tenders submitted by post shall be sent by 'REGISTERED POST ACKNOWLEDGEMENT DUE / by COURIER' and shall be posted with due allowance for any postal/courier delays. BHEL takes no responsibility for delay, loss or non-receipt of tenders sent by post/courier. The tenders received after the specified time of their submission are treated as 'Late Tenders' and shall not be considered under any circumstances. Offers received by Fax/Email/Internet shall be considered as per terms of NIT.

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 4 OF 30

- 1.2.3 Tenders shall be opened by authorised Officer of BHEL at his office at the time and date as specified in the NIT, in the presence of such of those tenderers or their authorised representatives who may be present
- 1.2.4 Tenderers whose bids are found techno commercially qualified shall be informed the date and time of opening of the Price Bids and such Tenderers may depute their representatives to witness the opening of the price bids. BHEL's decision in this regard shall be final and binding.
- 1.2.5 Before submission of Offer, the tenderers are advised to inspect the site of work and the environments and be well acquainted with the actual working and other prevalent conditions, facilities available, position of material and labour, means of transport and access to Site, accommodation, etc. No claim will be entertained later on the grounds of lack of knowledge of any of these conditions.
- 1.3. **LANGUAGE**
- 1.3.1 The tenderer shall quote the rates in English language and international numerals. These rates shall be entered in figures as well as in words. For the purpose of the tenders, the metric system of units shall be used.
- 1.3.2 All entries in the tender shall either be typed or written legibly in ink. Erasing and over-writing is not permitted and may render such tenders liable for rejection. All cancellations and insertions shall be duly attested by the tenderer.
- 1.4 **PRICE DISCREPANCY:**
- 1.4.1 **Conventional (Manual) Price Bid opening :** In the case of price bid opening without resorting to Reverse Auction, if there are differences between the rates given by the tenderer in words and figures or in amount worked out by him, the following procedure for evaluation and award shall be followed:
- i) When there is a difference between the rates in figures and in words, the rates which corresponds to the amounts worked out by the contractor, shall be taken as correct
 - ii) When the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figure or in words, then the rate quoted by the contractor in words shall be taken as correct
 - iii) When the rate quoted by the contractor in figures and words tallies but the amount is not worked out correctly, the rate quoted by the contractor shall be taken as correct and not the amount.
 - iv) In case of lumpsum price, if there is any difference between the amount in figures and in words, the amount quoted by the bidder in words shall be taken as correct.
 - v) In case of omission in quoting any rate for one or more items, the evaluation shall be done considering the highest quoted rate obtained against the respective items by other tenderers for the subject tender. If the tenderer becomes L-1, the notional rates for the omission items shall be the lowest rates quoted for the respective items by the other tenderers against the respective omission items for the subject job and the 'Total quoted price (loaded for omissions)' shall be arrived at. However the overall price remaining the same as quoted originally, the rates for all the items in the 'Total quoted price (loaded for omissions)' shall be reduced item wise in proportion to the ratio of 'Original' total price and the 'Total quoted price (loaded for omissions)'
 - vi) The 'Final Total Amount' shall be arrived at after considering the amounts worked out in line with 'i' to 'iv' above.
- 1.4.2 **Reverse Auction:** In case of Reverse Auction, the successful bidder shall undertake to execute

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 5 OF 30

the work as per overall price offered by him during the Reverse Auction process. In case of omission of rates, the procedure shall be as per 'Guidelines for Reverse Auction' enclosed.

1.5. QUALIFICATION OF TENDERERS

- i) Only tenderers who have previous experience in the work of the nature and description detailed in the Notice Inviting Tender and/or tender specification are expected to quote for this work duly detailing their experience along with offer.
- ii) Offers from tenderers who do not have proven and established experience in the field shall not be considered
- iii) .Offers from tenderers who are under suspension (banned) by any Unit/Region/Division of BHEL shall not be considered.
- iv) Offers from tenderers who do not comply with the latest guidelines of Ministry/Commissions of Govt of India shall not be considered.

1.6. EVALUATION OF BIDS

- i) Technical Bids submitted by the tenderer will be opened first and evaluated for fulfilling the Pre Qualification criteria and other conditions in NIT/Tender documents, based on documentary evidences submitted along with the offer
- ii) In case the same qualifying experience is claimed by more than one agency, then the agency who has executed the work as per documentary evidence submitted shall only be qualified. Scope of qualifying work should be totally with the agency who has executed and in case it is only labour+consumables without T&P, then the responsibility of execution is assigned to the first agency and not to the agency who has executed only as labour supply contractor. Further, BHEL reserves the right to ask for further proofs including submission of TDS certificates for the said job
- iii) In case the qualifying experience is claimed by private organizations based on Work Order and completion certificates from another private organization, BHEL reserves the right to ask for further proofs including submission of TDS certificates for the said job
- iv) Assessing Bidder Capacity for executing the current tender shall be as per Notice Inviting Tender
- v) Price Bids of shortlisted bidders shall only be opened either through the conventional price bid opening or through electronic Reverse Auction, at the discretion of BHEL
- vi) Price Bids of unqualified bidders shall not be opened. Reasons for rejection shall be intimated in due course after issue of LOI/LOA to successful bidder and receipt of unqualified acceptance from the successful bidder
- vii) Bidders are advised to also refer to clause no 2.9.4 regarding evaluation of their performance in ongoing projects for the current tender

1.7. DATA TO BE ENCLOSED

Full information shall be given by the tenderer in respect of the following. Non-submission of this information may lead to rejection of the offer.

- i) **INCOME TAX PERMANENT ACCOUNT NUMBER**
Certified copies of Permanent Account Numbers as allotted by Income Tax Department for the Company/Firm/Individual Partners, etc. shall be furnished along with tender.
- ii) **ORGANIZATION CHART**
The organization chart of the tenderer's organization, including the names, addresses and contact

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 6 OF 30

information of the Directors/Partners shall be furnished along with the offer.

- iii) An attested copy of the Power of Attorney, in case the tender is signed by an individual other than the sole proprietor
- iv) IN CASE OF INDIVIDUAL TENDERER:
His / her full name, address and place & nature of business.
- v) IN CASE OF PARTNERSHIP FIRM
The names of all the partners and their addresses, A copy of the partnership deed/instrument of partnership duly certified by the Notary Public shall be enclosed.
- vi) IN CASE OF COMPANIES:
 - a. Date and place of registration including date of commencement certificate in case of Public Companies (certified copies of Memorandum and articles of Association are also to be furnished).
 - b. Nature of business carried on by the Company and the provisions of the Memorandum relating thereof.

1.8 AUTHORISATION AND ATTESTATION

Tenders shall be signed by a person duly authorized/empowered to do so. An attested copy of the Power of Attorney, in case the tender is signed by an individual other than the sole proprietor shall be submitted along with the tenders

1.9 EARNEST MONEY DEPOSIT

1.9.1 Every tender must be accompanied by the prescribed amount of Earnest Money Deposit (EMD) in the manner described herein.

- i) EMD shall be furnished along with the offer in full as per the amount indicated in the Special Conditions of Contract / NIT
- ii) EMD is to be paid in cash (as permissible under Income Tax Act), Pay order or Demand Draft in favour of 'Bharat Heavy Electricals Limited' and payable at Regional HQ issuing the tender.
- iii) No other form of EMD remittance shall be acceptable to BHEL
- iv) Bidder may opt to deposit "One Time EMD" of Rs. 2.0 lakhs (Rupees Two lakhs only) with BHEL:Power Sector Region HQ issuing the tender, which will enable them to participate in all the future tender enquiries in respect of Erection and Commissioning services issued from the respective office. Interested bidders may clearly send their consent for converting the present EMD into a "One Time EMD" in their offer.
 - Note : The 'One Time EMD' cannot be withdrawn by the tenderers within 3 years from the date of deposit, under any circumstances. The Tenderer who wishes to withdraw after three years will not be allowed to submit 'One Time EMD' again.
- v) Bidders who have already deposited such "One Time EMD" of Rs. 2.00 lakh are exempted from submission of EMD for this tender. However a copy of 'One Time EMD' certificate issued by BHEL Regional HQ issuing the tender shall be enclosed along with the offer.

1.9.2 EMD by the bidder will be forfeited as per Tender Documents if

- i) After opening the tender, the bidder revokes his tender within the validity period or increases his

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 7 OF 30

earlier quoted rates.

- ii) The bidder does not commence the work within the period as per LOI/Contract. In case the LOI / contract is silent in this regard then within 15 days after award of contract.

1.9.3 EMD shall not carry any interest.

1.9.4 In the case of unsuccessful bidders, the Earnest Money will be refunded to them within a reasonable time after acceptance of award by successful tenderer.

1.10 SECURITY DEPOSIT

1.10.1 Upon acceptance of Tender, the successful Tenderer should deposit the required amount of Security Deposit for satisfactory completion of work, as per the rates given below:

SN	Contract Value	Security Deposit Amount
1	Up to Rs. 10 lakhs	10% of Contract Value
2	Above Rs. 10 lakhs upto Rs.50 lakhs	1 lakh + 7.5% of the Contract Value exceeding Rs. 10 lakhs.
3	Above Rs. 50 lakhs	Rs 4 lakhs + 5% of the Contract Value exceeding Rs. 50 lakhs.

1.10.2 The security Deposit should be furnished before start of the work by the contractor.

1.10.3 Security Deposit may be furnished in any one of the following forms

- i) Cash (as permissible under the Income Tax Act)
- ii) Pay Order / Demand Draft in favour of BHEL.
- iii) Local cheques of scheduled banks, subject to realization.
- iv) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back).
- v) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format for Security Deposit shall be in the prescribed formats
- vi) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.
- vii) Security deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be deposited in any form as prescribed before start of the work and the balance 50% may be recovered from the running bills.
- viii) EMD of the successful bidder can be converted and adjusted against the cash portion of Security Deposit excepting for such bidders who have remitted One Time EMD.

NOTE: Acceptance of Security Deposit against Sl. No. (iv) and (vi) above will be subject to hypothecation or endorsement on the documents in favour of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith.

1.10.4 The Security Deposit shall not carry any interest.

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 8 OF 30

1.10.5 In case the value of work exceeds / reduces from the awarded / accepted value, the Security Deposit shall be correspondingly enhanced / reduced as given below:

- i) The enhanced part of the Security Deposit shall be immediately deposited by the Contractor or adjusted against payments due to the Contractor.
- ii) There will be no reduction in Security Deposit value in case of variation in contract value upto the lower limit specified in Quantity variation clause. In case of reduction of contract value beyond the lower limit specified in Quantity Variation clause, then the Security Deposit shall be re adjusted in proportion.
- iii) In case of reduction, the reduced Contract value shall be certified by BHEL Construction Manager after ascertaining / freezing of BOQ / Drawings from the Design / Engineering Centre. The reduced Security Deposit value can only be considered after taking into account the adequacy of the securities held by BHEL to meet the liabilities of the contractor for the contract, and the performance of the contract in general. In such cases, the revised value of Security Deposit shall be worked out only after execution of not less than the lower limit of the revised scope of work/contract value as per quantity variation clause, and as certified by Construction Manager. This reduction in value of Security Deposit shall not entitle the contractor to any amendment of Contract and shall be operated at the discretion of BHEL
- iv) Contract value for the purpose of operating the reduced/increased value of Security Deposit due to Quantity Variation, shall be exclusive of Price Variation Clause, Over Run Compensation and Extra works done on manday rates.

1.10.6 The validity of Bank Guarantees towards Security Deposit shall be initially upto the completion period as stipulated in the Letter of Intent/Award + 3 months, and the same shall be kept valid by proper renewal till the acceptance of Final Bills of the Contractor, by BHEL

1.10.7 BHEL reserves the right of forfeiture of Security Deposit in addition to other claims and penalties in the event of the Contractor's failure to fulfill any of the contractual obligations or in the event of termination of contract as per terms and conditions of contract. BHEL reserves the right to set off the Security Deposit against any claims of other contracts with BHEL.

1.11 RETURN OF SECURITY DEPOSIT

Security Deposit shall be refunded/Bank Guarantee(s) released to the Contractor along with the 'Final Bill' after deducting all expenses / other amounts due to BHEL under the contract / other contracts entered into with them by BHEL.

1.12 BANK GUARANTEES

Where ever Bank Guarantees are to be furnished/submitted by the contractor, the following shall be complied with

- i) Bank Guarantees shall be from Scheduled Banks / Public Financial Institutions as defined in the Companies Act.
- ii) The Bank Guarantees shall be as per prescribed formats.
- iii) It is the responsibility of the bidder to get the Bank Guarantees revalidated/extended for the required period (subject to a minimum period of six months), as per the advice of BHEL Site Engineer / Construction Manager. BHEL shall not be liable for issue of any reminders regarding expiry of the

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 9 OF 30

Bank Guarantees.

- iv) In case extension/further extensions of any Bank Guarantees are not required, the bidders shall ensure that the same is explicitly endorsed by the Construction Manager and submitted to the Regional HQ issuing the LOI/LOA.
- v) In case the Bank Guarantees are not extended before the expiry date, BHEL reserves the right to invoke the same by informing the concerned Bank in writing, without any advance notice/communication to the concerned bidder.
- vi) Bidders to note that any corrections to Bank Guarantees shall be done by the issuing Bank, only through an amendment in an appropriate non judicial stamp paper.
- vii) The Original Bank Guarantee shall be sent directly by the Bank to BHEL under Registered Post (Acknowledgement Due), addressed to the Subcontracting Department of the respective Region.

1.13 VALIDITY OF OFFER

The rates in the Tender shall be kept open for acceptance for a minimum period of SIX MONTHS from latest due date of offer submission (including extension, if any) . In case BHEL (Bharat Heavy Electricals Ltd) calls for negotiations, such negotiations shall not amount to cancellation or withdrawal of the original offer which shall be binding on the tenderers.

1.14 EXECUTION OF CONTRACT AGREEMENT

The successful tenderer's responsibility under this contract commences from the date of issue of the Letter of Intent by Bharat Heavy Electricals Limited. The Tenderer shall submit an unqualified acceptance to the Letter of Intent/Award within the period stipulated therein.

The successful tenderer shall be required to execute an agreement in the prescribed form, with BHEL, within a reasonable time after the acceptance of the Letter of Intent/Award, and in any case before releasing the first running bill. The contract agreement shall be signed by a person duly authorized/empowered by the tenderer. The expenses for preparation of agreement document shall be borne by BHEL

1.15 REJECTION OF TENDER AND OTHER CONDITIONS

- 1.15.1 The acceptance of tender will rest with BHEL which does not bind itself to accept the lowest tender or any tender and reserves to itself full rights for the following without assigning any reasons whatsoever:-

- a. To reject any or all of the tenders.
- b. To split up the work amongst two or more tenderers as per NIT
- c. To award the work in part if specified in NIT
- d. In case of either of the contingencies stated in (b) and (c) above, the time for completion as stipulated in the tender shall be applicable.

- 1.15.2 Conditional tenders, unsolicited tenders, tenders which are incomplete or not in the form specified or defective or have been materially altered or not in accordance with the tender

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 10 OF 30

conditions, specifications etc., are liable to be rejected.

- 1.15.3 Tenders are liable to be rejected in case of unsatisfactory performance of the tenderer with BHEL, or tenderer under suspension (hold/banning /delisted) by any unit / region / division of BHEL or tenderers who do not comply with the latest guidelines of Ministry/Commissions of Govt of India. BHEL reserves the right to reject a bidder in case it is observed that they are overloaded and may not be in a position to execute this job as per the required schedule in line with clause no. 9.0 of the 'NIT'. The decision of BHEL will be final in this regard.
- 1.15.4 If a tenderer who is a proprietor expires after the submission of his tender or after the acceptance of his tender, BHEL may at their discretion, cancel such tender. If a partner of a firm expires after the submission of tender or after the acceptance of the tender, BHEL may then cancel such tender at their discretion, unless the firm retains its character.
- 1.15.5 BHEL will not be bound by any Power of Attorney granted by changes in the composition of the firm made subsequent to the execution of the contract. They may, however, recognise such power of Attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the contractor concerned.
- 1.15.6 If the tenderer deliberately gives wrong information in his tender, BHEL reserves the right to reject such tender at any stage or to cancel the contract if awarded and forfeit the Earnest Money/Security Deposit/any other money due.
- 1.15.7 Canvassing in any form in connection with the tenders submitted by the Tenderer shall make his offer liable to rejection.
- 1.15.8 In case the Proprietor, Partner or Director of the Company/Firm submitting the Tender, has any relative or relation employed in BHEL, the authority inviting the Tender shall be informed of the fact as per specified format, along with the Offer. Failing to do so, BHEL may, at its sole discretion, reject the tender or cancel the contract and forfeit the Earnest Money/Security Deposit.
- 1.15.9 The successful tenderer should not sub-contract part or complete work detailed in the tender specification undertaken by him without written permission of BHEL's Construction Manager/Site Incharge. The tenderer is solely responsible to BHEL for the work awarded to him.
- 1.15.10 The Tender submitted by a techno commercially qualified tenderer shall become the property of BHEL who shall be under no obligation to return the same to the bidder. However unopened price bids and late tenders shall be returned to the bidders
- 1.15.11 Unsolicited discount received after the due date and time of Bid Submission shall not be considered for evaluation. However, if the party who has submitted the unsolicited discount/rebate becomes the L-I party, then the awarded price i.e contract value shall be worked out after considering the discount so offered.
- 1.15.12 BHEL shall not be liable for any expenses incurred by the bidder in the preparation of the tender irrespective of whether the tender is accepted or not.

Bharat Heavy Electricals Limited		
Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 11 OF 30

CHAPTER-2

2.1 **DEFINITION:** The following terms shall have the meaning hereby assigned to them except where the context otherwise requires

- i) BHEL shall mean Bharat Heavy Electricals Limited (of the respective Power Sector Region inviting the Tender), a company registered under Indian Companies Act 1956, with its Registered Office at BHEL HOUSE, SIRI FORT, NEW DELHI – 110 049, or its Power Sector Regional Offices or its Authorised Officers or its Site Engineers or other employees authorised to deal with any matters with which these persons are concerned on its behalf.
- ii) “EXECUTIVE DIRECTOR” or ‘GROUP GENERAL MANAGER’ or “GENERAL MANAGER (Incharge)” or “GENERAL MANAGER” shall mean the Officer in Administrative charge of the respective Power Sector Region.
- iii) “COMPETENT AUTHORITY” shall mean Executive Director or Group General Manager or General Manager (Incharge) or General Manager or BHEL Officers who are empowered to act on behalf of the Executive Director or General Manager (Incharge) or General Manager of BHEL.
- iv) “ENGINEER” or “ENGINEER IN CHARGE” shall mean an Officer of BHEL as may be duly appointed and authorized by BHEL to act as “Engineer” on his behalf for the purpose of the Contract, to perform the duty set forth in this General Conditions of Contract and other Contract documents. The term also includes ‘CONSTRUCTION MANAGER’ or ‘SITE INCHARGE’ as well as Officers at Site or at the Headquarters of the respective Power Sector Regions.
- v) “SITE” shall mean the places or place at which the plants/equipments are to be erected and services are to be performed as per the specification of this Tender.
- vi) “CLIENT OF BHEL” or “CUSTOMER” shall mean the project authorities with whom BHEL has entered into a contract for supply of equipments or provision of services.
- vii) “CONTRACTOR” shall mean the successful Bidder/Tenderer who is awarded the Contract and shall include the Contractor’s successors, heirs, executors, administrators and permitted assigns.
- viii) “CONTRACT” or “CONTRACT DOCUMENT” shall mean and include the Agreement of Work Order, the accepted appendices of Rates, Schedules, Quantities if any, General Conditions of Contract, Special Conditions of Contract, Instructions to the Tenderers, Drawings, Technical Specifications, the Special Specifications if any, the Tender documents, subsequent amendments mutually agreed upon and the Letter of Intent/Acceptance issued by BHEL. Any conditions or terms stipulated by the contractor in the tender documents or subsequent letters shall not form part of the contract unless, specifically accepted in writing by BHEL in the Letter of Intent/Award and incorporated in the agreement.
- ix) “GENERAL CONDITIONS OF CONTRACT” shall mean the ‘Instructions to Tenderers’ and ‘General Conditions of Contract’ pertaining to the work for which above tenders have been called for.

Bharat Heavy Electricals Limited		
Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 12 OF 30

x)	“TENDER SPECIFICATION” or “TENDER” or “TENDER DOCUMENTS” shall mean General Conditions, Common Conditions, Special Conditions, Price Bid, Rate Schedule, Technical Specifications, Appendices, Annexures, Corrigendums, Amendments, Forms, procedures, Site information, etc and drawings/documents pertaining to the work for which the tenderers are required to submit their offers. Individual specification number will be assigned to each Tender Specification.
xi)	“LETTER OF INTENT” shall mean the intimation by a Letter/Fax/email to the tenderer that the tender has been accepted in accordance with provisions contained in the letter. The responsibility of the contractor commences from the date of issue of this letter and all terms and conditions of the contract are applicable from this date.
xii)	“COMPLETION TIME” shall mean the period by ‘date/month’ specified in the ‘Letter of Intent/Award’ or date mutually agreed upon for handing over of the intended scope of work, the erected equipment/plant which are found acceptable by the Engineer, being of required standard and conforming to the specifications of the Contract.
xiii)	“PLANT” shall mean and connote the entire assembly of the plant and equipments covered by the contract.
xiv)	“EQUIPMENT” shall mean equipment, machineries, materials, structural, electricals and other components of the plant covered by the contract.
xv)	“TESTS” shall mean and include such test or tests to be carried out on the part of the contractor as are prescribed in the contract or considered necessary by BHEL, in order to ascertain the quality, workmanship, performance and efficiency of the contractor or part thereof.
xvi)	“APPROVED”, “DIRECTED” or “INSTRUCTED” shall mean approved, directed or instructed by BHEL.
xvii)	“WORK or CONTRACT WORK” shall mean and include supply of all categories of labour, specified consumables, tools and tackles and Plants required for complete and satisfactory site transportation, handling, stacking, storing, erecting, testing and commissioning of the equipments to the entire satisfaction of BHEL.
xviii)	“SINGULAR AND PLURALS ETC” words carrying singular number shall also include plural and vice versa, where the context so requires. Words imparting the masculine Gender shall be taken to include the feminine Gender and words imparting persons shall include any Company or Associations or Body of Individuals, whether incorporated or not.
xix)	“HEADING” – The heading in these General Conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof or be taken as instructions thereof or of the contract.
xx)	“MONTH” shall mean calendar month unless otherwise specified in the Tender.

Bharat Heavy Electricals Limited		
Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 13 OF 30

xxi)	Day' or 'Days' unless herein otherwise expressly defined shall mean calendar day or days of twenty four (24) hours each. A week shall mean continuous period of seven (7) days.
xxii)	"COMMISSIONING" shall mean the synchronisation testing and achieving functional operation of the Equipment with associated system after all initial adjustments, trials, cleaning, re-assembly required at site if any, have been completed and Equipment with associated system is ready for taking into service.
xxiii)	"WRITING" shall include any manuscript type written or hand written or printed statement or electronically transmitted messages, under the signature or seal or transmittal of BHEL.
xxiv)	"TEMPORARY WORK" shall mean all temporary works for every kind required in or for the execution, completion, maintenance of the work.
xxv)	'CONTRACT PRICE' or 'CONTRACT VALUE' shall mean the sum mentioned in the LOI/LOA/Contract Agreement subject to such additions thereto or deductions there from as may be made under provisions hereinafter contained
xxvi)	"COMMENCEMENT DATE" or "START DATE" shall mean the commencement/start of work at Site as per terms defined in the Tenderl
xxvii)	"SHORT CLOSING" or "FORE CLOSING" of Contract shall mean the premature closing of Contract, for reasons not attributable to the contractor and mutually agreed between BHEL and the contractor
xxviii)	"TERMINATION" of Contract shall mean the pre mature closing of contract due to reasons as mentioned in the contract
xxix)	"DE MOBILISATION" shall mean the temporary winding up of Site establishment by Contractor leading to suspension of works temporarily for reasons not attributable to the contractor
xxx)	"RE MOBILISATION" shall mean the resumption of work with all resources required for the work after demobilization.

2.2 LAW GOVERNING THE CONTRACT AND COURT JURISDICTION

The contract shall be governed by the Law for the time being in force in the Republic of India. The Civil Court having original Civil Jurisdiction at Delhi for PSNR, at Kolkata for PSER, at Nagpur for PSWR and at Chennai for PSSR, shall alone have exclusive jurisdiction in regard to all claims in respect of the Contract. No other Civil Court shall have jurisdiction in case of any dispute, under this contract

2.3 ISSUE OF NOTICE

2.3.1 Service of notice on contractor

Any notice to be given to the Contractor under the terms of the contract shall be served by sending the same by Registered Post / Speed Post to or leaving the same at the Contractor's last known address of the principal place of business (or in the event of the contractor being a company, to or at its Registered Office). In case of change of address, the notice shall be served at changed address as notified in writing by the Contractor to BHEL. Such posting or leaving of the notice shall be deemed to be good service of such notice and the time mentioned to the condition for doing any act after notice shall be reckoned from the date so mentioned in such notice.

2.3.2 Service of notice on BHEL

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 14 OF 30

Any notice to be given to BHEL in-charge/Region under the terms of the Contract shall be served by sending the same by post to or leaving the same at BHEL address or changed address as notified in writing by BHEL to the Contractor.

2.4 USE OF LAND

No land belonging to BHEL or their Customer under temporary possession of BHEL shall be occupied by the contractor without written permission of BHEL.

2.5 COMMENCEMENT OF WORK

2.5.1 The contractor shall commence the work as per the time indicated in the Letter of Intent from BHEL and shall proceed with the same with due expedition without delay.

2.5.2 If the contractor fails to start the work within stipulated time as per LOI or as intimated by BHEL, then BHEL at its sole discretion will have the right to cancel the contract. The Earnest Money and/or Security Deposit with BHEL will stand forfeited without any further reference to him without prejudice to any and all of BHEL's other rights and remedies in this regard.

2.5.3 All the work shall be carried out under the direction and to the satisfaction of BHEL.

2.6 MEASUREMENT OF WORK AND MODE OF PAYMENT:

2.6.1 All payments due to the contractors shall be made by e mode only, unless otherwise found operationally difficult for reasons to be recorded in writing

2.6.2 For progress running bill payments: - The Contractor shall present detailed measurement sheets in triplicate, duly indicating all relevant details based on technical documents and connected drawings for work done during the month/period under various categories in line with terms of payment as per contract. The basis of arriving at the quantities, weights shall be relevant documents and drawings released by BHEL. These measurement sheets shall be prepared jointly with BHEL Engineers and signed by both the parties.

2.6.3 These measurement sheets will be checked by BHEL Engineer and quantities and percentage eligible for payment under various groups shall be decided by BHEL Engineer. The abstract of quantities and percentage so arrived at based on the terms of payment shall be entered in Measurement Book and signed by both the parties.

2.6.4 Based on the above quantities, contractor shall prepare the bills in prescribed format and work out the financial value. These will be entered in Measurement Book and signed by both the parties. Payment shall be made by BHEL after effecting the recoveries due from the contractor.

2.6.5 All recoveries due from the contractor for the month/period shall be effected in full from the corresponding running bills unless specific approval from the competent authorities is obtained to the contrary.

2.6.6 Measurement shall be restricted to that portion of work for which it is required to ascertain the financial liability of BHEL under this contract.

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 15 OF 30

- 2.6.7 The measurement shall be taken jointly by persons duly authorized on the part of BHEL and by the Contractor.
- 2.6.8 The Contractor shall bear the expenditure involved if any, in making the measurements and testing of materials to be used/used in the work. The contractor shall, without extra charges, provide all the assistance with appliances and other things necessary for measurement.
- 2.6.9 If at any time due to any reason whatsoever, it becomes necessary to re-measure the work done in full or in part, the expenses towards such re measurements shall be borne by the contractor unless such re measurements are warranted solely for reasons not attributable to contractor.
- 2.6.10 Passing of bills covered by such measurements does not amount to acceptance of the completion of the work measured. Any left out work has to be completed, if pointed out at a later date by BHEL.
- 2.6.11 Final measurement bill shall be prepared in the final bill format prescribed for the purpose based on the certificate issued by BHEL Engineer that entire works as stipulated in tender specification has been completed in all respects to the entire satisfaction of BHEL. Contractor shall give unqualified "No Claim" Certificate. All the tools and tackles loaned to him should be returned in satisfactory condition to BHEL. The abstract of final quantities and financial values shall also be entered in the Measurement Books and signed by both parties to the contract. The Final Bill shall be prepared and paid within a reasonable time after completion of work.
- 2.7 **RIGHTS OF BHEL**
BHEL reserves the following rights in respect of this contract during the original contract period or its extensions if any, as per the provisions of the contract, without entitling the contractor for any compensation.
- 2.7.1 To withdraw any portion of work and/or to restrict/alter quantum of work as indicated in the contract during the progress of work and get it done through other agencies to suit BHEL's commitment to its customer or in case BHEL decides to advance the date of completion due to other emergent reasons/ BHEL's obligation to its customer.
- 2.7.2 To terminate the contract or get any part of the work done through other agency or deploy BHEL's own/hired/otherwise arranged resources , at the risk and cost of the contractor after due notice of a period of two weeks by BHEL, in the event of:-
- i) Contractor's continued poor progress
 - ii) Withdrawal from or abandonment of the work before completion of the work
 - iii) Contractor's inability to progress the work for completion as stipulated in the contract
 - iv) Poor quality of work
 - v) Corrupt act of Contractor
 - vi) Insolvency of the Contractor
 - vii) Persistent disregard to the instructions of BHEL
 - viii) Assignment, transfer, sub-letting of contract without BHEL's written permission
 - ix) Non fulfillment of any contractual obligations
 - x) In the opinion of BHEL, the contractor is overloaded and is not in a position to execute the job as per required schedule

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 16 OF 30

2.7.3 To meet the expenses including BHEL overheads on the differential cost at 5%, over and above the Liquidated damages/penalties arising out of "Risk & Cost" as explained above under Sl.No. 2.7.2. BHEL shall recover the amount from any money due from Contractor, or from any money due to the Contractor including Security Deposit, or by forfeiting any T&P or material of the contractor under this contract or any other contract of BHEL or by any other means or any combination thereof

2.7.4 To terminate the contract or to restrict the quantum of work and pay for the portion of work executed in case BHEL's contract with their customer are terminated for any reason, as per mutual agreement.

2.7.5 To effect recovery from any amounts due to the contractor under this or any other contract or in any other form, the moneys BHEL is statutorily forced to pay to anybody, due to contractor's failure to fulfill any of his obligations. BHEL shall levy overheads of 5% on all such payments along with interest as defined elsewhere in the GCC.

2.7.6 While every endeavour will be made by BHEL to this end, they cannot guarantee uninterrupted work due to conditions beyond their control. The Contractor will not be normally entitled for any compensation/extra payment on this account unless otherwise specified elsewhere in the contract.

2.7.7 In case the execution of works comes to a complete halt or reaches a stage wherein worthwhile works cannot be executed and there is no possibility of commencement of work for a period of not less than two months, due to reasons not attributable to the contractor and other than Force Majeure conditions, BHEL may consider permitting the contractor to de mobilize forthwith and re mobilize at an agreed future date. Cost of such demobilization/remobilization shall be mutually agreed. ORC in such cases shall not be applicable for the period between the period of demobilization and re mobilisation. The duration of contract/time extension shall accordingly get modified suitably. In case of any conflict, BHEL decision in this regard shall be final and binding on the contractor.

2.7.8 In the unforeseen event of inordinate delay in receipt of materials, drawings, fronts, etc, due to which inordinate discontinuity of work is anticipated, BHEL at its discretion may consider contractor's request to short close the contract in following cases:

- a) The balance works (including but not limited to Trial Operation, PG Test, etc) are minor vis a vis the scope of work envisaged as per the contract.
- b) There has been no significant work in past 6 months OR no significant work is expected in next 6 months (example in Hydro projects or in projects where work has stopped due to reasons beyond the control of BHEL)
- c) The balance works cannot be done within a reasonable period of time as they are dependent on unit shutdown or on other facilities of customer or any other reasons not attributable to the contractor

At the point of requesting for short closure, contractor shall establish that he has completed all works possible of completion and he is not able to proceed with the balance works due to constraints beyond his control. In such a case, the estimated value of the unexecuted portion of work (or estimated value of services to be provided for carrying out milestone/stage payments like

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 17 OF 30

Trial Operation/PG Test, etc) as mutually agreed, shall however be reduced from the final contract value.

2.7.9 LIQUIDATED DAMAGES/PENALTY

If the contractor fails to maintain the required progress of work which results in delay in the completion of the work as per the contractual completion period, BHEL shall have the right to impose Liquidated Damage/Penalty at the rate of 0. 5% of the contract value, per week of delay or part thereof subject to a maximum of 10% of the contract value. For this purpose, the period of delay shall be the delay attributable to the Contractor for the completion of work as per contract. Contract Value for this purpose, shall be the final executed value exclusive of ORC, Extra Works executed on Manday rate basis, Supplementary/Additional Items and PVC.

2.8 RESPONSIBILITIES OF THE CONTRACTOR IN RESPECT OF LOCAL LAWS, EMPLOYMENT OF WORKERS ETC.

The following are the responsibilities of the contractor in respect of observance of local laws, employment of personnel, payment of taxes etc. The subcontractor shall fully indemnify BHEL against any claims of whatsoever nature arising due to the failure of the contractor in discharging any of his responsibilities hereunder:

- 2.8.1 As far as possible, Unskilled Workers shall be engaged from the local areas in which the work is being executed.
- 2.8.2 The contractor at all times during the continuance of this contract shall, in all his dealings with local labour for the time being employed on or in connection with the work, have due regard to all local festivals and religious and other customs.
- 2.8.3 The contractor shall comply with all applicable State and Central Laws, Statutory Rules, Regulations etc. such as Payment of Wages Act, Minimum Wages Act, Workmen Compensation Act, Employer's Liability Act, Industrial Disputes Act, Employers Provident Act, Employees State Insurance Scheme, Contract Labour (Regulation and Abolition) Act 1970, Payment of Bonus & Gratuity Act and other Acts, Rules and Regulations for labour as may be enacted by the Government during the tenure of the Contract and having force or jurisdiction at Site. The Contractor shall also give to the local Governing Body, Police and other relevant Authorities all such notices as may be required by the Law.
- 2.8.4 The contractor shall obtain independent License under the Contract Labour (Regulations and Abolition Act, 1970) as required from the concerned Authorities based on the certificate (Form-V) issued by the Principal Employer/Customer
- 2.8.5 The contractor shall pay all taxes, fees, license charges, deposits, duties, tolls, royalties, commission or other charges which may be leviable on account of his operations in executing the contract.
- 2.8.6 While BHEL would pay the inspection fees and Registration fees of Boiler/Electrical Inspectorate,

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 18 OF 30

	all other arrangements for site visits periodically by the Inspectorate to site, Inspection certificate etc. will have to be made by contractor. However, BHEL will not make any payment to the Inspectorate in connection with contractor's Welders/Electricians qualification tests etc.
2.8.7	Contractor shall be responsible for provision of Health and Sanitary arrangements (more particularly described in Contract Labour Regulation & Abolition Act), Safety precautions etc. as may be required for safe and satisfactory execution of contract.
2.8.8	The contractor shall be responsible for proper accommodation including adequate medical facilities for personnel employed by him.
2.8.9	The contractor shall be responsible for the proper behavior and observance of all regulations by the staff employed by him.
2.8.10	The contractor shall ensure that no damage is caused to any person/property of other parties working at site. If any such damage is caused, it is responsibility of the contractor to make good the losses or compensate for the same.
2.8.11	All the properties/equipments/components of BHEL/their Client loaned with or without deposit to the contractor in connection with the contract shall remain properties of BHEL/their Client.
2.8.12	The contractor shall use such properties for the purpose of execution of this contract. All such properties/equipments/components shall be deemed to be in good condition when received by the contractor unless he notifies within 48 hours to the contrary. The contractor shall return them in good condition as and when required by BHEL/their Client. In case of non-return, loss, damage, repairs etc, the cost thereof as may be fixed by BHEL Engineer will be recovered from the contractor
2.8.13	In case the contractor is required to undertake any work outside the scope of this contract, the rates payable shall be those mutually agreed upon if the item rates are not mentioned in existing contract
2.8.14	Any delay in completion of works/or non achievement of periodical targets due to the reasons attributable to the contractor, the same may have to be compensated by the contractor either by increasing manpower and resources or by working extra hours and/or by working more than one shift. All these are to be carried out by the contractor at no extra cost.
2.8.15	The contractor shall arrange, coordinate his work in such a manner as to cause no hindrance to other agencies working in the same premises.
2.8.16	All safety rules and codes applied by the Client/BHEL at site shall be observed by the contractor without exception. The contractor shall be responsible for the safety of the equipment/material and works to be performed by him and shall maintain all light, fencing guards, slings etc. or other protection necessary for the purpose. Contractor shall also take such additional precautions as may be indicated from time to time by the Engineer with a view to prevent pilferage, accidents, fire hazards. Due precautions shall be taken against fire hazards and atmospheric conditions. Suitable number of Clerical staff, watch and ward, store keepers to take care of equipment/materials and construction tools and tackles shall be posted at site by the contractor till the completion of work

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 19 OF 30

under this contract.

The contractor shall arrange for such safety devices as are necessary for such type of work and carry out the requisite site tests of handling equipment, lifting tools, tackles etc. as per prescribed standards and practices.

Contractor has to ensure the implementation of Health, Safety and Environment (HSE) requirements as per directions given by BHEL/Customer. The contractor has to assist in HSE audit by BHEL/Customer and submit compliance Report. The contractor has to generate and submit record/reports as per HSE plan/activities as per instruction of BHEL/Customer

- 2.8.17 The contractor will be directly responsible for payment of wages to his workmen. A pay roll sheet giving all the payments given to the workers and duly signed by the contractor's representative should be furnished to BHEL site for record purpose, if so called for.
- 2.8.18 In case of any class of work for which there is no such specification as laid down in the contract, such work shall be carried out in accordance with the instructions and requirements of the Engineer.
- 2.8.19 Also, no idle charges will be admissible in the event of any stoppage caused in the work resulting in contractor's labour and Tools & Plants being rendered idle due to any reason at any time.
- 2.8.20 The contractor shall take all reasonable care to protect the materials and work till such time the plant/equipment has been taken over by BHEL or their Client whichever is earlier.
- 2.8.21 The contractor shall not stop the work or abandon the site for whatsoever reason of dispute, excepting force majeure conditions. All such problems/disputes shall be separately discussed and settled without affecting the progress of work. Such stoppage or abandonment shall be treated as breach of contract and dealt with accordingly
- 2.8.22 The contractor shall keep the area of work clean and shall remove the debris etc. while executing day-to-day work. Upon completion of work, the contractor shall remove from the vicinity of work, all scrap, packing materials, rubbish, unused and other materials and deposit them in places specified by the Engineer. The contractor will also demolish all the hutments, sheds, offices, etc. constructed and used by him and shall clean the debris. In the event of his failure to do so, the same will be arranged to be done by the Engineer and the expenses recovered from the contractor.
- 2.8.23 The contractor shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and timely execution shall be the essence of this contract. The contractor shall be responsible to ensure that the quality, assembly and workmanship conform to the dimensions and clearance given in the drawings and/ or as per the instructions of the Engineer.
- 2.8.24 The Contractor to note that some of BHEL's T&Ps/MMDs may not be insured. The Contractor will take necessary precautions and due care to protect the same while in his custody from any damage/ loss till the same is handed over back to BHEL. In case the damage / loss is due to carelessness/ negligence on the part of the contractor, the Contractor is liable to get them repair/

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 20 OF 30

replaced immediately and in case of his failure to do so within a reasonable time, BHEL will reserve the right to recover the loss from the contractor.

2.9 PROGRESS MONITORING, MONTHLY REVIEW AND PERFORMANCE EVALUATION

- 2.9.1 A detailed plan/programme for completion of the contractual scope of work as per the time schedule given in the contract shall be jointly agreed between BHEL and Contractor, before commencement of work. The above programme shall be supported by monthwise deployment of resources viz Manpower, T&P, Consumables, etc. Progress will be reviewed periodically (Daily/Weekly/Monthly) vis a vis this jointly agreed programme. The Contractor shall submit periodical progress reports (Daily/Weekly/Monthly) and other reports/information including manpower, consumables, T&P mobilization etc as desired by BHEL.
- 2.9.2 Monthly progress review between BHEL and Contractor shall be based on the agreed programme as above, availability of inputs/fronts etc, and constraints if any, as per prescribed formats. Manpower, T&P and consumable reports as per prescribed formats shall be submitted by contractor every month. Release of RA Bills shall be contingent upon certification by BHEL Site Engineer of the availability of the above prescribed formats duly filled in and signed.
- 2.9.3 The burden of proof that the causes leading to any shortfall is not due to any reasons attributable to the contractor is on the contractor himself. The monthly progress review shall record shortfalls attributable to (i) Contractor, (ii) Force Majeure Conditions, and (iii) BHEL
- 2.9.4 Performance of the Contractor shall be assessed as per prescribed formats and shall form the basis for 'Annual/Overall Performance Evaluation' of the Contractor and also for 'Assessment of Capacity of Bidder' for Tenders where the Contractor is a bidder. BHEL reserves the right to revise the evaluation formats during the course of execution of the works

2.10 TIME OF COMPLETION

- 2.10.1 The time schedule shall be as prescribed in the Contract. The time for completion shall be reckoned from the date of commencement of work at Site as certified by BHEL Engineers
- 2.10.2 The entire work shall be completed by the contractor within the time schedule or within such extended periods of time as may be allowed by BHEL under clause 2.11

2.11 EXTENSION OF TIME FOR COMPLETION

- 2.11.1 If the completion of work as detailed in the scope of work gets delayed beyond the contract period, the contractor shall request for an extension of the contract and BHEL at its discretion may extend the Contract.
- 2.11.2 Based on the monthly reviews jointly signed, the works balance at the end of original contract period less the backlog attributable to the contractor shall be quantified, and the number of months of 'Time extension' required for completion of the same shall be jointly worked out. Within this period of 'Time extension', the contractor is bound to complete the portion of backlog attributable to the contractor. Any further 'Time extension' or 'Time extensions' at the end of the previous extension shall be worked out similarly.
- 2.11.3 However if any 'Time extension' is granted to the contractor to facilitate continuation of work and completion of contract, due to backlog attributable to the contractor alone, then it shall be without prejudice to the rights of BHEL to impose penalty/LD for the delays attributable to the contractor, in addition to any other actions BHEL may wish to take at the risk and cost of contractor.
- 2.11.4 A joint programme shall be drawn for the balance amount of work to be completed during the period of 'Time Extension', along with matching resources (with weightages) to be deployed by the contractor as per specified format. Review of the programme and record of shortfall shall be done

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 21 OF 30

every month of the 'Time extension' period in the same manner as is done for the regular contract period.

2.11.5 During the period of 'Time extension', contractor shall maintain their resources as per mutually agreed program

2.11.6 At the end of total work completion as certified by BHEL Engineer, and upon analysis of the total delay, the portion of time extensions attributable to (i) Contractor, (ii) Force majeure conditions, and (iii) BHEL, shall be worked out and shall be considered to be exhausted in the same order. The total period of time extensions shall be the sum of (i), (ii) and (iii) above and shall be equal to period between the scheduled date of completion and the actual date of completion of contract. LD shall be imposed/levied for the portion of time extensions attributable to contractor and recoverable from the dues payable to the contractor.

2.12 OVERRUN COMPENSATION

2.12.1 Over Run Compensation (ORC) is payable for works done during the extension period, by way of rate revisions for periods beyond original contract period subject to the following terms and conditions.

2.12.2 Rates shall be increased by 10% for the first twelve months of one or more extensions beyond original contract period. For the next twelve months of further extensions if any, rates shall be increased as above by 10% over the previous twelve months, and similarly for each subsequent twelve months extension.

2.12.3 The amount of increase payable per month due to rate revisions is subject to a minimum of Rs 1,00,000/- per month and a maximum of Rs 10,00,000/- per month.

2.12.4 Should there be any 'Time extension' for reasons attributable only to the contractor, then the work shall be executed by the contractor at the rates applicable for the period the work was planned

2.12.5 Payment of ORC shall be regulated as follows:

- i) Contractor is entitled to Over Run Compensation (ORC) only for the portion of backlog attributable to BHEL.
- ii) 50% of the compensation as per clause 2.12.3 is allocated for deployment of resources agreed as per the joint programme drawn vide 2.11.4. Payment shall however be based on the actual deployment of resources for the month as certified by BHEL, as per weightages assigned therein
- iii) 50% of the compensation as per clause 2.12.3, is allocated for achieving of planned progress agreed as per the joint programme drawn vide 2.11.4. Payment shall be on pro rata basis for actual achieved quantities
- iv) Total Over Run Compensation shall be limited to 10% of the executed contract value as certified in Final Bill. For this purpose executed contract value excludes PVC, ORC, Supplementary/Additional Items and Extra Works done on Manday rate basis

2.12.6 Contractor shall not be entitled for any Over Run Compensation (ORC) for the portion of backlog attributable to the contractor. Such works shall be executed at the rates applicable for the period the work was planned

2.13 INTEREST BEARING RECOVERABLE ADVANCES

2.13.1 Normally no advance is payable to the contractor. However, advance payment in exceptional circumstances shall be interest bearing and secured through a Bank Guarantee and shall be limited to a maximum of 5% of contract value. This 'Interest Bearing Recoverable Advance' shall be

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 22 OF 30

payable in not less than two installments with any of the installment not exceeding 60% of the total eligible advance.	
2.13.2	In exceptional circumstances, with due justification, Competent Authority of BHEL is empowered to approve proposals for payment of additional interim interest bearing advance against Bank Guarantee, for resource augmentation towards expediting work for project implementation.
2.13.3	Bank Guarantee towards 'Interest Bearing Recoverable Advance' shall be atleast 110% of the advance so as to enable recovery of not only principle amount but also the interest portion, if so required.
2.13.4	Contractor shall establish the utilization of advance drawn before the release of next installment.
2.13.5	Payment and recovery of Interest Bearing Recoverable advance shall be at the sole discretion of BHEL and shall not be a subject matter of arbitration.
2.13.6	The rate of interest applicable for the above advances shall be the prime lending rate of State Bank of India prevailing at the time of disbursement of the advance + 2%, and such rate will remain fixed till the total advance amount is recovered
2.13.7	Unadjusted amount of advances paid shall not exceed 5% of the total contract value at any point of time. Recovery of advances shall be made progressively from each Running Bill such that the advance amounts paid along with the interest is fully recovered by the time the contractor's billing reaches 80% of contract value.
2.13.8	Recovery rate per month shall be the sum of: a. Not less than 10% of Running Bill amount b. Simple interest up to the date of RA Bill on the outstanding Principle amount/amounts
2.13.9	Contractor to submit Bank Guarantee as per prescribed formats for each of the advance and shall be valid for at least one year or the recovery duration or the balance contract period which ever is later. In case the recovery of dues does not get completed within the aforesaid BG period, the contractor shall renew the BG or submit fresh BG for the outstanding amount and the remaining recovery period.
2.13.10	BHEL is entitled to make recovery of the entire outstanding amount in case the contractor fails to comply with the BG requirement
2.14	QUANTITY VARIATION
2.14.1	The quoted rates 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 limits of Plus (+) or Minus (-) 15% of awarded contract value
2.14.2	Compensation due to variation of final executed value in excess of the limits defined in clause above, shall be as follows: i) In case the finally executed contract value reduces below the lower limit of Contract Value due to quantity variation specified above, the contractor will be eligible for compensation @ 15% of the difference between the lower limit of the contract value and the actual executed value. ii) In case the finally executed contract value increases above the upper limit of Contract Value

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 23 OF 30

due to quantity variation specified above, there will be no revision in the rates within the contract period.

2.15 EXTRA WORKS

- 2.15.1 All rectifications/modifications, revamping, and reworks required for any reasons not due to the fault of the contractor, or needed due to any change in deviation from drawings and design of equipments, operation/maintenance requirements, mismatching, or due to damages in transit, storage and erection/commissioning, and other allied works which are not very specifically indicated in the drawings, but are found essential for satisfactory completion of the work, will be considered as extra works.
- 2.15.2 Extra works arising on account of the contractor's fault, irrespective of time consumed in rectification of the damage/loss, will have to be carried out by the contractor free of cost. Under such circumstances, any material and consumable required for this purpose will also have to be arranged by the contractor at his cost.
- 2.15.3 All the extra work should be carried out by a separately identifiable gang, without affecting routine activities. Daily log sheets in the pro-forma prescribed by BHEL should be maintained and shall be signed by the contractor's representative and BHEL engineer. No claim for extra work will be considered/entertained in the absence of the said supporting documents i.e. daily log sheets. Signing of log sheets by BHEL engineer does not necessarily mean the acceptance of such works as extra works.
- 2.15.4 BHEL retains the right to award or not to award any of the major repair/rework/modification/rectification/fabrication works to the contractor, at their discretion without assigning any reason for the same
- 2.15.5 After eligibility of extra works is established and finally accepted by BHEL engineer/designer, payment will be released on competent authority's approval at the following rate.
- MAN-HOUR RATE FOR ELIGIBLE EXTRA WORKS:** Single composite average labour man-hour rate, including overtime if any, supervision, use of tools and tackles and other site expenses and incidentals, consumables for carrying out any major rework/repairs/rectification/modification/fabrication as certified by site as may arise during the course of erection, testing, commissioning or extra works arising out of transit, storage and erection damages, payment, if found due will be at Rs 60/- per man hour.
- 2.15.6 The above composite labour man hour rate towards extra works shall remain firm and not subject to any variation during execution of the work. PVC will not be applicable for extra works. Rate revision, Over Run Charges/compensation etc will not be applicable due to extra works.
- 2.15.7 **Extra Works for Civil Packages** shall be regulated as follows
- i) **Rates for Extra Works arising due to (1) non availability of BOQ (Rate Schedule), OR (2) change in Specifications of materials/works (3) rectification/modification/dismantling & re erecting etc due to no fault of Contractor, shall be in the order of the following:**

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 24 OF 30

- a) Item rates are to be derived from similar nature of items in the BOQ (Rate Schedule) with applicable escalation derived from All India Consumer Price Index for Whole Sale Commodities.
 - b) As per CPWD-DSR-2007 (or latest edition) with applicable escalation derived from All India Consumer price Index for Whole Sale Commodities, OR, Notification issued by the office of CPWD for 'Cost Index' in that Region where the project is being executed, whichever is less
 - c) Item rates are to be worked out on the basis of prevailing market rates mutually agreed between BHEL and Contractor, plus 15% towards Contractor's overheads and profit.
- ii) PVC and ORC will not applicable be for (i) above.

2.16 SUPPLEMENTARY ITEMS

2.16.1 For NON Civil Works

Supplementary items are items/works required for completion of entire work but not specified in the scope of work. Subject to certification of such items/works as supplementary items by BHEL Engineer, rates shall be derived on the basis of any one of the following on mutual agreement:

- i) Based on percentage breakup/rates indicated for similar/nearby items
- ii) In case (i) above does not exist, then BHEL/site may derive the percentage breakup/rates to suit the type of work

2.16.2 For Civil Works

- i) Rates for Supplementary Works/Additional Works arising out due to additions/alterations in the original scope of works as per contract subject to certification of BHEL Engineer shall be worked out as under:
 - a) Item rates which are available in existing BOQ (Rate Schedule) shall be operated with applicable escalation derived from All India Consumer Price Index for Whole Sale Commodities
 - b) Items of works which are not available in existing BOQ shall be operated as an 'Extra Works' and rate shall be derived as per clause no 2.15.7
- ii) Execution of Supplementary Works/Additional Works through the Contractor shall be at the sole discretion of BHEL, and shall be considered as part of executed contract value for the purpose of Quantity Variation as per clause 2.14
- iii) BHEL Engineer's decision regarding fixing the rate as above is final and binding on the contractor.
- iv) PVC and ORC will not be applicable for (i) above.

2.17 PRICE VARIATION COMPENSATION

2.17.1 In order to take care of variation in cost of execution of work on either side, due to variation in the index of LABOUR, HIGH SPEED DIESEL OIL, WELDING ROD, CEMENT, STEEL, MATERIALS, Price Variation Formula as described herein shall be applicable

2.17.2 85% component of Contract Value shall be permitted to be adjusted for variation in various relevant indices during execution of work. The remaining 15% shall be treated as fixed component

2.17.3 The basis for calculation of price variation in each category, their component, Base Index, shall be as under:

SL NO.	CATEGORY	BASE INDEX	COMPONENT ('K')		
			CIVIL PACKAGES (See Note A/B/C)	MECHANICAL PACKAGES	LABOUR ORIENTED

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 25 OF 30

			A	B**	C		PACKAGES (See Note D)
i)	LABOUR (ALL CATEGORIES)	'MONTHLY ALL-INDIA AVERAGE CONSUMER PRICE INDEX NUMBERS FOR INDUSTRIAL WORKERS' published by Labour Bureau, Ministry of Labour and Employment, Government of India. (Website: labourbureau.nic.in)	40	25	30	65	80
ii)	HIGH SPEED DIESEL OIL	Name of Commodity : HSD OIL. Type : INDIVIDUAL COMMODITY (See Note F)	5	3	5	5	5
iii)	WELDING ROD	Name of Commodity : WELDING ROD Type: INDIVIDUAL COMMODITY (See Note F)				15	
iv)	CEMENT	Name of Commodity : GREY CEMENT Type: INDIVIDUAL COMMODITY (See Note F)		20	30		
v)	STEEL (Structural and Reinforcement Steel)	Name of Commodity : a1. IRON & SEMIS Type: GROUP ITEM (See Note F)		25			
vi)	MATERIALS (Other than Cement & Steel)	Name of Commodity: ALL COMMODITIES Type: GROUP ITEM (See Note F)	40	12	20		

Note: A) Cement & Steel : Free Issue (BHEL Scope)

B) Cement & Steel : In Contractor Scope {**: unless otherwise specified in Special Conditions of Contract (SCC) }

C) Cement in Contractor Scope, and Steel is Free Issue (BHEL Scope)

D) Predominantly 'Labour Oriented' packages including Material Handling & Management, Insulation, Painting, Electrical and CI or a combination thereof, which are separately tendered and awarded

E) For Composite packages (i.e. Civil+Mechanical+Electrical/CI or Civil+Mechanical or Mechanical+Electrical/CI), the components for various categories shall be as per respective packages

F) As per the 'MONTHLY WHOLE SALE PRICE INDEX' for the respective Commodity and Type, published by Office of Economic Adviser, Ministry of Commerce and Industry, Government of India. (Website : www.eaindustry.nic.in). Revisions in the index or commodity will be re adjusted accordingly.

2.17.4 Payment/recovery due to variation in index shall be determined on the basis of the following notional formula without any initial absorption, in respect of the identified components viz LABOUR, HIGH SPEED DIESEL OIL, WELDING ROD, CEMENT, STEEL, MATERIALS

$$P = K \times R \times \frac{(X_N - X_0)}{X_0}$$

Where

P = Amount to be paid/recovered due to variation in the Index for Labour, High Speed Diesel Oil, Welding Rod, Cement, Steel and Materials

K = Percentage component applicable for Labour, High Speed Diesel Oil, Welding Rod, Cement, Steel and Materials

R = Value of work done for the billing month (Excluding Taxes and Duties if payable extra)

XN = Revised Index No for Labour, High Speed Diesel Oil, Welding Rod, Cement, Steel and Materials for the billing month under consideration

Xo = Index no for Labour, High Speed Diesel Oil, Welding Rod, Cement, Steel and Materials as on the Base date.

Bharat Heavy Electricals Limited		
Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 26 OF 30

2.17.5	Base date shall be calendar month of the latest date of submission of Tender.
2.17.6	PVC shall not be payable for the ORC amount, Supplementary/Additional Items, Extra works.
2.17.7	The contractor shall furnish necessary monthly bulletins for the necessary indices from the relevant websites along with his Bills.
2.17.8	The contractor will be required to raise the bills for price variation payments on a monthly basis along with the running bills irrespective of the fact whether any increase/decrease in the index for relevant categories has taken place or not. In case there is delay in publication of bulletins (final figure), the provisional values as published can be considered for payments and arrears shall be paid/recovered on getting the final values.
2.17.9	PVC shall be applicable for the entire original contract period plus the extended period. However the Total Quantum of Price Variation amount payable/recoverable shall be regulated as follows: i) For the portion of backlog attributable to the contractor, the PVC will be based on the average of the indices for the period of the original contract period. ii) For the period of Force Majeure, the PVC will be limited to the indices applicable at the beginning of the force majeure period. iii) For the portion of backlog attributable to BHEL, the PVC will be as per the indices applicable for the respective months iv) The total amount of PVC shall not exceed 20% of the cumulatively executed contract value. Executed contract value for this purpose is exclusive of PVC, ORC, Supplementary/Additional Items and Extra works.
2.18	INSURANCE
2.18.1	BHEL/their customer shall arrange for insuring the materials/properties of BHEL/customer covering the risks during transit, storage, erection and commissioning.
2.18.2	It is the sole responsibility of the contractor to insure his materials, equipments, workmen, etc. against accidents and injury while at work and to pay compensation, if any, to workmen as per Workmen's compensation Act. The work will be carried out in a protected area and all the rules and regulations of the client /BHEL in the area of project which are in force from time to time will have to be followed by the contractor.
2.18.3	If due to negligence and or non-observation of safety and other precautions by the contractors, any accident/injury occurs to the property / manpower belong to third party, the contractor shall have to pay necessary compensation and other expense, if so decided by the appropriate authorities.
2.18.4	The contractor will take necessary precautions and due care to protect the material, while in his custody from any damage/ loss due to theft or otherwise till the same is taken over by BHEL or customer. For lodging / processing of insurance claim the contractor will submit necessary documents. BHEL will recover the loss including the deductible franchise from the contractor, in case the damage / loss is due to carelessness / negligence on the part of the contractor. In case of any theft of material under contractor's custody, matter shall be reported to police by the contractor immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL for taking up with insurance. However this will not relieve the contractor of his

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 27 OF 30

contractual obligation for the material in his custody.

2.19 STRIKES & LOCKOUT

2.19.1 The contractor will be fully responsible for all disputes and other issues connected with his labour. In the event of the contractor's labour resorting to strike or the Contractor resorting to lockout and if the strike or lockout declared is not settled within a period of one month, BHEL shall have the right to get the work executed through any other agencies and the cost so incurred by BHEL shall be deducted from the Contractor's bills.

2.19.2 For all purposes whatsoever, the employees of the contractor shall not be deemed to be in the employment of BHEL

2.20 FORCE MAJEURE

The following shall amount to Force Majeure:-

2.20.1 Acts of God, act of any Government, War, Sabotage, Riots, Civil commotion, Police action, Revolution, Flood, Fire, Cyclones, Earth quake and Epidemic and other similar causes over which the contractor has no control.

2.20.2 If the contractor suffers delay in the due execution of the contractual obligation due to delays caused by force majeure as defined above, the agreed time of completion of the job covered by this contract or the obligations of the contractor shall be extended by a period of time equal to period of delay, provided that on the occurrence of any such contingency, the contractor immediately reports to BHEL in writing the causes of delay and the contractor shall not be eligible for any compensation.

2.21 ARBITRATION & RECONCILIATION

2.21.1 In case amicable settlement is not reached in the event of any dispute or difference arising out of the execution of the Contract or the respective rights and liabilities of the parties or in relation to interpretation of any provision by the Contractor in any manner touching upon the Contract, such dispute or difference shall (except as to any matters, the decision of which is specifically provided for therein) be referred to the sole arbitration of the arbitrator appointed by BHEL/In charge(Region).

The award of the Arbitrator shall be binding upon the parties to the dispute

Subject as aforesaid, the provisions of Arbitration and Reconciliation Act 1996 (India) or statutory modifications or re enactments thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings under this clause. The venue of the arbitration shall be the place from which the contract is issued or such other place as the Arbitrator at his discretion may determine

2.21.2 In case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable :

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 28 OF 30

In the event of any dispute or difference relating to the interpretation and application of the provisions of the Contract, such dispute or difference shall be referred to by either party to the arbitration of one of the arbitrators in the department of public enterprises. The award of the arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may make further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary or Additional Secretary when so authorized by the Law Secretary, whose decision shall bind the parties hereto finally and conclusively.

2.21.3 The cost of arbitration shall be borne equally by the parties.

2.21.4 Work under the contract shall be continued during the arbitration proceedings

2.22 RETENTION AMOUNT

2.22.1 Retention Amount shall be 5% of executed contract value and shall be recovered at the rate of 5% from each Running Bill admitted, including PVC Bills.

2.22.2 Refund of Retention Amount shall be as follows:

- i) 50% of retention amount along with 'Final Bill'
- ii) Balance 50% of retention amount shall be retained towards 'Performance Guarantee for Workmanship' and shall become refundable after expiry of Guarantee period, provided all the defects noticed during the guarantee period have been rectified to the satisfaction of BHEL Site Engineer/BHEL Construction Manager, and after deducting all expenses/other amounts due to BHEL under the contract/other contracts entered into by BHEL with them. This portion of the retention amount can be released on commencement of the Guarantee period, on submission of equivalent Bank Guarantee.

2.23 PAYMENTS

Payments to Contractors are made in any one of the following forms

2.23.1 Running Account Bills (RA Bills)

- i) These are for interim payments when the contracts are in progress. The bills for such interim payments are to be prepared by Contractor in prescribed formats (RA Bill forms).
- ii) Payments shall be made according to the extent of work done as per measurements taken up to the end of the calendar month and in line with the terms of payments described in the Tender documents
- iii) Recoveries on account of electricity, water, statutory deductions, etc are made as per terms of contract
- iv) Full rates for the work done shall be allowed only if the quantum of work has been done as per the specifications stipulated in the contract. If the work is not executed as per the stipulated specifications, BHEL may ask the contractor to re do the work according to the required specifications, without any extra cost. However, where this is not considered necessary 'OR' where the part work is done due to factors like non-availability of material to be supplied by BHEL 'OR' non availability of fronts 'OR' non availability of drawings, fraction payment against full rate, as is considered reasonable, may be allowed with due regard for the work remaining to be done. BHEL decision in this regard will be final and

Bharat Heavy Electricals Limited		
Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 29 OF 30

binding on the contractor. v) In order to facilitate part payment, BHEL Site Engineer at his discretion may further split the contracted rates/percentages to suit site conditions, cash flow requirements according to the progress of work	
2.23.2	Final Bill Final Bill' is used for final payment on closing of Running Account for works or for single payment after completion of works. 'Final Bill' shall be submitted as per prescribed format after completion of works as per scope and upon material reconciliation, along with the following. i) 'No Claim Certificate' by contractor ii) Clearance certificates where ever applicable viz Clearance Certificates from Customer, various Statutory Authorities like Labour department, PF Authorities, Commercial Tax Department, etc iii) Indemnity bond as per prescribed format BHEL shall settle the final bills after deducting all liabilities of Contractor to BHEL
2.24	PERFORMANCE GUARANTEE FOR WORKMANSHIP
2.24.1	Even though the work will be carried out under the supervision of BHEL Engineers the Contractor will be responsible for the quality of the workmanship and shall guarantee the work done for a period of twelve months from the date of commencement of guarantee period as defined in Special Conditions of Contract, for good workmanship and shall rectify free of cost all defects due to faulty erection detected during the guarantee period. In the event of the Contractor failing to repair the defective works within the time specified by the Engineer, BHEL may proceed to undertake the repairs of such defective works at the Contractor's risk and cost, without prejudice to any other rights and recover the same from the Guarantee money.
2.24.2	BHEL shall release the guarantee money subject to the following i) Contractor has submitted 'Final Bill' ii) Guarantee period as per contract has expired iii) Contractor has furnished 'No Claim Certificate' in specified format iv) BHEL Site Engineer/Construction Manager has furnished the 'No Demand Certificate' in specified format v) Contractor has carried out the works required to be carried out by him during the period of Guarantee and all expenses incurred by BHEL on carrying out such works is included for adjustment from the Guarantee money refundable.
2.25	CLOSING OF CONTRACTS The Contract shall be considered completed and closed upon completion of all contractual obligations and settlement of Final Bill or completion of Guarantee period whichever is later. Upon closing of Contract, BHEL shall issue a completion certificate as per standard format, based on specific request of Contractor.
2.26	REVERSE AUCTION: BHEL reserves the right to go for Reverse Auction for Price Bid Opening by BHEL appointed service provider, instead of opening the submitted sealed price bid in the conventional way. The Business Rules for Reverse Auction shall be as per BHEL guidelines issued from time to time.
2.27	SUSPENSION OF BUSINESS DEALINGS BHEL reserves the right to take action against Contractors who either fail to perform or Tenderers/Contractor who indulge in malpractices, by suspending business dealings with them in

Bharat Heavy Electricals Limited Power Sector - Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IB	GENERAL CONDITIONS OF CONTRACT (SERVICE)	PAGE 30 OF 30

line with BHEL guidelines issued from time to time.	
2.28	OTHER ISSUES
2.28.1	Value of Non judicial Stamp Paper for Bank Guarantees and for Contract Agreement shall be not less than Rs 100/- unless otherwise required under relevant statutes.
2.28.2	In case of any conflict between the General Conditions of Contract and Special Conditions of Contract, provisions contained in the Special Conditions of Contract shall prevail.
2.28.3	Unless otherwise specified in NIT, offers from consortium/JVs shall not be considered.
2.28.4	BHEL may not insist for signing of Contract Agreements in respect of low value and short time period contracts like providing services for Hot water flushing, Chemical Cleaning, Transportation, etc

Bharat Heavy Electricals Limited Power Sector – Eastern Region, Kolkata		
TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-ID	SPECIAL CONDITIONS OF CONTRACT (SERVICE)	PAGE1OF47

CONTENTS

SN	DESCRIPTION	Chapter	No. OF PAGES
1	General Intent of the Specifications	Chapter-I	
2	General Services to be rendered by the Bidder	Chapter-II	
3	General Technical Requirements (Codes and Standards)	Chapter-III	
4	Obligations of Contractor (In respect of Tools, Tackles, Consumables, etc employment of supervisory staff and workmen)	Chapter-IV	
5	Responsibilities of Contractor (In respect of employment of Labour, Supervisory staff, etc)	Chapter-V	
6	Material Handling, Storage, Preservation, etc	Chapter-VI	
7	Drawings and Documents	Chapter-VII	
8	Inspection and Quality	Chapter-VIII	
9	HSE & OHSAS Obligations	Chapter-IX	
10	RA Bill Payment	Chapter-X	
11	Performance Monitoring	Chapter-XI	
12	Suspension of Business Dealings	Chapter-XII	

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - I : General Intent of Specifications

1.0	INTENT OF THE SPECIFICATION
1.1	The intent of this erection specification is to provide services for execution of the project according to most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for the proper and efficient services towards installation of the plant shall not relieve the contractor of the responsibility of providing such services / facilities to complete the work or portion of work awarded to him. The quoted / accepted rates / price shall deem to be inclusive of all such contingencies.
1.2	The work shall conform to dimensions and tolerances given in various drawings and documents that will be provided during erection. If any portion of works is found to be defective in workmanship and not conforming to drawings / documents or other stipulations, the contractor shall dismantle and re-do the work duly replacing the defective materials at their own cost, failing which recoveries, as determined by BHEL, shall be effected from contractor's bills.
1.3	It is not the intent of this specification to specify herein all the details of erection and commissioning. However, the system shall conform in all respects to high standards of quality and workmanship for performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgments is not in full accordance herewith.
1.4	The omission of specific reference to any fabrication / erection or other method, equipment or material necessary for proper and efficient working of the plant shall not relieve the tenderer of the responsibility of providing such facilities to complete the work at quoted rates. Any mismatch/ defect found due to mistake in fabrication / erection shall have to be rectified by the vendor free of cost. Inspection by BHEL/Customer does not relieve vendor of his responsibility of executing quality erection.
1.5	The work covered under this specification is of highly sophisticated nature, requiring the best quality workmanship, supervision, engineering and construction management. The contractor should ensure proper planning and successful and timely completion of the work to meet the overall project schedule. The contractor must deploy adequate quantity of tools & plants, modern / latest construction aids etc. He must also deploy adequate trained, qualified and experienced supervisory staff and skilled personnel.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - I : General Intent of Specifications

1.6	Contractor shall erect and commission all the equipments and auxiliaries as per the sequence & methodology prescribed by BHEL depending upon the technical requirements. Availability of materials and fronts will decide this. BHEL Engineer's decision regarding correctness of the work and method of working shall be final and binding on the contractor. No claims for extra payment from the contractor will be entertained on the ground of deviation from the methods / sequence adopted in erection of similar sets elsewhere.
1.7	Following shall be the minimum responsibility of contractor and have to be provided within finally accepted rates / prices:
1.7.1	Provision as required of all types of labour, supervisors, engineers, watch and ward, tools & tackles, calibrated MMEs (Monitoring and Measuring Equipment) as specified and otherwise required for the work, consumables for erection, testing and commissioning including material handling
1.7.2	Achieving Proper out-turn / Turn-over as per BHEL plan and commitment.
1.7.3	Completion of work as per BHEL Schedule
1.7.4	Good quality and accurate workmanship for proper performance of the equipment
1.7.5	Repair and rectification
1.7.6	Preservation / Re-conservation of all components during storage / erection / commissioning till handing over.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - II : General Services to be rendered by the Bidder

2.0	GENERAL SERVICES TO BE RENDERED BY THE BIDDER
2.1	Services for construction, fabrication, equipment erection testing as well as trial run & commissioning of various equipment and accessories under the contract shall include but not be limited to the following:
2.2	Issuing materials from store/open yard from time to time for erection as per the construction programme. The Contractor shall be the custodian of all the materials issued till the plant/equipment is officially taken over by the owner / BHEL after complete erection any successful trial run & commissioning.
2.3	Transport of material to their respective places of erection and erection of the complete plant & equipment as supplied under this specification.
2.4	Trial run and commissioning of individual equipment / sub-systems to the satisfaction of Owner/BHEL.
2.5	Deployment of all skilled and unskilled manpower required for erection, supervision of erection, watch & ward, commissioning and other services to be rendered under this specification.
2.6	Deployment of all erection tools & tackle, construction machinery, transportation vehicles and all other implements in adequate number and size, appropriate for the erection work to be handled under scope of this specification except otherwise specified.
2.7	Supply of all consumables, eg welding electrodes, cleaning agents, diesel oil, lubricant etc as well as materials required for temporary supports, scaffolding etc as necessary for such erection work, unless specified other wise.
2.8	Providing support services for the contractor's erection staff eg construction of site offices, temporary stores, residential accommodation and transport to work site for erection personnel, watch and ward for security and safety of the materials under the Contractor's custody etc. as required.
2.9	Maintaining proper documentation of all the site activities undertaken by the Contractor as per the proforma mutually agreed with BHEL, Submission of monthly progress reports and any such document as and when desired by BHEL/owner, taking approval of all statutory authorities i.e Boiler Inspector, Factory Inspector, Inspector of Explosives etc , as applicable for respective portions of work fall under the jurisdiction of such statutes of laws.
2.10	Any other service, although not specifically called for but required for a contract of the size and nature indicated in the specification.

SPECIAL CONDITIONS OF CONTRACT (SCC)
Chapter - III : General Technical Requirements (Codes and Standards)

3.0	GENERAL TECHNICAL REQUIREMENTS (CODES AND STANDARDS)
3.1	Except where otherwise specified, the plant/equipment shall comply with the appropriate Indian Standard or an agreed internationally accepted Standard Specification as mentioned elsewhere in contract specifications, each incorporating the latest revisions at the time of tendering. Where no internationally accepted standard is applicable, the Bidder shall give all particulars and details as necessary, to enable BHEL to identify all of the plant/equipment in the same detail as would be possible had there been a Standard Specification.
3.2	Where the Bidder proposes alternative codes or standards he shall include in his tender one copy (in English) of each Standard Specification to which materials offered shall comply. In such case, the adopted alternative standard shall be equivalent or superior to the standards mentioned in the specification.
3.3	In the event of any conflict between the codes and standards referred above, and the requirements of this specification, the requirements which are more stringent shall govern.
3.4	Tools used during erection and commissioning shall not be accepted except with the specific approval of the Engineer.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IV : Obligations of Contractor

4.0	OBLIGATIONS OF CONTRACTOR
4.1	CONSUMABLES & OTHER ITEMS
4.1.1	The contractor shall provide within finally accepted price / rates, all consumables (excepting those indicated in BHEL scope) like welding electrodes (including alloy steel and stainless steel), filler wires, TIG filler wires (over & above as supplied by the unit along with the plant materials, which will be given free of cost to bidder), gases (inert, welding, cutting), soldering material, dye penetrants, radiography films, etc. Other erection consumables such as tapes, jointing compound, grease, mobile oil, M-seal, Araldite, petrol, CTC / other cleaning agents, grinding and cutting wheels are to be provided by the contractor. Steel, packers, shims, wooden planks, scaffolding materials hardware items etc required for temporary works such as supports, scaffoldings are to be arranged by the contractor. Sealing compounds, gaskets, gland packing, wooden/concrete sleepers, for temporary work, required for completion of work except those which are specifically supplied by manufacturing unit are also to be arranged by the contractor.
4.1.2	All the shims, gaskets and packing, which go finally as part of plant equipment, shall be supplied by BHEL free of cost.
4.1.3	It shall be the responsibility of the contractor to plan the activities and store sufficient quantity of consumables. Non-availability of any consumable materials or equivalent suggested by BHEL cannot be considered as reason for not attaining the required progress or for additional claim.
4.1.4	<u>TIG Filler wire for Boiler and Filler wires for Electrodes for P91/T91 piping:</u> These shall be supplied by BHEL free of cost as supplied by BHEL Manufacturing Units as part of regular supply. Required quantity as arrived at by calculation / standards will only be supplied. It would be the contractors' responsibility to account for the consumption of these filler wires. Additional consumption beyond standard / calculated quantity will be at cost recovery basis only unless and otherwise accounted for. Surplus quantity of TIG filler wire, if any, shall be properly stored and returned to BHEL stores.
4.1.5	It shall be the responsibility of the contractor to obtain prior approval of BHEL, regarding suppliers, type of electrodes etc before procurement of welding electrodes. On receipt of electrodes at site these shall be subjected to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch number, date of expiry etc and produce test certificate for each lot / batch with correlation of batch / lot number with respective test certificate. No

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IV : Obligations of Contractor

	electrode without a valid test certificate will to be used.
4.1.6	BHEL reserves the right to reject the use of any consumable including electrodes, gases, lubricants / special consumables if it is not found to be of the required standard / make / purity or when shelf life has expired. Contractor shall ensure display of shelf life on consumable wherever required and records maintained.
4.1.7	Storage of all consumables including welding electrodes shall be done as per requirement / instruction of the Engineer by the contractor at his cost.
4.1.8	In case of improper arrangement for procurement of any consumable, BHEL reserves the right to procure the same from any source and recover the cost from the Contractor's first subsequent bill at market value plus the departmental charges of BHEL from time to time. Postponement of such recovery is normally not permitted. The decision of Engineer in this regard shall be final and binding on the Contractor.
4.1.9	All lubricants and chemicals required for pre-commissioning, commissioning, testing, preservation and lubricants for trial runs of the equipment shall be supplied by BHEL / BHEL's client. All services including labour and T&P will be provided by the contractor for handling, filling, emptying, refilling etc. The consumption of lubricants / chemicals shall be properly accounted for. Surplus material if any shall be properly stacked/tagged and returned to BHEL/ CUSTOMER stores at no extra cost to BHEL. BHEL reserves the right to recover costs for wastage by the contractor.
4.1.10	Transportation of oil drums, from stores, filling of oil for flushing, first filling, subsequent changeover if any, topping/making up till the unit is fully commissioned and handed over to customer is included in scope of this contract. The contractor shall have to return all the empty drums to BHEL / BHEL's client store at no extra cost. Any loss / damage to above drums shall be to contractor's account.
4.1.11	All charges on account of Octroi, terminal or sales tax and other duties on materials obtained from any source for carrying out the works in the scope of the contractor shall be borne by the contractor.
4.2	TOOLS AND PLANTS / MONITORING AND MEASURING EQUIPMENT (MMEs)
4.2.1	T&Ps and MMEs to be provided by Contractor
4.2.1.1	All T&Ps and MMEs excepting those specifically indicated in BHEL scope are to be provided by the Contractor. Contractor has to make his own arrangement at his cost for completing the formalities (including arrangement of Road permits, if any) if required with Sales Tax/VAT authorities, for bringing their materials, plants and

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IV : Obligations of Contractor

	equipments at site for the execution of work under this contract.
4.2.1.2	All suitable cranes, lifting and transport equipments for material handling at stores/yard/siding of BHEL/Customer are included in scope. BHEL's cranes will not be available for this purpose unless otherwise specifically permitted as per contract conditions
4.2.1.3	All T&Ps to be deployed by the contractor shall have the approval of BHEL Engineer with regard to brand, quality and specification.
4.2.1.4	Indicative list of Major T&Ps in the scope of Contractor are given in the Technical Conditions of Contract. Bidders to note that these are only indicative and as such all other T&P necessary for timely and satisfactory completion of work in scope shall be mobilized by Contractor
4.2.1.5	Timely deployment of adequate T&Ps is the responsibility of the contractor. The contractor shall be prepared to augment the T&P at short notice to match the planned programme and to achieve the milestones.
4.2.1.6	Contractor shall maintain and operate his tools and plants in such a way that major breakdowns are avoided. In the event of major breakdown, contractor shall make alternative arrangements expeditiously so that the progress of work is not hampered.
4.2.1.7	In the event of contractor failing to arrange the required tools, plants, machinery, equipment, material or non-availability of the same owing to breakdown, BHEL will make alternative arrangement at the risk and cost of the contractor. Decision of BHEL shall be final and binding on the contractor
4.2.1.8	The T&P to be arranged by the contractor shall be in proper working condition and their operation shall not lead to unsafe condition. The movements of cranes, and other equipment should be such that no damage / breakage occurs to foundations, other equipments, material, property and men. All arrangements for the movement of the T&P etc shall be the contractor's responsibility.
4.2.1.9	Use of welding generators/ rectifiers only shall be permitted for welding. Use of welding transformers will be subject to specific approval of BHEL engineer.
4.2.1.10	The contractor at his cost shall carry out periodical testing of his construction equipments. Test certificates shall be furnished to BHEL.
4.2.1.11	Contractor shall ensure deployment of serviced and healthy T&Ps including cranes, lifting tackles, wire ropes, manila ropes, winches and slings etc. History card and maintenance records for major T&Ps will be maintained by the contractor and will be made available to BHEL Engineer for inspection as and when required.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IV : Obligations of Contractor

	Fitness certificate / Test Certificates of T&P shall have to be submitted before it is put in use. Identification for such T&Ps will be done as per BHEL Engineer's advice. BHEL reserves the right to permit only new slings up to 20 mm and lifting tackles up to 3 MT capacities.
4.2.1.12	Contractor shall ensure deployment of reliable and calibrated MMEs (Inspection measuring and Monitoring equipment). The MMEs shall have test / calibration certificates from authorized / Government approved / accredited agencies traceable to National / International standards. Each MME shall have a label indicating calibration status i.e. date of calibration, calibration agency and due date for calibration. A list of such instruments deployed by contractor at site with its calibration status is to be submitted to BHEL Engineer for control.
4.2.1.13	Re-testing / re-calibration shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer within the contract price. The contractor will also have alternate arrangements for such MME so that work does not suffer when the particular instrument is sent for calibration. If any MMEs not found fit for use, BHEL shall have the right to stop the use of such item. It will be necessary for the contractor to deploy proper item. Any readings taken by the defective instrument will be recalled and repeat the readings taken by that instrument with a proper one. In case he fails to do so, BHEL may deploy MMEs and retake the readings at contractor's cost.
4.2.1.14	BHEL shall have lien on all T&P, MMEs and other equipment of the contractor brought to the site for the purpose of erection, testing and commissioning. BHEL shall continue to hold the lien on all such items throughout the period of contract / extended period. The contractor and / or his sub-contractors, without the prior written approval of the Engineer, shall remove no material brought to the site.
4.2.1.15	The month wise T&P deployment plan to execute the work is to be submitted as per relevant format as per the instruction of BHEL. It shall be the contractor's responsibility to deploy the required T&P, for timely and successful completion of the job, to any extent.
4.2.2	Obligations in respect of T&Ps and MMEs provided by BHEL
4.2.2.1	T&P / MMEs being provided by BHEL to sub-contractor free of hire charges shall be shared by other subcontractors working for BHEL at site and the allotment done by BHEL Engineer shall be final and binding.
4.2.2.2	BHEL T&P will be issued in basic assembled condition. Additional loose components / sub-assemblies / attachments as and when necessary, will be

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IV : Obligations of Contractor

	issued by BHEL. Assembly of such additional loose components/sub-assemblies/ attachments is in contractor's scope.
4.2.2.3	In case of non-availability of the T&Ps to be provided by BHEL due to breakdown, major overhauls, distribution pattern or any other reason, the contractor shall plan / amend / alter his activities to meet erection / commissioning targets in consultation with BHEL.
4.2.2.4	void
4.2.2.5	The contractor shall engage trained and experienced operators for the operation of BHEL's T&Ps. Their skill / performance will be checked by BHEL Engineer before they are allowed to operate the same. However checking of skills by BHEL does not absolve the contractor of his responsibilities for proper and safe handling of equipment, consistent good performance of operators and regular performance evaluation of operators.
4.2.2.6	The day to day operation and maintenance of BHEL's T&Ps (Other than cranes) shall be carried out by contractor as per manufacturer's / BHEL's maintenance schedule at his cost. The contractor shall arrange, at his own cost, trained operators, fuel and other consumables for their operation. BHEL shall arrange all spares needed for upkeep of major T&Ps provided like Huck Bolting Machine*, DG Set, Induction Machine and Hydraulic Test pumps. The contractor has to arrange for fixing of the spares; supervision in specialized cases will be provided by BHEL. For upkeep of all other T&Ps supplied by BHEL, spares shall be arranged by the Contractor. BHEL supplied T&Ps shall be maintained in good working condition during the entire period of use. T&Ps in defective / damaged condition shall be rectified promptly to the full satisfaction of BHEL engineer. Contractor shall maintain records for maintenance of major T&Ps. These shall be made available for Inspection whenever required. In case of any lapses on the part of the contractor, BHEL at its own discretion shall get the servicing / repair of equipment done at the risk and cost of the contractor along with BHEL overheads. Further, if there are breakdowns / damages due to negligence of the contractor, the complete service / repair charges and cost of all the spares damaged with BHEL overheads shall be recovered from contractor's RA bills. *: for operation and maintenance of ESP Huck bolting machine, BHEL shall provide the basic power rig and hose. Balance toolingsie Guns, chuck jaws etc are to be arranged by contractor.
4.2.2.7	void

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IV : Obligations of Contractor

4.2.2.8	Increasing / shortening of the crane boom to suit work requirements shall have to be arranged by the indenting contractor at his cost including restoration to a state as directed by BHEL. All necessary manpower tools, support, consumables, illumination etc. will have to be arranged by contractor at his cost. If required, contractor has to return the crane with original boom.
4.2.2.9	The area and infrastructure development of the area to be carried out by the customer. However in construction projects of this magnitude it is possible that all the areas / approaches may not be ready. In such cases backfilling of approaches where ever necessary, consolidation of ground and arrangement of sleepers / sand bag filling etc for safe operation / movement of equipment including cranes / trailers etc shall be the responsibility of the contractor at his cost. No compensation on this account shall be payable.
4.2.2.10	In the event of contractor not using and maintaining BHEL T&Ps according to BHEL's instructions. BHEL will have the right to withdraw such item without any notice and no claim in this regard shall be entertained and contractor shall be responsible for delay in execution on this account.
4.2.2.11	The contractor shall furnish regular utilization report of the BHEL T&Ps, as per requirement of BHEL.
4.2.2.12	Any loss / damage to any part of BHEL T&Ps and MMEs shall be to the contractor's account and any expenditure on these accounts by BHEL will be recovered from the contractor's bill in case the contractor fails to make good the loss.
4.2.2.13	It shall be responsibility of the contractor to take delivery of T&Ps and MMEs from stores or place of use by other contractor at project site, transport the same to site and return the same to BHEL store / place as intimated by Engineer in project site in good working conditions after use.
4.2.2.14	The contractor shall return BHEL T&Ps and MMEs issued to him in good working condition as and when desired by BHEL (on completion or reduction of workload). If contractor delays return of T&P and MME, hire charges as applicable shall be levied by BHEL from time, it was requisitioned till the time of actual return. T&Ps and MMEs returned in damaged / unserviceable condition shall be got repaired by BHEL at its own discretion and entire cost of repair with BHEL overheads shall be recovered from the contractor.
4.2.2.15	Replacement cost including BHEL overheads in respect of irreparable / completely damaged / non return of T&Ps and MMEs shall be recovered from the

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IV : Obligations of Contractor

	contractor's running / final bills
4.2.2.16	Obligations in respect of Cranes provided by BHEL
a)	BHEL will make available the cranes (as per Technical Conditions of Contract) free of charge to the contractor on sharing basis mainly for the purposes enumerated/indicated therein. BHEL cranes have to be shared with other agencies / contractors of BHEL. The allocation of cranes shall be the discretion of BHEL engineer, which shall be binding on the contractor.
b)	BHEL Cranes may be initially issued in basic assembled condition. Any alteration/addition like boom reduction / extension, assembly of components/sub-assemblies needed for modulating the capacity/reach/other features of cranes and restoration to the state as directed by BHEL shall be the contractor's responsibility.
c)	In case the BHEL cranes are not covered under AMC of BHEL, then the day-to-day upkeep and running maintenance like filling / topping up of lubricants, changing filters, etc including repair of self starter and dynamo of these cranes shall be the responsibility of the contractor. If on checking it is found that the same is not followed, BHEL will exercise its right to get the job/works done at the risk and cost of contractor. In case BHEL cranes are covered under AMC awarded by BHEL, then the day-to-day upkeep and running maintenance as described above are excluded from scope. However any additional helpers if any required during Preventive/Breakdown Maintenance, Assembly/disassembly shall be provided by contractor at no extra cost. BHEL may also provide cranes through crane hiring agencies in which case the day-to-day upkeep and running maintenance shall be excluded from scope of contractor.
d)	Minor consumables like cotton cloth, cotton waste, etc is to be supplied by Contractor. All spares and lubricants/grease is excluded from scope. Contractor to give the requirements of these items well in advance in case the cranes provided by BHEL are BHEL owned cranes.
e)	Unless otherwise specified, trained operators for BHEL owned cranes shall be provided by the contractor. These operators should possess valid license for heavy vehicle.
f)	BHEL cranes will be withdrawn for regular and capital maintenance as per the respective schedule of maintenance. As far as possible such schedules will be intimated to the contractor in advance and may be adjusted depending on the work

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IV : Obligations of Contractor

	requirements at site. However no claim whatsoever will be entertained on account of non-availability of cranes.
g)	Where the services of the cranes provided by BHEL are to be shared by other agencies/ contractors of BHEL, the contractor's responsibilities defined above will also be apportioned accordingly to the beneficiary agency. Working arrangements in this regard will be done at site by BHEL engineer and in any case his decision shall be final and binding.
h)	Major breakdowns will be attended to by BHEL. However, in case of breakdowns or damages due to negligence of the contractor, the complete service/repair charges including cost of spares shall be to the account of the contractor, along with BHEL overheads.
4.2.2.17	Obligations in respect of Construction Lift/Elevators provided by BHEL
a)	The total erection including commissioning, maintenance, statutory clearances shall be included in scope of work. Supervision by the original equipment supplier or their authorized agency shall be arranged for by BHEL, in case found necessary.
b)	All day to day and routine maintenance and checking is to be carried out by the contractor as per the recommendations of the supplier. He should periodically check the brakes and carry out the all works to ensure the safety of all those using the lift/elevator. BHEL shall arrange spares required for upkeep of Construction lift/elevator
c)	The construction lift/elevator should never be overloaded as this can lead to serious accidents. Ensuring all safety aspects in operation of the lift shall be the responsibility of the contractor. Erection of all the required number of landing platforms is included in scope. Landing platforms are to be provided with proper barricades and hand railings.
d)	After completion of contractual scope of work or as per BHEL advice, the temporary elevator/lift shall be dismantled and handed over to BHEL neatly identified/tagged. Temporary structures/platforms etc erected for the elevators/lifts are also to be dismantled and materials to be returned to stores as applicable. The construction and dismantling of the foundations required for the construction/elevator lifts is included in the scope of the contractor.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – V : Responsibilities of Contractor in respect of Labour, Supervisory Staff, etc.

5.0	RESPONSIBILITIES OF CONTRACTOR IN RESPECT OF LABOUR, SUPERVISORY STAFF, ETC.
5.1	Refer relevant clauses of General Conditions of Contract (GCC) also in this regard
5.2	The contractor shall deploy all the necessary skilled/semiskilled/ unskilled labour including highly skilled workmen etc. These workmen should have previous experience on similar job. They shall hold valid certificates wherever necessary. BHEL reserves the right to insist on removal of any employee of the contractor at any time if he is found to be unsuitable and the contractor shall forthwith remove him.
5.3	Contractor shall also comply with the requirements of local authorities/ project authorities calling for police verification of antecedents of the workmen, staff etc.
5.4	It is the responsibility of the contractor to engage his workmen in shifts and or on overtime basis for achieving the targets set by BHEL. This target may be set to suit BHEL's commitments to its customer or to advance date of completion of events or due to other reasons. The decision of BHEL in regard to setting the erection and commissioning targets will be final and binding on the contractor.
5.5	Contractor shall provide at different elevation suitable arrangement for urinal and drinking water facility with necessary plumbing & disposal arrangement including construction of septic tank. These installations shall be maintained in hygienic condition at all times.
5.6	The Contractor in the event of engaging 20 or more workmen, shall obtain Independent license under the Contract labour (Regulation and Abolition) Act 1970 from the concerned authorities based on Form-V issued by the Principal Employer/Customer. In order to issue Form-V by Customer, Contractor shall fulfill all Statutory requirements like Insurance Policy, PF Code/PF Account number etc as per the requirement of BHEL/Customer
5.7	Contractor shall deduct the necessary amount towards Provident Fund and contribute equal amount as per Government of India laws. This amount will be deposited regularly to the provident Fund Commissioner. BHEL/Customer may insist for submission of the account code duly certified by PF Commissioner
5.8	Contractor may also be required to comply with provisions of ESI Act in vogue if applicable and submit evidence to BHEL.
5.9	BHEL / customer may insist for witnessing the regular payment to the labour. They may also like to verify the relevant records for compliance with statutory

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – V : Responsibilities of Contractor in respect of Labour, Supervisory Staff, etc.

	requirements. Contractor shall enable such facilities to BHEL / Customer.
5.10	Contractor shall deploy only qualified and experienced engineers/ supervisors. They shall have professional approach in executing the work.
5.11	The contractor's supervisory staff shall execute the work in the most professional manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. They shall be responsible to ensure that the assembly and workmanship conform to dimensions and tolerances given in the drawings/instructions given by BHEL engineer from time to time.
5.12	The supervisory staff employed by the contractor shall ensure proper outturn of work and discipline on the part of the labour put on the job by the contractor. Also in general they should see that the works are carried out in a safe and proper manner and in coordination with other labour and staff employed directly by BHEL or other contractors of BHEL or BHEL's client.
5.13	It is the responsibility of the contractor to arrange gate pass for all his employees, T&P etc for entering the project premises. Necessary coordination with customer officials is the responsibility of the contractor. Contractor to follow all the procedures laid down by the customer for making gate passes. Where permitted, by customer / BHEL, to work beyond normal working hours, the contractor shall arrange necessary work permits for working beyond normal working hours.
5.14	The actual deployment will of Labour and Engineer/supervision staff shall be so as to satisfy the erection and commissioning targets set by BHEL. If at any time, it is found that the contractor is not in a position to deploy the required engineers/supervisors/workmen due to any reason, BHEL shall have the option to make alternate arrangements at the contractor's risk and cost. The expenditure incurred along with BHEL overheads thereon shall be recovered from the contractor
5.15	Contractor shall not deploy women labour at night.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VI: Material Handling, Storage & preservation

6.0	MATERIAL HANDLING, STORAGE AND PRESERVATION ETC
6.1	MATERIAL HANDLING AND STORAGE
6.1.1	All the equipments/materials furnished under this contract shall be received from the project stores, sheds / storage yards and transported to pre assembly area / erection site and stored in the storage spaces in a manner so that they are easily retrievable till the contractor erects them. While drawing/lifting material from BHEL / customer stores, the contractor shall ensure that the balance / other materials are stacked back immediately. No claim is admissible on this account
6.1.2	While BHEL will endeavor to store / stack / identify materials properly in their open / close / semi closed / tarpaulins covered storage yard / shed, it shall be contractor's responsibility to assist BHEL in identifying materials well in time for erection. They should take the delivery of the same, following the procedure indicated by BHEL, and transport the material safely to pre-assembly yard / erection site in time, according to program.
6.1.3	The contractor shall take delivery of components, equipment / consumables from storage area after getting the approval of BHEL Engineer on standard indent forms.
6.1.4	The contractor shall identify and deploy necessary Engineers / supervisors / workmen for the above work in sufficient number as may be needed by BHEL, for areas covering their scope.
6.1.5	All the equipment shall be handled very carefully to prevent any damage or loss. No untested wire ropes / slings etc. shall be used for unloading / handling. The equipment shall be properly protected to prevent damage either to the equipment or to the floor where they are stored. The equipment from the stores shall be moved to the actual location at the appropriate time so as to avoid damage of such equipment at site.
6.1.6	Contractor shall ensure that while lifting slings shall be put over the points indicated on the equipment or as indicated in the manufacturer's drawings. Slings / shackles of proper size shall be used for all lifting and rigging purposes. All care shall be taken to safe guard the equipment against any damage. Dragging of piping / valves should be avoided. In case of any damage the cost shall be covered from the contractor.
6.1.7	Approach road conditions from the stores / yards to the erection site may not

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VI: Material Handling, Storage & preservation

	be equipped and ideal for smooth transportation of the equipment. Contractor may have to be adequately prepared to transport the materials under the above circumstances without any extra cost. . The contractor may familiar himself with soil conditions at site.
6.1.8	Contractor shall be responsible for examining all the plant and materials issued to him and notify the Engineer immediately of any damage, shortage, discrepancy etc before they are moved out of the stores / storage area. The contractor shall be solely responsible for any shortages or damages in transit, handling, storage and erection of the equipment once received by him. As the erection work will be spread in different areas / locations of the project, contractor has to arrange sufficient number of watch / ward personal to avoid any pilferage of material
6.1.9	The contractor shall maintain an accurate and exhaustive record-detailing out the list of all equipment received by him for the purpose of erection and keep such record open for the inspection of the engineer at any time.
6.1.10	All the material in the custody of contractor and stored in the open or dusty locations must be covered with suitable weather proof / fire retardant covering material wherever applicable and shall be blocked up on raised level above ground. All covering materials including blocks and sleeper shall be arranged by the contractor at his cost.
6.1.11	If the material belonging to the contractor are stored in area other than those earmarked for his operation the engineer will have the right to get it moved to the area earmarked for the contractor at the contractors risk and cost.
6.1.12	The contractor shall be responsible for making suitable indoor storage facilities to store all equipment (drawn by the contractor from BHEL / customer stores), which require indoor storage till the time of their installation. The Engineer will direct the contractor in this regard, which item in his opinion will require indoor storage, and the contractor shall comply with Engineer's decision.
6.1.13	The contractor shall ensure that all surplus / damaged / scrap / unused material, packing wood / containers/ special transporting frames etc are returned to BHEL at a place in project area identified by the Engineer. The contractor will maintain an account for all items received and returned to BHEL. Any shortage in returning such items shall be chargeable to the contractor except allowable wastage for packing wood only.
6.1.14	The contractor shall hand over all parts / materials remaining extra over the normal requirement with proper identification tags to the stores as directed by

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VI: Material Handling, Storage & preservation

	the concerned BHEL engineer.
6.1.15	The contractor shall ensure that all the packing materials and protective devices installed on equipment during transit and storage are removed before installation.
6.1.16	It shall be the responsibility of the contractor to keep the work / storage areas in neat, tidy and working conditions. All surplus/unusable packing and other materials shall be removed and deposited at location(s) specified by BHEL within the project premises. If required weighing of the same within the project premises will have to be carried out.
6.2	PRESERVATION OF COMPONENTS
6.2.1	After taking delivery from BHEL / customer's stores, plant materials storage shall be subjected to the following protection besides other provisions indicated in these specifications elsewhere.
6.2.1.1	Items stored outdoors shall be stacked up at least six inches (6") off the ground. Items should not be stored in a low lying area where water logging is a possibility. Contractor should have sufficient numbers of wooden / concrete / steel sleepers for the job.
6.2.1.2	Motors, valves, electrical equipment, control equipment and instruments, and special or precision items requiring special care, etc shall be stored indoors. Motor windings shall be kept dry by use of external heat or space heaters.
6.2.1.3	Bearings and other wearing surfaces of plant materials shall be protected against corrosion and kept clean and should be regularly monitored.
6.2.1.4	Insulation materials shall be stored indoors or otherwise protected against getting wet/ damaged, using suitable measures and should be protected from direct rain.
6.2.2	It shall be the responsibility of the contractor to apply preservatives / touch up paints (primer) on equipment handled and erected by him till such time of final painting. It shall be contractor's responsibility to arrange for required paints (primer), thinners, labour, scaffolding materials, cleaning materials like wire brush, emery sheets, etc, cleaning of surface and provide one coat of preservatives / paints (primer) from time to time as decided by BHEL engineer. The accepted rate shall include this work also. It is to be noted that such painting may have to be done as and when required till such time the final painting is carried out.
6.2.3	The contractor shall effectively protect the finished work from action of weather

SPECIAL CONDITIONS OF CONTRACT (SCC)
Chapter – VI: Material Handling, Storage & preservation

	and from damage or defacement and shall cover the finished parts then and there for their protection.
6.2.4	Any failure on the part of contractor to carry out works according to above clauses will entail BHEL to carry out the job from any other party and recover the cost from contractor.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VII: Drawings and documents

7.0	DRAWINGS AND DOCUMENTS
7.1	The detailed drawings, specifications available with BHEL engineers will be made available to the contractor during execution of work at site. The contractor will also ensure availability of all drawings / documents at work place.
7.2	Necessary drawings to carry out the erection work will be furnished to the contractor by BHEL on loan, which shall be returned to BHEL Engineer at site after completion of work. Contractor shall ensure safe storage and quick retrieval of these documents.
7.3	The contractor shall maintain a record of all drawings and documents available with him in a register as per format given by BHEL Engineer. Contractor shall ensure use of pertinent drawings / data / documents and removal of obsolete ones from work place and returning to BHEL.
7.4	The data furnished in various annexure enclosed with this tender specification are only approximate and for guidance. However, the change in the design and in the quantity may occur as is usual in any such large scale of work. The contractors quoted rates shall be inclusive of the above factor
7.5	Should any error or ambiguity be discovered in the specification or information the contractor shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final and binding on the contractor.
7.6	Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimension / details, without specific approval of BHEL.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VIII: Inspection and Quality

8.0	INSPECTION AND QUALITY
8.1	Inspection, Quality Assurance, Quality Control
8.1.1	Preparation of quality assurance log sheets and protocols with customer/ consultants/statutory authority, welding logs, NDE records, testing & calibration records and other quality control and quality assurance documentation as per BHEL engineer's instructions, is within the scope of work/specification. These records shall be submitted to BHEL/customer for approval from time to time.
8.1.2	The protocols between contractor and customer/ BHEL shall be made prior to installation for correctness of foundations, materials, procedures, at each stage of installation, generally as per the requirement of customer/ BHEL. This is necessary to ensure elimination of errors or keeping them within tolerable limits and to avoid accumulation and multiplication of errors.
8.1.3	A daily log book should be maintained by every supervisor/engineer of contractor on the job in duplicate (one for BHEL and one for contractor) for detailing and incorporating alignment/clearance / centering / leveling readings and inspection details of various equipments etc. High pressure welding details like serial number of weld joints, welders name, date of welding, details of repair, heat treatment etc. will be documented in welding log as per BHEL Engineer's instructions. Record of radiography containing details like serial number of weld joints, date of radiography, repairs, if any, re-shots etc shall also be maintained as per BHEL Engineer's instructions. Record of heat treatments performed shall be maintained as prescribed by BHEL
8.1.4	The performance of welders will be reviewed from time to time as per the BHEL standards. Welders' performance record shall be furnished periodically furnished for scrutiny of BHEL's Engineer. Corrective action as informed by BHEL shall be taken in respect of those welders not conforming to these standards. This may include removal/ discontinuance of concerned welder(s). Contractor shall arrange for the alternate welders immediately
8.1.5	All the welders shall carry identity cards as per the proforma prescribed by BHEL/Customer/Consultant. Only welders duly authorized by

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VIII: Inspection and Quality

	BHEL/customer/consultant shall be engaged on the work.
8.1.6	Contractor shall provide all the Measuring Monitoring Equipments (MMEs) required for completion of the work satisfactorily. These MMEs shall be of brand, quality and accuracy specified by BHEL Engineer and should have necessary calibration and other certificates as per the requirement of BHEL Engineer. Decision of BHEL Engineer regarding acceptance or otherwise of the measuring instruments/gauges/tools for the work under this specification, is final and binding on the contractor. BHEL may give an indicative list of MMEs required for this work and to be made available by the contractor. The list will be reviewed by BHEL and the contractor shall meet any augmentation needed wherever required.
8.1.7	It is the responsibility of the contractor to prove the accuracy of the testing/measuring/calibrating equipments brought by him based on the periodicity of calibration as called for in the BHEL's quality assurance standards/BHEL Engineer's instructions.
8.1.8	Any re-laying or re-termination of cables/re-erection of instruments/recalibration of instruments etc. required due to contractor's mistake or design requirement and found at any stage inspection, shall be carried out by the contractor at no extra cost.
8.1.9	BHEL, Power Sector Regions (PSNR/PSER/PSWR/PSSR) have already been accredited with ISO 9001 certification and as such this work is subject to various audits to meet ISO 9001 requirements. One particular aspect which needs special mention is about arrangement of calibration of instruments by the contractor. Contractor shall ensure deployment of reliable and calibrated MMEs (Measuring and Monitoring Equipments). The MMEs shall have test / calibration certificates from authorised / Government approved / Accredited agencies traceable to National / International Standards. Re-testing / re-calibration shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer within the contract price. The contractor will also have alternate arrangements for such MMEs so that work does not suffer when the particular equipment / instrument is sent for calibration. Also if any MMEs not found fit for use, BHEL shall have the right to stop the use of such item and instruct the contractor to deploy proper item and recall ie repeat the readings taken by that instrument, failing which BHEL may deploy MME and retake the readings at Contractor's cost.
8.1.10	Re-work necessitated on account of use of invalid MMEs shall be entirely to the

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VIII: Inspection and Quality

	contractor's account. He shall be responsible to take all corrective actions, including resource augmentation if any, as specified by BHEL to make-up for the loss of time.
8.1.11	In the courses of erection, it may become necessary to carry repeated checks of the work with instruments recently calibrated, re-calibrated. BHEL may counter/ finally check the measurements with their own MMEs. Contractor shall render all assistance in conduct of such counter/final measurements.
8.1.12	Total Quality is the watchword of the work and Contractor shall strive to achieve the Quality Standards, procedures laid down by BHEL. He shall follow all the instructions as per BHEL drawings and Quality Standards.
8.2	Stage Inspection By FES/QA Engineers
8.2.1	Apart from day-to-day inspection by BHEL Engineers stationed at Site and Customer's Engineers, stage inspection of equipments under erection and commissioning at various stages shall also be conducted by teams of Engineers from Field Engineering Services of BHEL's Manufacturing Units, Quality Assurance teams from Field Quality Assurance, Unit/Factory Quality Assurance and Commissioning Engineers from Technical Services etc. Contractor shall arrange all labour, tools and tackles etc.along with proper access for such stage inspections free of cost.
8.2.2	Any modifications suggested by BHEL FES and QA Engineers' team shall be carried out. Claims of contractor, if any, shall be dealt as per Section 13, and provided such modifications have not arisen for reasons attributable to the contractor.
8.3	Statutory Inspection of Work
8.3.1	The work to be executed under these specifications has to be offered for inspection, at appropriate stages of work completion, to various statutory authorities for compliance with applicable regulations. The work related statutory inspections, though not limited to, are as under: 1) Inspectorate of Steam Boilers and Smoke Nuisance 2) Electrical Inspector 3) Factory Inspector, Labour Commissioner, PF Commissioner and other authority connected to this project work

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VIII: Inspection and Quality

	The scope includes getting the approvals from the statutory authorities, which includes arranging for inspection visits of statutory authority periodically as per BHEL Engineer's instructions, arranging materials for ground inspection, taking rub outs for the pressure parts to be offered for inspection, submitting co-related inspection reports, documents, radiographs etc and following up the matter with them. Contractor shall also make all arrangements for offering the Products / Systems for inspection at location, as applicable, to the concerned authority.
8.3.2	Contractor should be qualified to execute pressure parts & piping work coming under the purview of IBR, for which he should register himself with CIB of state concerned. contractor also should be aware of the latest IBR regulations and Electricity Act, including the amendments thereof.
8.3.3	Contractor shall comply with 'Qualification Tests for welders engaged in welding of Boilers and Steam Pipes under Construction, Erection and Fabrication at Site in India and in repairing Boilers and steam pipes by welding' in line with Chapter XIII of Indian Boiler Regulations-1950, for testing his welders / men / workers, including all associated fees, procedures, required instruments and equipments and their calibration there of. It shall be contractor's responsibility to obtain approval of Statutory Authorities, wherever applicable, for the conducting of any work which comes under the purview of these authorities, at his cost.
8.3.4	The following fees shall be excluded from scope of Contractor: 1. Registration Fee as per Regulation 385 of Chapter IX of Indian Boiler Regulations-1950 2. Fees for inspection of Boiler at the site of Construction as per Regulation 395 A, sl no 4 of Chapter IX of Indian Boiler Regulations-1950 However all other fees like visit fees charged by the Boiler Inspector and other arrangements for his visit or visits till satisfactory completion of work, shall be included in scope of Contractor
8.4	The Quality Management System of BHEL, Power Sector Regions (PSNR/PSER/PSWR/PSSR) have already been certified and accredited under ISO 9002 standards in this regard. The basic philosophy of the Quality Management System is to define the organizational responsibility, work as per

Bharat Heavy Electricals Limited

Power Sector – Eastern Region, Kolkata

VOLUME-ID

TENDER NO. PSER:SCT:NKP-E2053:20

PAGE24OF47

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter – VIII: Inspection and Quality

	documented procedures, verify the output with respect to acceptance norms, identify the non-conforming product/ procedure and take corrective action for removal of non-conformance specifying the steps for avoiding recurrence of such non-conformities, & maintain the relevant quality records. The nonconformities are to be identified through the conduct of periodical audit of implementation of quality systems at various locations/stages of work. Suppliers/vendors of various products/services contributing in the work are also considered as part of the quality management system. .as such the contractor is expected not only to conform to the quality management system of BHEL but also it is desirable that they themselves are accredited under any quality management system standard.
8.5	Field Quality Assurance
8.5.1	Contractor shall carry out all activities conforming to the approved Field Quality Plan (FQP) as revised from time to time. Total quality shall be the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He shall follow all the instructions as per BHEL drawings and quality standards. Contractor shall provide the services of quality assurance engineer as per the relevant clauses.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

9.0	OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT MANAGEMENT/ QUALITY ASSURANCE PROGRAMME: BHEL, Power Sector Regions (PSNR/ER/WR/SR) are each certified for ISO 9001. Quality of work to customer's satisfaction and fulfillment of system requirements are the essence of ISO 9001 certification. BHEL, PS Regions have HSE certification (ISO 14001 & OHSAS 18001) and therefore Contractor also shall organise/ plan/ perform all their activities to meet with the applicable requirements of these standards.
9.1	HSE (Health, safety & Environment): Contractor will comply with HSE (Health, safety & Environment) requirements of BHEL. HSE requirements in brief, are given below :-
9.1.1	Contractor will nominate one of their qualified and experienced employees as Safety Officer, who will be responsible for all HSE related issues of contractors work area. Safety Officer will have authority to stop any activity, in case he observes that the activity is not being carried out in safe manner. He will conduct surprise inspection as well as periodic inspection/drill (at least once in a month) and submit such reports to BHEL. He will conduct periodic meetings with supervisors of different working groups and explain HSE issues and use of PPEs to them. Reports of such meetings will be submitted to BHEL. Contractor will develop suitable work procedures based upon HSE guidelines and OCPs and implement it. Such work procedures will consist of Area of work, T&P Details, Work Procedure, PPE requirements etc. Please refer Schedule VIII of BOCW Rules for number of safety officers, qualification, duties etc. Contractor should highlight the requirement of safety to staff and labour through daily tool box meeting before start of the days job. Contractor to also submit monthly safety reports as per the format/procedure of BHEL.
9.1.2	The contractor shall arrange induction and regular health check of their employees as per schedule VII of BOCW rules by aregistered medical practitioner. The contractor shall take special care of the employees affected with occupational diseases under rule 230 and schedule II of BOCW Rules. The employees not meeting the fitness requirement should not be engaged for such job
9.1.3	Following personnel protective equipments (PPEs), in adequate numbers, will

Bharat Heavy Electricals Limited Power Sector – Eastern Region, Kolkata		
VOLUME-ID	TENDER NO. PSER:SCT:NKP-E2053:20	PAGE26OF47

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	be made available at site & their regular use by all concerned will be ensured :-
	- HELMET
	- SAFETY GOGGLES & WELDING FACE SHIELDS
	- SAFETY BELTS AND PROTECTIVE NET FOR WORKING AT HEIGHT
	- SAFETY SHOES
	- EAR PLUG
	- ANY OTHER SAFETY EQUIPMENT REQUIRED FOR SAFE COMPLETION OF THE WORK
	Contractor to also submit monthly reports on above as per the format/procedure of BHEL.
9.1.4	Providing appropriate First Aid facilities for prompt treatment of injuries and illness at work place. Arranging training to contractor workmen/ employees for giving first aid.
9.1.5	Arranging ambulance in case of any emergency situation .
9.1.6	Identification of nearest hospital and health check-up of workmen/employees
9.1.7	Providing filtered drinking water at work place in cool container.
9.1.8	Providing Canteen, Rest Room, Washing facilities to the contracted employees as per provisions of Contract Labour Regulation Act 1970 (Chapter V).
9.1.9	Providing appropriate fire fighting equipment at designated work place and nominate a fire officer/warden adequately trained for his job.
9.1.10	Identification of nearest fire station and display contact telephone nos. / person's name around work places for cases of emergencies .
9.1.11	Providing adequate no. of 24 V sources and ensure that no hand lamps are operating at voltage level above 24 Volts.
9.1.12	Fulfilling safety requirements at all power tapping points.
9.1.13	Red & White caution tape of proper width(1.5 to 2 inch) to be used for cordoning unsafe area such as open trench, excavation area etc.
9.1.14	Providing contractors company logo on cloths /uniform/ proper identity cards with photographs, for correct identification of people working at project site .
9.1.15	High/ Low pressure welders to be identified with separate colourclothings. No welders will be deployed without passing appropriate tests and holding valid welding certificates. Approved welding procedure should be displayed at work place.
9.1.16	Displaying safe handling procedures for all chemicals such as lube oil, acid, alkali, sealing compounds etc , at work place .

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

9.1.17	All scaffolding/ platforms should be made from materials of appropriate quality/grade so that these are safe for use. It should be certified/declared safe for use by an experienced contractor person, before any scaffolding/platform is used. Please refer IS:3696 part 1&2 and 4014 part 1 & 2
9.1.18	All T&Ps/ MMEs should be of reputed brand/appropriate quality & must have valid test/calibration certificates bearing endorsement from competent authority of BHEL.. Contractor to also submit monthly reports of T&Ps deployed and validity test certificates to BHEL safety Officer as per the format/procedure of BHEL.
9.1.19	Ensure that the regulatory requirement of excessive weight limit (to carry/lift/ move weights beyond prescribed limits) for male and female workers are complied with.
9.1.20	Safety slogan, Safety/ Caution boards , wherever required to be displayed in consultation with BHEL.
9.1.21	Take suitable measures for waste management and environment related laws/legislation as a part of normal construction activities. Compliance with the legal requirements on storage/ disposal of paint drums (including the empty ones), Lubricant containers, Chemical Containers, and transportation and storage of hazardous chemicals will be strictly maintained. Ensure proper cleanliness of work place, housekeeping and waste management (including proper waste disposal) on daily basis.
9.1.22	It is imperative on the part of the contractor to join and effectively contribute in joint measures such as tree plantation, environment protection, contributing towards social upliftment, conversion of packing woods to school furniture, keeping good relation with local populace etc.
9.1.23	The contractor shall carry out periodic air and water quality check and illumination level checking in his area of work place and take suitable control measure.
9.1.24	The Contractor is required to provide proper safety net systems (IS-11057) where ever the hazard of fall from height is present as per instruction of BHEL Engineer. The safety nets shall be fire resistant, duly tested and shall be of ISI Mark and the nets shall be located as per site requirements to arrest or to reduce the consequences of a possible fall of persons working at different heights.
9.1.25	All applicable OCPs (Operational control procedures) will be followed by contractor as per BHEL instructions. This will be done as part of normal scope of work. List of such OCPs is given below . In case any other OCP is found to

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	be applicable during the execution of work at site, then contractor will follow this as well, within quoted rate. These OCPs (applicable ones) will be made available to contractor during work execution at site. However for reference purpose, these are kept with Safety Officer of BHEL at the Power Sector Regional HQ, or available in downloadable format in the website, which may be refereed by contractor, if they so desire.
■	OCP for safe handling of chemicals
■	OCP for Electrical safety
■	OCP for energy conservation
■	OCP for safe welding and gas cutting operation
■	OCP for fire safety
■	OCP for safety in use of hand tools
■	OCP for first aid
■	OCP for food safety at canteen
■	OCP for safety in use of cranes
■	OCP for storage and handing of gas cylinders
■	OCP for manual arc welding
■	OCP for safe use of helmets
■	OCP for good house keeping
■	OCP for working at height
■	OCP for safe excavation
■	OCP for safe filling of Hydrogen in cylinder
■	OCP for illumination
■	OCP for handling and erection of heavy metals
■	OCP for safe acid cleaning
■	OCP for safe alkali boil out
■	OCP for safe oil flushing
■	OCP for steam blowing
■	OCP for safe working in confined area
■	OCP for safe operation of passenger lift, material hoists & cages
■	OCP for Vehicle maintenance
■	OCP for safe radiography
■	OCP for waste disposal
■	OCP for working at night
■	OCP for blasting
■	OCP for DG Set
■	OCP for handling & storage of mineral wool

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	■ OCP for drilling, reaming and grinding(machining) etc.
	■ OCP for hydraulic test
	■ OCP for spray insulation
	■ OCP for trial run of rotary equipment
	■ OCP for stress relieving
	■ OCP for material preservation
	■ OCP for cable laying/tray work
	■ OCP for electrical maintenance
	■ OCP for transformer charging
	■ OCP for safe handling of battery system
	■ OCP for computer operation
	■ OCP for storage in open yard
	■ OCP for sanitary maintenance
	■ OCP for batching
	■ OCP for piling rig operation
	■ OCP for gas distribution test
	■ OCP for cleaning of hotwell / deaerator
	■ OCP for electro-resistance heating
	■ OCP for compressor operation
	■ OCP for O&M of control of AC plant & system
	■ OCP for air compressor
	■ OCP for passivation
	■ OCP for Safe EDTA Cleaning
	■ OCP for Safe Chemical cleaning of Pre boiler system
	■ OCP for Safe Boiler Light up
	■ OCP for Safe Rolling and Synchronisation
	■ OCP for Safe Loading of Unit
9.2	SAFETY AND CLEANLINESS : The contractor shall take all necessary safety precautions and arrange for appropriate appliances as per discretion of BHEL or its authorised officials (Site Construction Manager) to prevent loss of human lives, injuries, to personnel engaged and damage to property. Before commencing the work, the contractor shall submit a "Safety Plan" to the above authorised BHEL official and obtain approval on the same. The safety plan shall indicate in detail the measures that would be taken by the contractor to ensure safety of men, equipment, materials and environment during execution of the work. This will also include an organization structure, role and responsibilities of the concerned key

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	personnel, the safety practices that will be followed, PPEs deployed, plan for handling critical activities and emergencies.
9.3	If the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions issued by the authorised BHEL official, BHEL shall have the right to take corrective steps at the risk and cost of the contractor.
9.4	During the course of construction, alternation or repairs, scrap with protruding nail, sharp edge etc and all other debris shall be kept clean from working areas, passage, ways and stairs in and around site.
9.5	Combustible scrap and debris shall be removed at regular intervals during the course of execution. Safe means shall be provided to facilitate such removal. The combustible scrap should be stored in safe place away from the plant materials to avoid fire accidents. The area shall be chosen in consultation with the Engineer and to be cordoned off.
9.6	Rigging equipment for materials handling shall be inspected prior to use in each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment will be removed from service.
9.7	Rigging equipment shall not be loaded in excess of its recommended safe working load. Rigging equipment, when not in use, shall be removed from the original work area so as not to present a hazard to employees.
9.8	Contractor shall notify the engineer, of his intention to bring on to site any equipment or any container, with liquid or gaseous fuel or other substance which may create a hazard. The Engineer shall have the right to prescribe the condition under which such equipment or container may be handled and used during the performance of the works and the contractor shall strictly adhere to such instructions. The Engineer shall have the right to inspect any construction tool and to forbid its use, if in his opinion it is unsafe. No claim due to such prohibition will be entertained.
9.9	Where it is necessary to provide and/or store petroleum products or petroleum mixture & explosives, the contractor shall be responsible for carrying out such provision / storage in accordance with the rules & regulations laid down in the relevant petroleum act, explosive act and petroleum and carbide of calcium manual, published by the chief inspector of explosives of India. All such storage shall have prior approval if necessary from the chief inspector of explosives or any other statutory authority. The contractor shall be responsible for obtaining

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	the same.
9.10	Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dragged, struck or permitted to strike each other violently.
9.11	When cylinders are transported by powered vehicle they shall be secured in a vertical position.
9.12	All workmen of the contractor working on construction area shall wear safety shoes, hand gloves, safety helmets and safety belt as applicable. The contractor shall provide to its workforce and ensure the use of following personnel protective equipment as found necessary and as directed by BHEL.
9.12.1	Safety Helmets conforming to IS-2925 : 1984
9.12.2	Safety Belts conforming to IS-3521:1983
9.12.3	Safety Shoes conforming to IS-1989 : 1978
9.12.4	Eye and face protection devices conforming to IS – 1179:1967, IS 5983:1980, IS 8521 Part 1:1977, IS 8521 Part 2: 1994.
9.12.5	Hand and body protection devices conforming to IS 4770:1991 and IS- 6994 : Part 1: 1973, IS – 8619 : 1977
9.12.6	Ear protection IS-9167:1979
9.12.7	Respiratory Protective Devices as per IS-9473:2002, i4746:1999 and 14166:1994
9.13	The contractor shall insure his workmen against all accidents and the policy shall be presented to BHEL Engineer on demand. Other wise, BHEL will arrange the same and the expenditure towards this will be debited to the contractor. In case of a fatal or disabling injury accident to any person at construction site due to lapses by the contractor, the victim and/or his/her dependants shall be compensated by the contractor as per statutory requirements. However, if considered necessary BHEL shall have the right to impose appropriate financial penalty on contractor and recover the same from payments due to the contractor for suitably compensating the victim and/or his/her dependence before imposing any such penalty. Appropriate enquiry shall be held by BHEL giving opportunity to the contractor for presenting his case. Above safety conditions are not exhaustive but gives an idea for the contractor and contractor shall adhere to all safety precaution given by the

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	Engineer at site.
9.14	The contractor shall arrange at his cost adequate lighting facilities e.g. flood lighting, hand lamps, area lighting etc. at various levels for safe and proper working operations during night hours at the work spot as well as at the pre-assembly area.
9.15	The contractor shall be responsible for provision of all the safety notices and safety equipment as enjoined on him by the application of relevant statutory regulation / provisions and/or as called upon by BHEL from time to time. He shall be held responsible for any violation of statutory regulations (local, state or central) and BHEL instruction that may endanger safety of men, equipment and material.
9.16	The contractor shall provide temporary fencing wherever required as a safety measure against accident and damage to properties. Suitable caution notices shall be displayed where access to any part is found to be unsafe and hazardous.
9.17	Contractor shall ensure safety of all the workmen, material and equipment either belonging to him or to others working at site. He shall observe safety rules and codes applied by BHEL without exception.
9.18	It will be the responsibility of the contractor to ensure safe lifting of the equipment, taking due precaution to avoid any accident and damage to other equipment and personnel. All requisite tests and inspection of handling equipment, tools & tackle shall be periodically done by the contractor by engaging only the COMPETENT PERSONS as per law. Defective equipment or uncertified shall be removed from service. Any equipment shall not be loaded in excess of its recommended safe working load.
9.19	The contractor shall provide necessary first aid facilities as per schedule III. In addition, ambulance facilities, OHC and CMO as per schedule IV, V, X and XI of BOCW Rules as applicable for all his employees, representatives and workmen at site and BHEL shall have no obligation in this regard. The first aid boxes should be placed at various elevations so as to make them available within the reach and at the quickest possible time. The contractor should conduct periodical first –aid classes to keep his supervisor and Engineers properly trained for attending to any emergency.
9.20	Training

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

9.20.1	The contractor shall arrange induction safety training for all employees before assigning work. In addition, awareness programme, mock drill at regular intervals and daily tool box meetings shall be arranged. Monthly report of the above to be given to BHEL safety Officer as per prescribed BHEL formats
9.20.2	All the contractor's supervisory personnel and sufficient number of workers shall be trained for fire protection systems. Enough number of such trained personnel must be available during the tenure of contract. Contractor should nominate his supervisor to coordinate and implement the safety measures.
9.21	Contractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, temporary structure in labour colony etc. Such fire protection equipment shall be easy and kept open at all times. The fire extinguishers shall be properly refilled and kept ready which should be certified at periodic intervals. The date of changing should be marked on the Cylinders. All other fire safety measures as laid down in the "codes for fire safety at construction site" issued by safety coordinator of BHEL shall be followed. Non-compliance of the above requirement under fire protection shall in no way relieve the contractor of any of his responsibility and liabilities to fire accident occurring either to his materials or equipment or those of others. Emergency contacts nos must be displayed at prominent locations
9.22	The contractor shall at his cost, remove from vicinity of work at least once each day all combustible waste, scrap, parting materials, rubbish, unused or other materials and deposit them in places specified by BHEL to keep the work site clear and tidy. Use of undercoated canvas paper, corrugated paper, fabricated carton, plastic or other flammable materials shall be restricted to the minimum and promptly removed.
9.23	The contractor shall not use any hand lamp energized by Electric power with supply voltage of more than 24 volts in confined spaces like inside water boxes, turbine casings, condensers etc.
9.24	All portable electric tools used by the contractor shall have safe plugging system to source of power and be appropriately earthed. Only electricians licensed by appropriate statutory authority shall be employed by the contractor to carry out all types of electrical works. Details of earth resource and their test date to be given to BHEL safety officer as per the prescribed formats of BHEL
9.25	In case of any delay in completion of a job due to mishaps attributable to lapses by the contractor, BHEL shall have the right to recover cost of such delay from

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	the payments due to the contractor, after notifying the contractor suitably.
9.26	Valve protection caps shall be kept in place and secured.
9.27	The contractor shall be responsible for the safe storage and handling of his radio-active sources as per BARC rules and regulations.
9.28	Tarpaulin being inflammable should not be used (instead, only non infusible covering materials shall be used) as protective cover while preheating, welding, stress relieving etc. at site.
9.29	If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so and/or if the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instruction regarding safety issued by BHEL, BHEL shall have the right to take corrective steps at the risk and cost of the contractor after giving a notice of not less than 7 days indicating the steps that would be taken by BHEL.
9.30	If the contractor succeeds in carrying out its job in time with out any fatal or disabling injury accident and without any damage to property BHEL may, at its sole discretion, favorably consider to reward the contractor suitably for the performance.
9.31	The contractor shall carefully follow the safety requirement of BHEL/ the purchaser with the regard to voltages used in critical areas.
9.32	The contractor shall use only properly insulated and armored cables which conform to the requirement of Indian Electricity Act and Rules for all wiring, electrical applications at site. BHEL reserves the right to replace any unsafe electrical installations, wiring, cabling etc. at the cost of the contractor. All electrical appliances used in the work shall be in good working condition and shall be properly earthed. No maintenance work shall be carried out on live equipment. The contractor shall maintain adequate number of qualified electricians to maintain his temporary electrical installations. Area wise Electrical safety inspection is to be carried out on monthly basis as per "Electrical Safety Inspection checklist" and the report is to be submitted to BHEL safety officer
9.33	The contractor shall arrange adequate number of persons specifically for clearing any debris and for house keeping of the erection area including restacking of components in the erection areas. Housekeeping to be carried out

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	as per BHEL's checklist and report is to be submitted to BHEL safety officer
9.34	In case of any damage to property due to lapses by the contractor, BHEL shall have the right to recover the cost of such damages from the contractor after holding an appropriate enquiry.
9.35	The contractor shall submit report of all accidents, fires and property damage etc to the Engineer immediately after such occurrence, but in any case not later than 24 hours of the occurrence. Such reports shall be furnished in the manner prescribed by BHEL. In addition periodic reports on safety shall also be submitted by the contractor to BHEL from time to time as prescribed by the Engineer. Compiled monthly reports of all kinds of accidents, fires and property damage to be submitted to BHEL safety officer as per prescribed formats
9.36	Before commencing the work, the contractor shall appoint/nominate a responsible person to supervise implementation of all safety measures and liaison with his counterpart of BHEL.
9.37	Suitable scaffolds shall be provided for workman for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration of work which can be done safely from ladders. When a ladder is used, it shall be of rigid construction made of steel. The steps shall have a minimum width of 45 cm and a maximum rise of 30 cm. Suitable handholds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ horizontal and 1 vertical.
9.38	Scaffolding or staging more than 3.6 m above the ground floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly bolted, braced or otherwise secured, at least 90 cm above the floor or platform of such scaffolding or staging and extending along the entire length of the out side and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from savor, from swaying, from the building or structure.
9.39	Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform gangways provided is more than 3.6 m above ground level or floor level, they shall be closely boarded and shall have adequate width which shall not be less than 750 mm and be suitably fenced as described above.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

9.40	Every opening in the floor or a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 90 cm.
9.41	Wherever there are open excavation in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.
9.42	Safe means of access shall be provided to all working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m in the length while the width between side rails in rung ladder shall in no case be less than app. 29.2 cm for ladder upto and including 3 m in length. For longer ladders this width shall be increased at least ¼” for each additional foot of length.
9.43	A sketch of the ladders and scaffolds proposed to be used shall be prepared and approval of the Engineer obtained prior to Construction.
9.44	All personnel of the Contactor working within the plant site shall be provided with safety helmets. All welders shall wear welding goggles while doing welding work and all metal worker shall be provided with safety gloves. Persons employed on metal cutting and grinding shall wear safety glasses.
9.45	Adequate precautions shall be taken to prevent danger for electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public.
9.46	All trenches, four feet or more in depth, shall at all times be supplied with at least one ladder for each 30 m in length or fraction thereof. The ladder shall be extended from bottom of the trench to at least 90 cm above the surface of the ground. Sides of the trenches which are 1.50 m or more in depth shall be stepped back to give suitable slope or securely held by timer bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 m of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.
9.47.1	The contractor shall take permission of BHEL prior to risky jobs such as working at height, hot work, liftig activities, etc through permits. No job should be started without permits.
9.47.2	The Contactor shall take all measures at the sites of the work to protect all persons from accidents and shall be bound to bear the expenses of defense of

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	every suit, action or other proceeding at law that may be brought by any persons for injury sustained or death owing to neglect of the above precautions and to pay any such persons such compensation or which may with the consent of the Contractor be paid to compromise any claim by any such person should such claim proceeding be filed against BHEL, the Contractor hereby agrees to indemnify BHEL against the same.
9.48	Before any demolition work is commenced and also during the process of the work the following shall be ensured:
9.48.1	All roads and open areas adjacent to the work site shall either be closed or suitably protected.
9.48.2	No electric cable or apparatus which is liable to be a source of danger nor a cable or an apparatus used by the operator shall remain electrically charged.
9.48.3	All practical steps shall be taken to prevent danger to persons employed from the risks of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render them unsafe.
9.49	All necessary personnel safety equipment as considered adequate by the Engineer should be kept available for the use of the persons employed in the Site and maintained in a condition suitable for immediate use and the Contractor should take adequate steps to ensure proper use of equipment by those concerned.
9.49.1	Workers employed on mixing asphalted materials, cement and lime mortars shall be provided with protective foot wear and protective goggles.
9.49.2	Those engaged in white washing and mixing or stacking of cement bags or any materials which is injurious to the eyes shall be provided with protective goggles.
9.49.3	Those engaged in welding works shall be provided with welder's protective eyesight lids.
9.49.4	Stone breakers shall be provided with protective goggles and protective clothing and seated sufficient to safe intervals.
9.49.5	Where workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into manhole, and the manholes so opened shall be cordoned off with suitable railing and provided

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	with warning signals or boards to prevent accident to the public.
9.49.6	The Contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, the following precautions should be taken.
9.49.6.1	No paint containing lead or lead products shall be used except in the form of paste or ready made paint.
9.49.6.2	Suitably face masks should be supplied for use by the workers where paints are applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
9.49.6.3	Overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.
9.50	When the work is being done near any place where there is risk of drowning all necessary equipment should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
9.51	Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safe guards. Hoisting appliance should be provided with such means as will reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers employed on electrical installations which are already energized, insulting mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided. The worker should not wear any rings, watches and carry keys or other materials which are good conductor of electricity.
9.52	All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near the places of work.
9.53	The contractor shall maintain and ensure necessary safety measures as required for inspection and tests HV test, Pneumatic test, Hydraulic test, Spring test, Bend test etc as applicable, to enable inspection Agency for performing Inspection. If any test equipment is found not complying with proper safety

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	requirements then the Inspection Agency may withhold inspection, till such time the desired safety requirements are met.
9.54	The Contractor shall notify BHEL of his intention to bring to site any equipment or material which may create hazard. BHEL shall have the right to prescribe the conditions under which such equipment or materials may be handled and the contractor shall adhere to such instructions. BHEL may prohibit the use of any construction machinery, which according to him is unsafe. No claim for compensation due to such prohibition will be entertained by BHEL.
9.55	All safety precautions shall be taken for welding and cutting operations as per IS-818. All safety precautions shall be taken for foundation and other excavation marks as per IS-3764.
9.56	.All gas cylinders shall be stored in upright position. Suitable trolley shall be used. There shall be flash-back arrestors conforming to IS-11006 at both cylinder and burner ends. Damaged tube and regulators must be immediately replaced. No of cylinders shall not exceed the specified quantity as per OCP
9.57	These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent, place at work spot. The persons responsible for compliance of the safety code shall be named therein by the Contractor
9.58	To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangement made by the contract shall be open to inspection by the Engineer of the Engineer's Representative.
9.59	Keeping the work area clean/ free from debris, removed scaffoldings, scraps, insulation/sheeting wastage /cut pieces, temporary structures, packing woods etc. will be in the scope of the contractor. Such cleanings has to be done by contractor within quoted rate, on daily basis by an identified group. If such activity is not carried out by contractor / BHEL is not satisfied, then BHEL may get it done by other agency and actual cost alongwith BHEL overheads will be deducted from contractor's bill. Such decisions of BHEL shall be binding on the contractor.
9.60	Notwithstanding the above clauses there is nothing to exit the Contractor from the operations of any other Act or Rule in force in area of work in this respect. Provided always that all safety measures apart from those specifically provided in this agreement which are brought to the notice of the Contractor from time to time by the Engineer shall be complied by the Contractor. Provided further that

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	all consequences, damages, or losses arising by reason of any safety code shall be met with by the Contractor.																																																																
9.61	<u>NON COMPLIANCE:-</u> NONCONFORMITY OF SAFETY RULES AND SAFETY APPLIANCES WILL BE VIEWED SERIOUSLY AND BHEL HAS RIGHT TO IMPOSE FINES ON THE CONTRACTOR AS UNDER <u>for every instance of violation noticed:</u> <table border="1"> <thead> <tr> <th>SN</th><th>Violation of Safety Norms</th><th>Fine (in Rs)</th></tr> </thead> <tbody> <tr><td>01</td><td>Not Wearing Safety Helmet</td><td>50/- *</td></tr> <tr><td>02.</td><td>Not wearing Safety Belt or not anchoring life line</td><td>100/-*</td></tr> <tr><td>03</td><td>Not wearing safety shoe</td><td>100/-*</td></tr> <tr><td>04</td><td>Not keeping gas cylinders vertically</td><td>100/-</td></tr> <tr><td>05</td><td>Not using flash back arrestors</td><td>50/-</td></tr> <tr><td>06</td><td>Not wearing gloves</td><td>50/- *</td></tr> <tr><td>07.</td><td>Grinding Without Goggles</td><td>50/- *</td></tr> <tr><td>08.</td><td>Not using 24 V Supply For Internal Work</td><td>500/-</td></tr> <tr><td>09.</td><td>Electrical Plugs Not used for hand Machine</td><td>100/-</td></tr> <tr><td>10.</td><td>Not Slings property</td><td>200/-</td></tr> <tr><td>11.</td><td>Using Damaged Sling</td><td>200/-</td></tr> <tr><td>12.</td><td>Lifting Cylinders Without Cage</td><td>500/-</td></tr> <tr><td>13.</td><td>Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.</td><td>200/-</td></tr> <tr><td>14.</td><td>Not Removing Small Scrap From Platforms</td><td>200/-</td></tr> <tr><td>15.</td><td>Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting</td><td>200/-</td></tr> <tr><td>16.</td><td>Not Maintaining Electric Winches Which are Operated Dangerously</td><td>500/-</td></tr> <tr><td>17.</td><td>Improper Earthing Of Electrical T&P</td><td>500/-</td></tr> <tr><td>18</td><td>No or improper barricading</td><td>500/-</td></tr> <tr><td>19.</td><td>Activity carried out without Safety work permit (Height work, Lifting activity, Hot work-each person/case)</td><td>1000/-</td></tr> <tr><td>20.</td><td>Accident Resulting in Partial Loss in Earning Capacity</td><td>25,000/- per victim</td></tr> </tbody> </table>		SN	Violation of Safety Norms	Fine (in Rs)	01	Not Wearing Safety Helmet	50/- *	02.	Not wearing Safety Belt or not anchoring life line	100/-*	03	Not wearing safety shoe	100/-*	04	Not keeping gas cylinders vertically	100/-	05	Not using flash back arrestors	50/-	06	Not wearing gloves	50/- *	07.	Grinding Without Goggles	50/- *	08.	Not using 24 V Supply For Internal Work	500/-	09.	Electrical Plugs Not used for hand Machine	100/-	10.	Not Slings property	200/-	11.	Using Damaged Sling	200/-	12.	Lifting Cylinders Without Cage	500/-	13.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-	14.	Not Removing Small Scrap From Platforms	200/-	15.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	200/-	16.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-	17.	Improper Earthing Of Electrical T&P	500/-	18	No or improper barricading	500/-	19.	Activity carried out without Safety work permit (Height work, Lifting activity, Hot work-each person/case)	1000/-	20.	Accident Resulting in Partial Loss in Earning Capacity	25,000/- per victim
SN	Violation of Safety Norms	Fine (in Rs)																																																															
01	Not Wearing Safety Helmet	50/- *																																																															
02.	Not wearing Safety Belt or not anchoring life line	100/-*																																																															
03	Not wearing safety shoe	100/-*																																																															
04	Not keeping gas cylinders vertically	100/-																																																															
05	Not using flash back arrestors	50/-																																																															
06	Not wearing gloves	50/- *																																																															
07.	Grinding Without Goggles	50/- *																																																															
08.	Not using 24 V Supply For Internal Work	500/-																																																															
09.	Electrical Plugs Not used for hand Machine	100/-																																																															
10.	Not Slings property	200/-																																																															
11.	Using Damaged Sling	200/-																																																															
12.	Lifting Cylinders Without Cage	500/-																																																															
13.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-																																																															
14.	Not Removing Small Scrap From Platforms	200/-																																																															
15.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	200/-																																																															
16.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-																																																															
17.	Improper Earthing Of Electrical T&P	500/-																																																															
18	No or improper barricading	500/-																																																															
19.	Activity carried out without Safety work permit (Height work, Lifting activity, Hot work-each person/case)	1000/-																																																															
20.	Accident Resulting in Partial Loss in Earning Capacity	25,000/- per victim																																																															

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter - IX: HSE & OHSAS

	21.	Fatal Accident/Accidents Resulting in total loss in Earning Capacity	1,00,000/- per victim #
	Legend:-*: per head, #: or as deducted by Customer whichever is higher Any other non-conformity noticed not listed above will also be fined as deemed fit by BHEL. The decision of BHEL engineer is final on the above. The amount will be deducted from running bills of the contractor. The amount collected above will be utilized for giving award to the employees who could avoid accident by following safety rules. Also the amount will be spent for purchasing the safety appliances and supporting the safety activity at site.		
9.61	<u>CITATION</u>:-If safety record of the contractor in execution of the awarded job is to the satisfaction of safety department of BHEL, issue of an appropriate certificate to recognize the safety performance of the contractor may be considered by BHEL after completion of the job		
9.62	<u>MEMORANDUM OF UNDERSTANDING</u> After Award Of Work, Contractors Are Required To Enter Into A Memorandum Of Understanding As Given Below: <u>Memorandum of Understanding</u> ➤ BHEL, Power Sector _____ Region is committed to Health, Safety and Environment Policy (EHS Policy). ➤ M/s _____ do hereby also commit to the same EHS Policy while executing the Contract Number _____ ➤ M/s _____ shall ensure that safe work practices not limited to the above are followed by all construction workers and supervisors. Spirit and content therein shall be reached to all workers and supervisors for compliance. ➤ BHEL will be carrying out EHS audits twice a year and M/s _____ shall ensure to close any non-conformity observed/reported within fifteen days. Signed by authorized representative of M/s -----		

SPECIAL CONDITIONS OF CONTRACT (SCC)
Chapter - IX: HSE & OHSAS

	Name : Place & Date:

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter-X: RA Bill Payments

10.0	RA Bill Payments
10.1	The contractor shall submit his monthly RA bills with all the details required by BHEL on specified date every month covering progress of work in all respects and areas for the previous calendar month.
10.2	Mode of payment and measurement of work completed shall be as per relevant clauses of General Conditions of Contract
10.3	Release of payment in each running bill including PVC Bills where ever applicable will be restricted to 95% of the value of work admitted as per stages of progressive pro rata payments.
10.4	The 5% thus remaining shall be treated as 'Retention Amount' and shall be released as per terms specified in the General Conditions of Contract.
10.5	The payment for running bills will normally be released within 30 days of submission of running bill complete in all respects with all documents. It is the responsibility of the contractor to make his own arrangements for making timely payments towards labour wages, statutory payments, outstanding dues etc and other dues in the meanwhile. In case of Civil works, 60% of RA Bills complete and correct in all respects and certified by BHEL Engineer, shall be paid within 15 days of receipt. Balance payment shall be within 30 days.
10.6	BHEL shall release payment through Electronic Fund Transfer (EFT)/RTGS. In order to implement this system, Contractor to furnish details pertaining to his Bank Accounts where proceeds will be transferred through BHEL's banker, as per prescribed formats: Note: BHEL may also choose to release payment by other alternative modes as applicable
10.7	Paying Authority shall be the Construction Manager of the Site. Any change in the paying Authority shall be intimated to the Contactor accordingly.

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter-XI : Performance Monitoring

11.0	Performance Monitoring
11.1	Performance of the contractor is monitored through various reports/reviews and shall be jointly evaluated every month for unit wise identified packages as per prescribed formats. Based on the net weighted scores obtained, Contractors shall be rated 'Good' or 'Satisfactory' or 'Unsatisfactory'
11.2	In case of any dispute on performance rating and the contractor refuses to sign on the performance rating given by BHEL package Incharge, the same shall be reviewed by BHEL site Incharge/Construction Manager and his decision shall be final.
11.3	Release of RA Bills will be contingent upon joint evaluation of performance
11.4	Performance of the contractor will be taken into consideration for assessing the capacity of the bidder to execute future jobs under tender, as detailed in the Notice Inviting Tender. Risk of non evaluation or non availability of the Monthly performance evaluation reports is to be borne by the Bidder.
11.5	In case of 'Unsatisfactory performance' for a continuous period of three or more months for a package or packages, BHEL has the right to get the balance works executed at the risk and cost of the contractor.
11.6	In case of 'Unsatisfactory performance' in a financial year, BHEL reserves the right to put on hold such Contractors for a period of six months for similar package or similar packages

SPECIAL CONDITIONS OF CONTRACT (SCC)

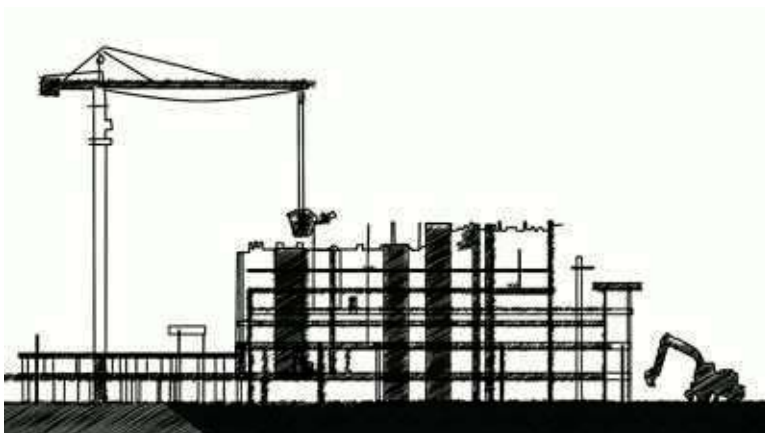
Chapter-XII: Suspension of Business Dealings

12.0	Suspension of Business dealings
12.1	BHEL reserves the right to take action against contractors who fail to perform or indulge in malpractices, by suspending business dealings with them.
12.2	Suspension could be in the form of 'Hold', 'De-listing' or 'Banning' a contractor.
12.3	A bidder may be put on HOLD for a period of 6 months, for future tenders for specific works on the basis of one or more of the following reasons: a) Bidder does not honour his own offer or any of its conditions within the validity period. b) Bidder fails to respond against three consecutive enquires of BHEL. c) After placement of order, Bidder fails to execute a contract. d) Bidder fails to settle sundry debt account, for which he is legitimately liable, within one year of its occurrence. e) Bidder's performance rating falls below 60% in specific category (more fully described in chapter 'Performance Monitoring') f) Bidder works are under strike/ lockout for a long period.
12.4	A Bidder may be de-listed from the list of registered Bidders of the region for a period of 1 year on the basis of one or more of the following reasons:- a) Bidder tampers with tendering procedure affecting ordering process or commits any misconduct which is contrary to business ethics. b) Bidder has substituted, damaged, failed to return, short returned or unauthorizedly disposed off materials/ documents/ drawings/ tools etc of BHEL. c) Bidder no longer has the technical staff, equipment, financial resources etc. required to execute the orders/ contracts.
12.5	A Bidder can be banned from doing any business with all Units of BHEL for a period of 3 years on the basis of one or more of the following reasons: a) Bidder is found to be responsible for submitting fake/ false/ forged documents, certificates, or information prejudicial to BHEL's interest. b) In spite of warnings, the Bidder persistently violates or circumvents the provisions of labour laws/ regulations/ rules and other statutory requirements. c) Bidder is found to be involved in cartel formation

SPECIAL CONDITIONS OF CONTRACT (SCC)

Chapter-XII: Suspension of Business Dealings

	d) The Bidder has indulged in malpractices or misconduct such as bribery, corruption and fraud, pilferage etc which are contrary to business ethics. e) The Bidder is found guilty by any court of law for criminal activity/ offences involving moral turpitude in relation to business dealings. f) The Bidder is declared bankrupt, insolvent, has wound up or been dissolved; i.e ceases to exist for all practical purposes. g) Bidder is found to have obtained Official Company information/ documentation by questionable means. h) Communication is received from the administrative Ministry of BHEL to ban the Bidder from business dealings.
12.6	Contracts already entered with a contractor before the date of issue of order of 'HOLD' or 'DE-LISTING' shall not be affected.
12.7	All existing contracts with a 'BANNED' contractor shall normally be short closed
12.8	Once the order for suspension is passed, existing offers/new offers of the contractor shall not be entertained
12.9	The above guidelines are not exhaustive but enunciate broad principles governing action against contractors



HEALTH, SAFETY and ENVIRONMENT PLAN

For

SITE OPERATIONS

By

SUB-CONTRACTORS

POWER SECTOR- EASTERN REGION

 PS-ER	HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SUB-CONTRACTORS (GENERAL)	Doc. No.: HSEP:14-ER
		Rev.: 00
		Date: 25.04.19
		Page 2 of 162

DOCUMENT ISSUE SHEET

	PREPARED BY	APPROVED BY
NAME	Saswajeet Rout	
DESIGNATION		
SIGNATURE		Pradip Ghosh Digitally signed by Pradip Ghosh DN: cn=Pradip Ghosh, o=BHEL, ou=HSE-PSEER, email=pradipg@bhelpser.co.in, c=IN Date: 2019.06.15 13:02:14 +05'30'
ISSUED BY:		
ISSUED TO:		
COPY NO:		
DATE OF ISSUE:		

THIS PLAN SUPERSEDES THE STANDARD HSE PLAN

 PS-ER	HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SUB-CONTRACTORS (GENERAL)	Doc. No.: HSEP:14-ER
		Rev.: 00
		Date: 25.04.19
		Page 3 of 162

HSE PLAN FOR SITE OPERATIONS BY BHEL'S SUBCONTRACTORS AT A GLANCE

BEFORE START	SIGNING OF MOU	
	Agree to comply to HSE requirement- Statutory and BHEL's	Agree to accept BHEL's decision on release of 1.5% (as specified in the contract) of Gross bill Amount or part thereof or otherwise (non-release), based on our HSE performance as evaluated by BHEL during the execution period
PLAN	HSE ORGANISATION	
	Manpower 1 (one) safety officer for every 300 workers or part thereof 1(one) safety-supervisor for every 150 workers 1(one) safety-steward/ supervisor for every 50 workers As per Cl. 7.1	HSE Roles and responsibilities - All employees as per 7.2.1 - Site In-charge & Package In-charges- As per clause 7.2.2 - Safety officer- As per clause 7.2.3
	HSE Planning for Man, Machinery / Equipment/ Tools & Tackles	
PROVIDE	HSE INFRASTRUCTURE	
	- PPEs - Drinking Water - Washing Facilities - Latrines and Urinals - Provision of shelter for rest - Medical facilities	- Canteen facilities - Labor Colony - Emergency Vehicle - Pest Control - Scrapyard - Illumination - Crèches (if required)
TRAIN	HSE TRAINING , AWARENESS & PROMOTION	
	Training - Induction training - Height work and other critical areas - Tool Box talk & Pep Talk - Job Specific Training	Awareness & Promotion - Posters & Signage - Emergency Contact/Information Display - Banner - Competition & Awards
COMMUNICATE	HSE COMMUNICATION	
	Incident Reporting - Accident- Fatal, Major & Minor - Property damage - Near Miss Safety Performance Reporting	Event Reporting - Celebrations - Training - Medical camp - Motivational Activities



PS-ER

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SUB-CONTRACTORS (GENERAL)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 4 of 162

EXECUTE SAFELY

SAFETY DURING WORK EXECUTION

PERMIT TO WORK

Height work (above 2 meters), Hot Work, Heavy Lifting, Confined Space, Radiography, Excavation (More than 1.22 meters), Lockout / Tag out

OPERATIONAL CONTROL

• Welding, Gas Cutting Grinding • Rigging, Signaling • Cylinder- Storage & Movement • Demolition work • T&Ps • Chemical Handling • Electrical works • Painting	• Fire • Scaffolding • Height work • Working Platform • Excavation / Civil Work • Ladder • Lifting • Hoisting appliance • Hard Barricading

HOUSE KEEPING

WASTE MANGEMENT

TRAFFIC MANAGEMENT

ENVIRONMENTAL CONTROL

EMERGENCY PREPAREDNESS AND RESPONSE PLANNING

CHECKS

HSE AUDITS & INSPECTION

• Daily Checks • Inspection of Height work • Inspection of PPEs • Inspection of T & Ps	• Inspection of Cranes & Winches • Inspection of Welding and Gas cutting • Inspection of elevators etc.

HSE PERFORMANCE EVALUATION PARAMETERS

NON CONFORMANCE

PENALTY for NON CONFORMANCE

Refer Clause 16 Incremental penalty

For repeated violation by the same person, the penalty would be double of the previous penalty

For repeated fatal incident in the same contract / package, incremental penalty to be imposed. The subcontractor will pay 2 times the penalty compared to the previously paid in case there are repeated cases of fatal incidents under the same subcontractor for the same package in the same unit.

COMPENSATION TO ACCIDENT VICTIMS

Refer Clause 17

Employee Compensation Act, 1922

Other Acts and Guidelines relevant to employee compensation



HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SUB-CONTRACTORS
(GENERAL)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 5 of 162

ORGANIZATION OF THIS DOCUMENT

- **GENERAL SECTION**
- **SECTION A:**
MAIN REQUIREMENTS APPLICABLE IN FULL
- **SECTION B:**
SPECIAL REQUIREMENTS
- **ANNEXES**

CONTENTS

S. No.	Description	Page No.
GENERAL		
1	PURPOSE	9
2	SCOPE	9
3	OBJECTIVES AND TARGETS	10
4	REFERENCES	11
5	HEALTH, SAFETY & ENVIRONMENT POLICY	12
	MEMORANDUM OF UNDERSTANDING	13
6	TERMS & DEFINITIONS	14
SECTION-A		
7	HSE ORGANIZATION	17
7.1	DEPLOYMENT (NUMBERS, QUALIFICATIONS & EXPERIENCE)	17
7.2	HSE RESPONSIBILITIES	19
8	PLANNING BY SUBCONTRACTOR	23
8.1	MOBILISATION OF MACHINERY/EQUIPMENT/TOOLS	23
8.2	MOBILISATION OF MANPOWER BY SUBCONTRACTOR	24
8.3	PROVISION OF PPEs	25
8.4	ARRANGEMENT OF INFRASTRUCTURE	26
9	HSE TRAINING & AWARENESS	32
10	HSE PROMOTION – SIGNAGE, POSTERS, COMPETITIONS, AWARDS ETC	34
11	HSE COMMUNICATION & PARTICIPATION	35
12	INCIDENT INVESTIGATION & CORRECTIVE ACTION	36
13	SAFETY DURING WORK EXECUTION	37
13.1	HSE SYSTEMS & PROCEDURES	37
13.2	WORK PERMIT SYSTEM	39
13.3	ACTIVITY SPECIFIC SAFETY REQUIREMENTS	40
13.4	ENVIRONMENTAL CONTROL	46
13.5	HOUSEKEEPING	47



PS-ER

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SUB-CONTRACTORS
(GENERAL)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 7 of 162

S. No.	Description	Page No.
13.6	WASTE MANAGEMENT	47
13.7	TRAFFIC MANAGEMENT	48
13.8	EMERGENCY PREPAREDNESS & RESPONSE	50
13.9	CONTROL OF DOCUMENTS	50
13.10	CONTROL OF RECORDS	50
14	HSE INSPECTION	51
15	HSE PERFORMANCE	54
16	HSE PENALTIES FOR NON-COMPLIANCE	55
17	OTHER REQUIREMENTS	56
18	INTERNAL & EXTERNAL HSE AUDITS	56
19	HSE REVIEW	57
20	FORMATS USE	58
	FORMATS	
SECTION B		
	ESTABLISHMENT OF COMMON FACILITIES / INFRASTRUCTURE	
	SHARED FACILITIES	
ANNEXES		
	ANNEXURE-1	
	ANNEXURE-2	
	ANNEXURE-3	
	ANNEXURE-A: ACTIVITY SPECIFIC REQUIREMENTS FOR SAFETY	
	ANNEXURE-B: HSE PRECAUTIONS FOR ADVERSE CLIMATES & WEATHER CONDITIONS	
	ANNEXURE-C: FIRE EXTINGUISHER REQUIREMENTS	
	ANNEXURE-D: SPECIFICATIONS	
	RECORD OF REVISIONS	

GENERAL



POWER SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SUB-CONTRACTORS (GENERAL)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 9 of 162

1. PURPOSE

- 1.0** The purpose of this HSE Plan is to provide for the systematic identification, evaluation, prevention and control of general workplace hazards, specific job hazards, potential hazards and environmental impacts that may arise from foreseeable conditions during installation and servicing of industrial projects and power plants.
- 1.1** This document shall be followed by BHEL's Sub-Contractors at all installation and servicing sites. In case BHEL has contractual HSE obligations towards customer, this document will be followed in conjunction with (BHEL's) customer specific requirements, ensuring that applicable systems, controls and checks of both are implemented in letter and spirit.
- 1.2** In case the customer has any specific requirement, the same is to be fulfilled but may not include financial inclusion.
- 1.3** This document shall be followed unless otherwise mentioned in TCC (technical condition of contract) or elsewhere in NIT or contract documents. This supersedes all HSE clauses in GCC.
- 1.4** Although every effort has been made to make the procedures and guidelines in line with statutory requirements, in case of any discrepancy relevant statutory guidelines must be followed.

2. SCOPE

The document is applicable on all activities and assets including managerial, supervisory, professional, technical, clerical and other workers including contract laborers; and equipment operating under the control of BHEL's Subcontractors at all installation / servicing activities of BHEL Power Sector as per the relevant contractual obligations.

3. OBJECTIVES

The HSE Plan reflects that BHEL places high priority upon the Occupational Health, Safety and Environment at workplaces. The Sub-contractor shall:

Health & Safety

- Prevent injury and ill health of all persons at site ('Persons' refers to all personnel including managerial, supervisory, professional, technical, clerical and other workers including contract laborers)

Environment

- Prevent pollution to environment and ensure protection of environment taking into account interested party concern and conservation of resources and reduction of wastage

Legal Requirements

- Comply at all times with the relevant statutory and contractual HSE requirements.

Planning & Resources

- Ensure that all work planning takes into account all persons that may be affected by the work.
- Ensure timely provision of resources to facilitate effective implementation of HSE requirements.

Competency, Training & Awareness

- Provide trained, experienced and competent personnel. Ensure medically fit personnel only are engaged at work.
- Provide all personnel with adequate information, instruction, training and supervision on the safety aspect of their work.

Maintenance of Equipment

- Ensure fitness testing of all T&Ps. Lifting appliances like cranes, chain pulley blocks etc. are certified by competent authority.

Safety during Operations

- Provide and maintain plant, places and systems of work that are safe and without risk to health and the environment.
- Effectively control, co-ordinate and monitor the activities of all personnel on the Project sites including subcontractors in respects of HSE.
- Establish effective communication on HSE matters with all relevant parties involved in the Project works.

HSE Improvement

- Capture the data of all incidents including near misses, process deviation etc. Investigate and analyze the same to find out the root cause
- Ensure timely implementation of correction, corrective action.
- Ensure continual improvement in HSE performance



POWER SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SUB-CONTRACTORS
(GENERAL)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 11 of 162

GOALS AND TARGETS

- ❖ To achieve “Zero Incident at Site” (LTI)
- ❖ 100% compliance of all legal/statutory requirements related to HSE.
- ❖ 100% Health, Safety and Environmental Induction training attendance for all workers.
- ❖ 100% High Risk activities to be carried out only after approved Method Statement, HIRA / Aspect-Impact / JSA / OCP and Permit to Work are implemented.
- ❖ 100% PPEs compliance in high and medium risk activities.
- ❖ 100% monitoring of all Work Areas
- ❖ 100% detection of non-conformities in work area and 100% closure within specified time
- ❖ 100% incident (near miss, minor, major, other) reporting, recording and reviewing for corrective actions.
- ❖ Regular Safety Reviews to assess HSE program compliance and 100% closure of any recognized gaps to continually improve safety management and incident prevention.

4. REFERENCES

1. ALL CONTRACTUAL HSE REQUIREMENTS INCLUDING THIS DOCUMENT
2. ALL APPLICABLE ACTS, RULES & REGULATIONS
3. BHEL POWER SECTOR HSE MANAGEMENT SYSTEM
 - I. HSE PROCEDURES (13.1.1)
 - II. WORK PERMITS (See Clause 13.1.2)
 - III. OPERATIONAL CONTROL PROCEDURES (See Clause 13.1.3)
 - IV. FORMATS (See Clause 21)
4. BHEL CORPORATE STANDARD PPE GUIDELINES
5. RELEVANT INDIAN STANDARDS FOR SAFETY (See Annexure 02)

(Note: Wherever, the date or revision number of a document is not mentioned, latest revision is implied)

5. *BHEL HEALTH, SAFETY & ENVIRONMENT POLICY:*

In BHEL, Health, Safety and Environment (HSE) responsibilities are driven by our commitment to protect our employees and people we work with, community and environment. BHEL believes in zero tolerance for unsafe work/non-conformance to safety and in minimizing environmental footprint associated with all its business activities. We commit to continually improve our HSE performance by:

- Developing safety and sustainability culture through active leadership and by ensuring availability of required resources.
- Ensuring compliance with applicable legislation, regulations and BHEL systems.
- Taking up activities for conservation of resources and adopting sound waste management by following Reduce/Recycle/Reuse approach.
- Continually identifying, assessing and managing environmental impacts and Occupational Health & Safety risks of all activities, products and services adopting approach based on elimination/substitution/reduction/control.
- Incorporating appropriate Occupational Health, Safety and Environment criteria into business decisions, design of products & systems and for selection of plants, technologies and services.
- Imparting appropriate structured training to all persons at workplace and promoting awareness amongst customers, contractors and suppliers on HSE issues.
- Reviewing periodically this policy and HSE Management Systems to ensure its relevance, appropriateness and effectiveness.
- Communicating this policy within BHEL and making it available to interested parties.



Atul Sobti
Chairman & Managing Director

 POWER SECTOR	HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SUB-CONTRACTORS (GENERAL)	Doc. No.: HSEP:14-ER Rev.: 00 Date: 25.04.19 Page 13 of 162

6. TERMS AND DEFINITIONS

6.0 INCIDENT

Work- related or natural event(s) in which an injury or ill health (regardless of severity) or fatality, damage to property/environment occurred, or could have occurred.

6.1 NEAR MISS

An incident where no ill health, injury, damage or other loss occurs, but it had a potential to cause, is referred to as "Near-Miss incident".

6.2 MAN-HOURS WORKED

The total number of employee hours worked by all employees including subcontractors working in the premises.

It includes managerial, supervisory, professional, technical, clerical and other workers including contract laborers.

Man-hours worked shall be calculated from the payroll or time clock recorded including overtime. When this is not feasible, the same shall be estimated by multiplying the total man-days worked for the period covered by the number of hours worked per day. The total number of workday for a period is the sum of the number of men at work on each day of period. If the daily hours vary from department to department separate estimate shall be made for each department and the result added together.

6.3 FIRST AID CASES (FAC)

First aid cases include:

1. Visit to a physician or a licensed health care professional solely for observation or counselling
2. Conduct of diagnostic procedures like X rays, blood test including the prescription medications used solely for diagnostic purposes (e.g. eye drops to dilate eyes)
3. Using a non-prescription medicine at non-prescription strength (for medication available in both prescription and non-prescription form as recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is considered medical treatment for record keeping purposes);
4. Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine or rabies vaccine, are considered medical treatment);
5. Cleaning, flushing or soaking wounds on the surface of the skin;
6. Using wound coverings such as bandages, Band-Aids TM, gauze pads, etc.; or using butterfly bandages or Steri-Strips TM (other wound closing devices such as sutures, staples, etc., are considered medical treatment);
7. Using hot or cold therapy;
8. Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for record-keeping purposes);

 POWER SECTOR	HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SUB-CONTRACTORS (GENERAL)	Doc. No.: HSEP:14-ER Rev.: 00 Date: 25.04.19 Page 14 of 162

9. Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.).
 10. Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister;
 11. Using eye patches;
 12. Removing foreign bodies from the eye using only irrigation or a cotton swab;
 13. Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means;
 14. Using finger guards;
 15. Using massages (physical therapy or chiropractic treatment are considered medical treatment for recordkeeping purposes); or
 16. Drinking fluids for relief of heat stress.
- No other treatments are considered first aid.

6.4 MEDICAL TREATMENT CASES (MTC)

An incident involved with an injury or illness that needs medical attention beyond First-aid as per 6.3 above.

6.5 **Dangerous Occurrence** is defined as:

- (1) Collapse or failure of lifting appliances or hoist or conveyors or other similar equipment/machine;
- (2) Collapse or failure of a crane, derrick, winch, hoist or other appliance used in raising or lowering persons or goods or any part thereof, or the overturning of a crane;
- (3) Explosion or fire causing damage to the structure of any room or place in which persons are employed, or to any machine or plant, resulting in the complete suspension of ordinary work;
- (4) Electrical short circuit or failure of electrical machinery, plant or apparatus, attended by explosion or fire, causing structural damage involving its stoppage or disuse;
- (5) Explosion of a receiver or container used for the storage at a pressure greater than atmospheric pressure of any gas or gases (including air) or any liquid or solid resulting from the compression of gas;
- (6) Collapse in whole or part from any cause whatsoever of any roof, wall, floor, Structure or foundation forming part of the construction site in which persons are employed;
- (7) Total or partial collapse of any overburden, face, tip or embankment on the Construction site;
- (8) The overturning of, or collision with any object by any bulldozer, dumper, excavator, grader, lorry or shovel loader, or any mobile machine used for the handling of any substance on the construction site.

6.6 **Fire:** Except Dangerous occurrence, any incident involving fire.

6.7 **Property Damage:** Except Dangerous Occurrences and Fire, any incident of property (materials, building, equipment etc) getting damaged.

6.8 TYPE OF INCIDENT / ACCIDENT & THEIR REPORTING:

The categories of Incident / accident are as follows:

Non-Reportable Cases or NON-LTI: (Including First-aid cases as per 6.3 and MTC as per 6.4)

Minor: In this case the injured person resumes duty within 48 hours of incident.

 POWER SECTOR	HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SUB-CONTRACTORS (GENERAL)	Doc. No.: HSEP:14-ER Rev.: 00 Date: 25.04.19 Page 15 of 162

Reportable Cases (LTI or Loss Time Injury Cases):

Major: In this case the injured person is disable for 48 hours or more and is not able to perform his duty. (as per IS 3786). It includes fatality.

All incidents must be reported orally immediately and in writing within 24 hours of time of incident. However, in case of fatality, it shall be reported to the statutory authority within prescribed timeline through proper channel. Internal reporting shall be done within 6 hours of time of the incident

6.9 TOTAL REPORTABLE FREQUENCY RATE

Frequency rate is the number of Reportable Lost Time Injury (LTI) per one Million Man hours worked. Mathematically, the formula read as:

$$\frac{\text{Number of Reportable LTI}}{\text{Total Man Hours Worked}} \times 1,000,000$$

6.10 SEVERITY RATE

Severity rate is the Number of days lost due to Lost Time Injury (LTI) per one Million Man hours worked. Mathematically, the formula reads as:

$$\frac{\text{Days lost due to LTI}}{\text{Total Man Hours Worked}} \times 1,000,000$$

6.11 FREQUENCY SEVERITY INDEX (FSI)

$$\text{Frequency Severity Index, FSI} = \sqrt{\text{FR} \times \text{SR} / 1000}$$

6.12 INCIDENCE RATE

Incidence Rate is the Number of LTI per one thousand manpower deployed. Mathematically, the formula reads as:

$$\frac{\text{Number of LTI} \times 1000}{\text{Average number of manpower deployed}}$$

6.13 JOB SAFETY ANALYSIS

A job safety analysis (JSA) is a procedure which helps integrate accepted safety and health principles and practices into a particular task or job operation. In a JSA, each basic step of the job is to identify potential hazards and to recommend the safest way to do the job. Other terms used to describe this procedure are job hazard analysis (JHA) and job hazard breakdown.

6.14 SAFETY WALK

It's a walk (conducted periodically) by an official through a portion or whole of a site as an HSE officer, noting down HSE observations, speaking to concerned workmen and supervisor on observation, recording and reporting to in charges of agencies, getting the same rectified with personal follow up - to send out a strong message on Management's commitment to safety.

6.15 HEAVY & COMPLEX LIFTING

A heavy and complex lifting activity includes:

1. Lifting above 50 Tons
 2. Tandem Lifting using multiple cranes
 3. Total load exceeding 75% of capacity of crane
 4. Lift of unusual difficulty or geometry or rigging
 5. Lift over operating units
 6. Any other lift as decided by site HSE / Erection
- In any case, Job Safety Analysis to be carried out for any lift above 5 Tons.

6.16 SAFETY COMMITTEE

As per the BOCW, Safety Committee shall be constituted if there are more than five hundred or more construction workers are employed at any site. As per the Factories Act, 1948 it is for 250 workers. It shall be represented by equal number of representatives of employer and construction workers.

6.17 NIGHT WORK

Work conducted after sunset when only a fraction of total manpower is available

Section-A

Main Requirements

(Applicable in Full)



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date: 25.04.19
Page 18 of 58

7. HSE ORGANISATION

7.1 DEPLOYMENT

7.1.1 Minimum Number (Availability per contract / package per Working Shift)

7.1.1.1 HSE Officer	7.1.1.2 HSE Supervisor	7.1.1.3 HSE Steward / Observer
1 per 300 workers or part thereof as a minimum or as mandated by applicable legal requirements, whichever more stringent	1 per 150 workers or part thereof	1 per 50 workers or part thereof

7.1.1.4 The safety officers shall be engaged directly by the sub-contractor, whereas safety supervisors and safety stewards may be from the agencies engaged by the sub-contractor.

7.1.1.5 Deployment Plan:

- 7.1.1.5.1 These shall be minimum one HSE officer along with HSE supervisor and HSE steward in the aforesaid ratio for every shift for each unit of Boiler/ESP/Power House & TG/ Chimney/ Whole of Cooling Tower.
- 7.1.1.5.2 For Civil works and other BOP items, deployment shall be broadly as specified in the above table. But BHEL shall finally approve the deployment based on nature and volume of jobs, Risks and hazards associated etc.
- 7.1.1.5.3 The deployment plan of Safety manpower at various locations shall be submitted to BHEL for approval by subcontractor

BHEL reserves the right to demand more safety personnel than what is stipulated here and change the deployment pattern

 POWER SECTOR	HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)	Doc. No.: HSEP:14-ER Rev.: 00 Date: Page 19 of 58

7.1.2 QUALIFICATION & EXPERIENCE

All Degrees/ Diplomas shall be recognized by State Council for Technical Education & Vocational Training (SCTE & VT) / All India Council for Technical Education (AICTE) / University

7.1.2.1 HSE Officer	7.1.2.2 HSE Supervisor	7.1.2.3 HSE Steward / Observer
A. i. Recognized degree in any branch of Engg. or Tech. or Architecture with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than two years, or Recognized diploma in any branch of Engg. or Tech with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than five years. ii. Recognized degree or diploma in Industrial safety iii. (Preferably) have adequate knowledge of the language spoken by majority of the workers at the construction site. Alternatively: B. Graduation Degree in Science with Physics & Chemistry and degree or diploma in Industrial Safety (from any Indian institutes recognized by AICTE or State Council of Tech. Education of any Indian State) with practical experience of working in a building, plant or other construction works (as Safety Officer, in line with Indian Factories Act, 1958) for a period of not less than five years.	As a minimum, (s)he shall possess: A recognized graduation Degree in Science (with Physics & Chemistry) or a recognized diploma in Engg. or Tech. with: a. Minimum Two years of practical experience in construction work environment and b. Should possess requisite skills to deal with construction safety & fire related day-to-day issues.	As a minimum, (s)he shall possess: 1. Class XII pass certificate and 2. Trained in fire-fighting as well as in safety / occupational health related subjects, with: a. Minimum two year of practical experience in construction work environment and b. Should have adequate knowledge of the local language spoken by majority of the workers at the construction site.

7.1.3 HSE IN-CHARGE

In case there are more than one HSE Officers with any subcontractor, one of them, who is senior most by experience (in HSE discipline), may be designated as HSE In-Charge. Duties & responsibilities of such person shall be commensurate with that of relevant statute and primarily to coordinate with top management of Client and subcontractors.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 20 of 162

7.1.4 AVAILABILITY AND PENALTY FOR NON-DEPLOYMENT:

Subcontractor shall ensure physical availability of safety personnel at the place of specific work location including where Height Work Permit is required/granted. No work shall be started in any area until above safety personnel & concerned Site Engineer of subcontractor are physically deployed at site.

The Subcontractor shall prepare an organization chart identifying the areas of operations, responsibilities and reporting structure of all safety personnel and submit the same to BHEL.

The subcontractor shall deploy sufficient safety officers, supervisors and safety-stewards, as per numbers & qualifications mandated in this Section since mobilization of first batch of manpower and add more in proportion to the added strength in work force. Any delay in deployment will attract a penalty at following rates:

Non-deployment of HSE Officer	–	Rs 50000 per man-month
Non-deployment of HSE Supervisor	–	Rs 30000 per man-month
Non-deployment of HSE Steward	–	Rs 20000 per man-month

Penalty shall be collected for the period of non-availability of safety personnel after allowing a grace period of 15 days for finding a replacement.

7.1.5 QUALIFICATION OF CRANE & WINCH OPERATORS, DRIVERS etc.:

The Crane and Winch Operators, Drivers, Riggers and other professionals deployed shall be qualified and experienced, and have valid license for the class of vehicle / machinery as applicable. The subcontractor shall certify competence of these persons in writing as and when they join.

Crane/Winch operator should have certificate on subject course or owner experience certificate in letterhead.

7.1.6 In case the statutory requirements i.e. State or Central Acts and / or Rules as applicable like the Building and Other Construction Workers' Regulation of Employment and Conditions of Service- Act,1996 or State Rules (wherever notified), the Factories Act, 1948 or Rules (wherever notified), etc. are more stringent than above clarifications, the same shall be followed.

7.1.7 **BILLING:** Deployment of Safety manpower as per this clause **shall be** a billable item.

7.1.8 The Subcontractor shall verify & authenticate credentials of the HSE personnel detailed in this Section and furnish Bio-Data/Resume / Curriculum Vitae of the safety personnel as above for BHEL / Owner's approval, at least 1 month before the mobilization. The Subcontractor, whenever required, shall arrange submission of original testimonials / certificates of their Safety personnel, to BHEL / Owner (for verification/scrutiny, etc.)

7.1.9 Prior approval of CVs by BHEL for Safety Officer and Safety Supervisor is mandatory, however BHEL has right to check suitability of Safety Stewards as well.

7.2 HSE RESPONSIBILITIES

The subcontractors shall communicate the HSE responsibilities as indicated in this section to relevant employees in written Form and ensure awareness of the same

7.2.1 ALL EMPLOYEES

1. To be aware of, get involved in and ensure implementation of all HSE related Systems and Procedures including but not limited to:
 - a) BHEL HSE Management System including HSE Procedures and OCPs
 - b) Work Permit System
 - c) Emergency Preparedness Response Plans
 - d) Contractual HSE requirements
 - e) Legal Requirements
 - f) Penalty System
 - g) Training requirements
2. To ensure that the persons engaged in respective area follow the safety rules like using appropriate PPEs.
3. To keep track of repetitive minor or major incident observation/ report and submit to BHEL.
4. To prepare HIRA / JSA as required and submit to BHEL for verification.
5. To record all incidents including near miss and report to BHEL.
6. To adopt safe working practices at all times and act as role model for Safety
7. To take immediate corrective action actions in case any non-conformity is observed on product / process / system with respect to Occupational Health, Safety and Environment.
8. In case any particular activity / work has extremely high consequential risk or high environmental impact, same shall be brought to the notice of BHEL Package In-charge before starting the work.
9. To interfere/ stop work as & when identified unsafe.
10. To maintain & promote improved level of house-keeping all the time at site.
11. To support/co-operate with audit team members as & when safety audits are carried out.
12. To involve in investigation, if any incident occurs in his work area.
13. To participate in safety promotional programmes.
14. To attend the safety committee meeting, if member/ invitee
15. To ensure that only fit T&Ps and qualified persons are engaged for all activities.
16. Shall ensure that person working above 2.0 meter should use Safety Harness tied to a life line/stable structure.
17. Shall ensure that materials are not thrown from height. Cautions to be exercised to



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 22 of 162

prevent fall of material from height.

18. Shall ensure that all T&Ps engaged are tested for fitness and have valid certificates from competent authorities.

7.2.2 SITE IN –CHARGE & PACKAGE IN-CHARGES OF SUBCONTRACTOR

1. All requirements as per 7.2.1
2. **Shall ensure fulfillment of HSE requirements of BHEL contract as given in this document.**
3. Shall engage qualified safety manpower as per this document at all times.
4. Shall adhere to the rules and regulations mentioned in this document, practice very strictly in his area of work in consultation with his concerned engineer and the safety coordinator.
5. Shall screen all workmen for health and competence requirement before engaging for the job and periodically thereafter as required.
6. Shall ensure that all the workers are engaged after undergoing induction training.
7. Shall arrange for all necessary PPEs like safety helmets, belts, full body harness, shoes, face shield, hand gloves etc. before starting the job. Shall ensure that no working men /women carry excessive weight more than stipulated in Factory Rule Regulation R57.
8. Shall ensure that provisions stipulated in contract Labor Regulation Act 1970, Chapter V C.9, canteen, rest rooms/washing facilities to contracted employees at site.
9. Shall report all incidents (Fatal/Major/Minor/Near Miss) to the Site engineer /HSE officer of BHEL.
10. Shall conduct Safety Walks and safety inspections, and act as a role model for Safety.
11. Shall ensure that Horseplay is strictly forbidden.
12. Shall ensure that adequate illumination is arranged during night work.
13. Shall ensure that all personnel working under subcontractor are working safely and do not create any Hazard to self and to others.
14. Shall ensure display of adequate signage/posters on HSE.
15. Shall ensure that mobile phone is not used by workers while working.
16. Shall ensure conductance of HSE audit, mock drill, medical camps, induction training and training on HSE at site.
17. Shall ensure full co-operation during Client/External /Customer HSE audits.
18. Shall ensure submission of look-ahead plan for procurement of HSE equipment's and PPEs as per work schedule.
19. Shall ensure adequate valid fire extinguishers are provided at the work site.
20. Shall ensure availability of sufficient number of toilets /restrooms and adequate drinking water at work site and labor colony.
21. Shall ensure adequate emergency preparedness
22. Site In-charge also involve in the induction training so as to share knowledge of some incident and guide the worker to perform work safely.
23. Shall ensure power source for hand lamps shall be maximum of 24 v.
24. Shall ensure temporary fencing should be done for open edges if Hand – railings and Toe-



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 23 of 162

guards are not available.

25. Shall be responsible for the periodic testing of T&Ps (winches / crane /hydra/tools/equipment so on.) and Pressure Vessels as per applicable codes and submit report to BHEL
26. Shall be member of site HSE committee and attend all meetings of the committee

7.2.3 HSE OFFICER OF SUBCONTRACTOR

1. All requirements as per 7.2.1
2. Carry out safety inspection of Work Area, Work Method, Men, Machine & Material, P&M and other tools and tackles.
3. Facilitate HIRA and Aspect/Impact Study in the area and ensure control measures.
4. Highlight the requirements of safety through Tool-box / other meetings.
5. Help concerned HOS to prepare Job Specific instructions for critical jobs.
6. Maintain record and conduct investigation of all incident/dangerous occurrences & recommend appropriate safety measures.
7. Advice & co-ordinate for implementation of HSE permit systems, OCPs & MPs.
8. Convene HSE meeting & minute the proceeding for circulation & follow-up action.
9. Plan procurement of PPE & Safety devices and inspect their healthiness.
10. Report to BHEL on all matters pertaining to status of safety and promotional programmes at site level.
11. Encourage raising Near Miss Report on safety along with, improvement initiatives on safety.
12. Facilitate administration of First Aid
13. Facilitate screening of workmen and safety induction.
14. Conduct fire Drill and facilitate emergency preparedness
15. Design campaigns, competitions & other special programs to promote safety in the workplace.
16. Notify non-conformance to safety norms observed during site visits / site inspections.
17. Recommend to Site In-charge, immediate discontinuance of work until rectification, of such situations warranting immediate action in view of imminent danger to life or property or environment.
18. To decline acceptance of such PPE / safety equipment that do not conform to specified requirements.

7.2.4 HSE SUPERVISOR OF SUBCONTRACTOR

1. All requirements as per 7.2.1
2. To assist Safety officer

7.2.5 HSE STEWARD / OBSERVER OF SUBCONTRACTOR

1. All requirements as per 7.2.1
2. To monitor allotted area for Safety violations, take required action and inform the concerned Safety Supervisor / Officer



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 24 of 162

3. To assist Safety Officer and Safety Supervisor

7.2.6 HSE DOCUMENTS, SYSTEMS & PROCEDURES:

BHEL shall provide the subcontractor soft copies of all applicable HSE Procedures, Work Permits, Operational Control Procedures, Formats and any other instructions required for the implementation of HSE Management System before commencing operations at site. Subcontractor shall ensure the availability of the same.

7.2.7 IMPORTANT SITE EHS RULES RESULTING IN POSSIBLE EXPULSION FROM SITE

- ❖ Pre-employment Medical fitness is compulsory for all workers.
- ❖ EHS induction is mandatory for all new workers, supervisor and engineers, subcontractor managers etc.
- ❖ No visitors are allowed for site visit without safety induction.
- ❖ **Mandatory PPEs are**
 - ✓ Safety helmet,
 - ✓ Hard toe safety shoes,
 - ✓ Safety glasses
 - ✓ Reflective vest
 - ✓ Full/half sleeve (at least 4-inch-long) shirt
 - ✓ Full length pant/trousers for male and preferably Salwar Kameez for female
- ❖ **Zero Tolerance Safety Rules**
 - Violation of Fall protection / not anchoring & wearing safety harness above 6 feet,
 - Work without PTW
 - Child labor at site
- ❖ Restricted Use of cell phone in the working zone, operating vehicle/crane and at height. Encourage the people not to bring mobile phones inside the project premises.
- ❖ All vehicle being used at site to be in good condition in all respect.
- ❖ All electrical installations should have individual 30 mA ELCBs
- ❖ **Fighting:** Fighting anywhere on the Project site, including in parking areas, is strictly forbidden; violators will be barred from site and possibly subjected to legal action by local authorities.
- ❖ **Horseplay:** Running, pushing, practical jokes, and other horseplay are forbidden on the project site, including in parking areas.
- ❖ **Gambling:** Gambling on the Project site is not permitted
- ❖ **Alcohol & Drugs:** Intoxication or possession of alcohol or illegal drugs is strictly forbidden.
- ❖ **Weapons:** Possession of weapons on the Project site is strictly prohibited
- ❖ **Asbestos Material:** No asbestos material is allowed to use in Project Site
- ❖ **Hair:** Anyone working on site property with scalp hair longer than the top of his/her shoulders must tie-up and restrains the hair within the hard hat or coveralls, shirt or jacket collar.
- ❖ **Jewelry:** Loose necklaces, dangling earrings and bracelets shall not be worn when working on the Project site.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 25 of 162

- ❖ **Contact Lens:** While the site does not prohibit the wearing of contact lens, BHEL Project does not recommend their use.
- ❖ **Use of Empty Drums:** Use of empty drums to climb up and work is banned. Proper stool/ ladder/ stage required to be used if intended to work at height.
- ❖ Projects must comply in full with all applicable EHS local and national legislation. In circumstances where there is a conflict between local or national legislation and client requirements, the higher (more protective) requirement must prevail.
- ❖ All persons working on suspended scaffolds/cradles/gondolas must wear and use appropriate fall prevention equipment so as to protect them effectively at all times when they are at risk from any failure of any part of the scaffold/cradle/gondola, including its suspension system
- ❖ **Construction Trucks/Vehicles**
 - ✓ Vehicles must be equipped with proper seat belts for driver and passengers. All persons riding in vehicles must be advised of the requirement that seat belts are to be used whenever the vehicles are being operated.
 - ✓ The subcontractor is responsible for assuring the overall safe condition of vehicles assigned to its projects.
 - ✓ The speed limit on the project site is a maximum of 20 Km/hr.
 - ✓ Any person found operating or driving in a reckless or careless manner without regard for the safety of other employees or the general public will be immediately removed for the equipment they were operating and permanently prohibited from operating or driving any equipment on the project.
 - ✓ Any mobile equipment found to be unsafe or defective must be immediately removed from service and sent for repair or replacement. The subcontractor must ensure that the proper repairs have been made prior to putting the equipment back into service.
- ❖ **Construction Material Handling Heavy Equipment**
 - ✓ No equipment may be modified without equipment manufacturer's authorization.
 - ✓ Rollover Protective Structures must be provided for all equipment as required.
 - ✓ Seat belts must be provided and used by operators of all equipment that has a Rollover Protective Structure.
 - ✓ All bi-directional equipment must be equipped with an operable horn that must be used as needed when the machinery is moving in either direction.
 - ✓ All bi-directional equipment must also have an operable alarm in addition to the horn.
 - ✓ All equipment must be provided with a multi-purpose (class A, B, and C) fire extinguisher mounted in an easily accessible location.
 - ✓ Braking systems, controls, safety devices must be maintained in effective operating condition.
 - ✓ The operator must inspect the equipment at the beginning of the shift and test for acceptable



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 26 of 162

- ✓ operation as per the equipment's manufacturer's instructions. Inspections must be documented and filed.
- ✓ Only qualified personnel must be allowed to operate equipment. Qualification must be documented and filed.

In case any worker violates any of the EHS rules identified by BHEL as above, following punitive action shall be taken:

First Offence	Second Offence	Third Offence	Fourth Offence
Oral warning	Gate Pass Punched	Gate pass punched (second)	Gate Pass Punched(third) and person sent out of the gate Photo of concerned worker to be displayed on Notice boards and prominent locations.

BHEL has the right to send out such person even earlier than fourth offence after considering the severity of the offence and/or the persons track record related to following general/EHS rules.

BHEL reserves right to expel even concerned supervisor or engineer as well in case of repeat of such cases of indiscipline.

Note:

The appellate authority in this case shall be the BHEL Site In-charge whose decision shall be final on the matter and binding on all parties.

8. PLANNING FOR HSE

A. Identifying Hazards / Risks & Aspects / Impacts and implementing control measures

1. Subcontractor shall identify all OHS Hazards and Risks applicable to all activities in scope as per *HSEP01: HSE Procedure for OHS Hazards and Risks*, and plan & implement the required control measures.
2. Subcontractor shall identify all Environmental Aspects and Impacts applicable to all activities in scope as per *HSEP02: HSE Procedure for Environmental Aspects and Impacts*, and plan & implement the control measures.

B. Register of Regulations:

Subcontractor shall prepare a register of applicable rules and regulations in the scope as per



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 27 of 162

HSEP03: HSE Procedure for Register of Regulations and plan to ensure compliance.

The detailed plans and registers in A and B to be submitted to BHEL for review and approval within 60 days of start of work at site.

Note: The plans above are dynamic and shall be periodically reviewed as per BHEL requirement.

8.1 MOBILISATION OF MACHINERY / EQUIPMENT / TOOLS

1. Subcontractor shall furnish to BHEL, the Test Certificates issued by the jurisdictional competent persons of machinery, equipment and other T&Ps to be deployed at site, before deployment. BHEL reserves the right to disallow the same if found non-conforming to HSE / legal requirements
2. As a further measure to ensure that machinery, equipment and tools being mobilized to the construction site are fit for purpose and are maintained in safe operating condition and comply with legislative and owner requirement, inspection shall be arranged by in-house expert / competent authority (preferable) for acceptance. **(Report Format: HSEP:14-F15)**
3. **The equipment considered for this purpose shall include all those in the T&P list in the tender document. Conventional Hydra crane with carriage in front shall not be permitted. Other models like FX or TRX series of Escorts or equivalent shall be permitted.**
4. In the course of work, the subcontractor shall notify the BHEL Engineer, of his intention to bring on to site any equipment or any container, with liquid or gaseous fuel or other substance which may create a hazard.
5. The Engineer shall have the right to prescribe the condition under which such equipment or container may be handled and used during the performance of the works and the subcontractor shall strictly adhere to such instructions.
6. The Engineer shall have the right to inspect any construction tool and to forbid its use, if in his opinion it is unsafe. No claim due to such prohibition will be entertained.
7. Following items should be only ISO certified and not more than 2 yr. of purchase
 - i. Chain pulley block
 - ii. Wire rope slings
 - iii. Grinding machine and wheel and buffing wheel
 - iv. Gas cutting equipment
8. Following equipment should not be more than 5 Yr. old
 1. Welding machine
 2. Vibrator Machine
 3. Concrete cutter
 4. DB/Electrical panel
9. **Office Infrastructure** - subcontractor shall arrange a computer / Laptop with Network



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 28 of 162

connection, chair and table for HSE Staff to facilitate HSE reporting and recordkeeping.

8.2 MOBILISATION OF MANPOWER

1. As a measure to ensure that manpower being mobilized to the construction site is fit and competent for safe working, screening arrangement shall be made by the sub-contractor to ensure fulfillment of contractual as well as legislative requirement by:
 - i. Ensuring the required qualification/ training/ certification/ license and experience for the job as per Section 7 of this document & applicable legal requirements
 - ii. **Medical Checkup:** Examination of medical fitness shall be conducted through qualified medical professional for all workers to be deployed. (Record: Format No. HSEP14:F02). For height workers, height phobia test to be carried out as qualification criteria.
 - iii. **Induction Training:** Induction training of all workers to be ensured as per clause 9.1 and HSEP04: *HSE Procedure for Training & Awareness* (Record: Format No. HSEP14:F03)

Only on successfully meeting above criteria, permanent gate passes to be issued.

2. The subcontractor shall strictly adhere to the maximum daily working hours and other requirements as per applicable laws and shall not engage any employee below 18 years of age.
3. The subcontractor shall take special care of the employees affected with occupational diseases under rule 230 and schedule II of BOCW Rules. The employees not meeting the fitness requirement should not be engaged for such job.
4. Ensure that the regulatory requirements of excessive weight limit (to carry / lift / move weights beyond prescribed limits) for male and female workers are complied with.
5. System for Issue of Gate Passes to authorized personnel only shall be ensured at site
6. The subcontractor shall keep accurate and updated records of all manpower preferably in soft form
7. The subcontractor shall ensure appropriate infrastructure for workers as per Clause 8.4.

8.3 PROVISION OF PPEs

1. Adequate numbers of Personnel Protective Equipment (PPEs), will be made available at site & their effectiveness and regular use by all will be ensured
2. The PPEs shall conform to the relevant standards as listed in Annexure 02, and bear ISI mark.
3. The following matrix recommends usage of minimum PPEs against the respective job. For details, the respective OCPs to be referred.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 29 of 162

Sl. No	Type of work	Suggested PPEs
1	Work at height	Double lanyard full body harness with rope grab (as applicable), retractable Fall arrestor (specific cases), Safety nets (single / double)
2	Concrete and asphalt mixing	Nose mask, hand glove, apron, gum boot, goggles
3	Welders/ Grinders/ Gas cutters	Welding/face screen, apron, hand gloves, nose mask and ear muffs if noise level exceeds 90dB. Helmet fitted with welding shield is preferred for welders, safety goggles
4	Stone/ concrete breakers	Ear muffs, safety goggles, hand gloves
5	Electrical Work	Rubber hand glove, Electrical Resistance shoes, Arc-flash resistant suit.
6	Insulation Work	Respiratory mask, Hand gloves, safety goggles
7	Grit/Sand blasting	Blast suit, blast helmet, respirator, leather gloves, safety goggles
8	Painting	Plastic gloves, Respirators (particularly for Spray painting)
9	Radiography	As per BARC guidelines
10	General	Helmets, Safety Shoes Reflective vests, ear plugs, nose masks, safety goggles

- The exact PPEs required for a particular task shall be chosen to ensure there are multiple lines of defense against accident or injury. All applicable safety precautions for a job shall be ensured notwithstanding the duration or perceived importance of the task.
- Additionally, the BHEL safety officer may demand additional PPEs based on specific requirement
- The applicability of PPEs shall be as per the concept of Hierarchy of controls, i.e.:
Elimination->Substitution->Engineering Controls->Administrative Controls-PPEs
- Relying solely on PPEs without other applicable controls to be strictly avoided.
- The issuing agency shall maintain register for issue and receipt of PPEs (Format No. HSEP: 14-F06A). All the PPEs shall be checked for quality before issue and shall be periodically re-checked. The users shall be advised to check the PPEs themselves for any defect before putting on. The defective ones shall be replaced.
- The body harnesses shall be serial numbered.
- All worker should wear reflecting Jacket during both shift Day/Night.
- Where workers are employed in sewers and manholes, which are in use, the subcontractor shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into manhole, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent incident to the public
- Besides the PPEs mentioned above, the persons shall use helmet, safety shoe and reflective vest at all times. The visitors shall use Helmet and any other PPEs as



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 30 of 162

deemed appropriate for the area of work.

13. Following color scheme for Helmets to be maintained:

- Workmen: Yellow
- Safety staff: Green or white with green band
- Electrician: Red
- Others including visitors: White

14. The Helmets shall have logo or name (abbreviation of agency name permitted) affixed or printed on the front along with the person's gate pass no. & blood group. An awarded worker shall have reflective logo

8.4 ARRANGEMENT OF INFRASTRUCTURE

The subcontractor is responsible for ensuring and maintaining the required HSE infrastructure at site as described in this Section

8.4.1 DRINKING WATER

- Drinking Water Storage Tanks shall be provided and maintained at suitable places at different elevations / locations to ensure easy accessibility. The tank/container shall be kept on a platform at an elevation of at least 2 feet and should be covered:



- Construction and Quantity:** The design of Drinking Water Storage Tank (DWST) shall be submitted to BHEL for approval prior to initiating construction. Provision of 5 liter water daily for each worker to be maintained.
- Labelling:** DWST should be labeled as "Drinking Water". Date of last cleaning, next due date shall be indicated on the container besides Date of source testing as per IS 10500.
- Cleaning of the DWST shall be ensured at least once in a week. Mild cleaning detergents as used for cleaning vessels shall be applied and scrubbers (3M or equivalent) shall be used for removing scales and deposits on the inside surface. The tank shall be thoroughly cleaned with potable water only before it is refilled.
- Suitability of the water source should be tested as per IS10500.
- For all tanks containing water unsuitable for drinking, prominent "Do Not Drink" signage shall be pasted in English, Hindi and local language.
- In Hot Work and other critical areas, drinking water shall be made available near the activity
- Provision of supplying drinking water to height workers and those working in difficult to reach



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 31 of 162

areas shall be made available through dedicated personnel.

- 8.4.2 **PROVISION OF LATRINES AND URINALS AT SITE** (Ref: Interstate Migrant Workmen (Regulation & Employment and Act, 1979) read with The Inter-State Migrant Workmen (Regulation of employment and conditions of service) central rules, 1980 (PI refer rule no. 42)

LATRINES

1. Latrines shall be provided in every establishment on the following scale, namely: -
 - a. Where females are employed, there shall be at least one latrine for every 25 females;
 - b. Where males are employed, there shall be at least one latrine for every 25 males:

Provided that where the number of males or females exceeds 190, it shall be sufficient if there is one latrine for 25 males or females, as the case may be, up to the first 100, and one for every 30 thereafter
2. Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have a proper door and fastenings.
3. Where workers of both sexes are employed there shall be displayed outside each block of latrine and urinal a notice in the language understood by the majority of the workers '**For Men Only**', or '**For Women Only**', as the case may be.
4. The notice shall also bear the figure of a man or of a woman, as the case may be.

URINALS

5. There shall be at least one urinal for male workers up to fifty and one for female up to fifty employed at a time:
6. Provided that where the number of male or female workmen, as the case may be, exceeds 500 it shall be sufficient if there is one urinal for every fifty females up to the first 500 and one for every 100 or part thereof thereafter.
7. The urinals shall be designed and located so as to ensure privacy.
8. In case a structure encompasses multiple floors, urinals shall be provided suitably for quick access
9. The latrines and urinals shall be conveniently situated and accessible to workers at all times at the establishment.
10. The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times.
11. Latrines and urinals other than those connected with a flush sewage system shall comply with the requirements of the public health authorities.
12. Water shall be provided by the means of tap or otherwise so as to be conveniently accessible in or near the latrines and urinals.

8.4.3 WASHING FACILITIES

1. In every workplace, adequate and suitable facilities for washing shall be provided and maintained.
2. Separate and adequate cleaning facilities shall be provided for the use of male and female workers. Such facilities shall be conveniently accessible and shall be kept in clean and hygienic



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 32 of 162

condition and dully illuminated for night use.

3. Overalls shall be supplied by the subcontractor to the workmen and adequate facilities shall be provided to enable the painters and other workers to wash during the cessation of work.

8.4.4 PROVISION OF REST SHELTER FOR WOKERS

Proper Sheds & Shelters big enough to accommodate all possible workers shall be provided for workers to rest during break. Taking rest at height, in activity area and other hazardous locations shall not be allowed.

The drawing of such sheds shall be submitted to BHEL for approval before construction.

8.4.5 MEDICAL FACILITIES

Refer Section B for applicability of requirements pertaining to Clause 8.4.5.1

8.4.5.1 MEDICAL CUM FIRST-AID CENTER

- a) A medical center shall be setup at site with basic facilities for handling medical emergencies. The medical center shall be developed independently by BHEL/an agency as specified in the contract and run jointly by all agencies on proportionate sharing basis as stipulated in the contract.
- b) A qualified medical professional, not less than MBBS, shall be deployed at medical center as stipulated in the contract.(Part-time or full time as decided at the site).
- c) There shall be a full-time trained first aider and a nurse. Depending upon the working hours at the site, First-aider shall be deployed accordingly.
- d) The center shall have all articles as per Schedule IV of BOCW(Central) Rules'1998. In addition,, one Stokes basket stretcher shall be available.
- e) An ambulance shall be deployed for every 1000 persons along with trained driver and accessories as per schedule V of Central BOCW Rules'1998. Depending upon the working hours at the site, First-aider shall be deployed accordingly.
- f) The center shall be adequately equipped for Resuscitation, Immobilisation, Dressing, dealing with poisoning cases including snake and insect-bites and sufficient stock of emergency medicines as prescribed by the qualified medical professional as per point (b)

8.4.5.2 IMPORTANT

- g) If there is no specific mention of responsibility of deployment or setting up of any of the above facilities and operating expenses thereof, BHEL site management shall have the liberty to give this responsibility to any of the contractors on cost sharing basis.
- h) Medical waste shall be disposed as per prevailing legislation (Bio-Medical Waste –Management and Handling Rules, 1998)
- i) Every injury shall be treated, recorded and reported.
- j) All First Aid injuries shall be recorded as per Format No. HSEP:14-F17
- k) List of qualified first aiders and their contact numbers to be displayed at conspicuous places.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 33 of 162

8.4.5.3 FIRST AID

A. In addition to 8.4.5.1 &2, The subcontractor with Boiler&ESP, TG, Civil shall:

1. Provide necessary first aid facilities for every work place.
2. Ensure availability of qualified First-aider throughout the working hours.
3. Every injury shall be treated, recorded and reported.
4. Refresher course on first aid shall be conducted as necessary.
5. List of qualified first aiders and their contact numbers to be displayed at conspicuous places.
6. All First Aid injuries shall be recorded as per Format No. HSEP:14-F17

B. FIRST AID BOX

1. The first aid box shall be maintained by first aider who shall always be readily available during the working hours of the work place.
2. **Details of First Aid Box:**
 - a) Details of contents of first aid box is given in **Annexure 03**. A slip of contents shall be pasted on the First Aid Box with following details:

Name, Quantity, Expiry Date, Checked by...
 - b) First Aider's name and contact no to be displayed on the box.
 - c) The first aid box shall be distinctly marked with a Green Cross on white background.
 - d) The box shall be properly secured with lock & key to avoid misuse
7. The first aid boxes should be placed at various locations so as to make them available within easy reach of hazardous activities and at the quickest possible time.
8. The subcontractor shall ensure that the Supervisors and Engineers are adequately trained for attending to any emergency.
9. Monthly inspection of First Aid Box to be conducted by the subcontractor as per Format no. HSEP:14-F01

8.4.5.4 HEALTH CHECK UP

The persons engaged at the site shall undergo health checkup as per the **Format no. HSEP:14-F02** before induction. The persons engaged in the following works shall additionally undergo regular health checkup using same Format at least once in a year:

Height workers	Drivers/crane operators/riggers	Confined space workers
Shot/sand blaster	Welding and NDE personnel	Any person referred by BHEL

8.4.5.4.1 HEIGHT PHOBIA TEST

1. The persons engaged in working at heights (above 2 meters) to be assessed for Height Phobia and associated conditions.
2. Such workers are to be allowed only on successful completion of this test, otherwise they shall be allocated ground based jobs. IDs / Height passes shall be issued to such workers.

8.4.6 PROVISION OF CANTEEN FACILITY



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 34 of 162

Minimum or better facilities to be ensured as per BOCW (Rule 244) / Factories Act, specially taking care of the following:

1. Canteen facilities shall be provided for the workmen of the subcontractor inside the project site.
2. Proper cleaning and hygienic condition shall be maintained.
3. Proper care should be taken to prevent biological contamination.
4. Adequate drinking water should be available at canteen.
5. Fire extinguisher shall be provided inside canteen.
6. Regular health check-up and medication to the canteen workers shall be ensured.
7. Canteen waste to be disposed of in compliance with law
8. Domestic LPG cylinder shall not be used
9. Canteen should be periodically inspected using standard checklist finalized along with BHEL

8.4.7 PROVISION OF ACCOMMODATION / LABOR COLONY

1. The subcontractor shall provide to every workman (within fifteen days of the commencement of the employment of migrant workmen):
 - a) In case he is accompanied by any other member of his family, a suitable barrack so as to accommodate one room having at least a floor area of 10 square meters, a verandah and adequate additional covered space for cooking food as well as one common sanitary latrine, one common bathroom for every three such quarters; and
 - b) In case he is unaccompanied by any other member of his family, a suitable barrack so as to accommodate not more than ten such migrant workmen, having at least a floor area of not less than 6.5 square meters for each such migrant workman making use of the barrack, a verandah and adequate additional covered space for cooking food as well as one common sanitary latrine and one common bathroom for every ten such migrant workmen
2. Every quarter and the barrack shall be so constructed as to afford adequate ventilation, protection against heat, wind, rain and shall have smooth, hard and impervious floor surface.
3. The quarters or the barracks, as the case may be, shall be at a convenient distance from the establishment and shall have adequate supply of wholesome drinking water.
4. The area in which the quarters and/or barracks are located as well as the latrines and bathrooms provided therein shall be kept in a clean and sanitary condition at all times.
5. Regular housekeeping of the labor colony shall be ensured.
6. Availability of Bathing/ washing bay to be ensured

7. Room ventilation and safe electrification to be ensured
8. MSDS of LPG shall be put up prominently and shall be included in the induction training also.
9. The labor colony shall be secure so that only authorized persons have access to it.
10. Availability of local market to be ensured by the Sub-contractor
11. A "Suggestion Register" shall be made available at the labor colony for workers. The feedback shall be reviewed on weekly basis and acted upon.
12. Labor colony shall be inspected fortnightly by Subcontractor Safety Officer & HR executive, and report submitted to BHEL as per Format No. HSEP:4-F16
13. **Facility of Crèches** – to be provided wherein more than fifty female workers are deployed
14. Provisions of Clause 8.4.1, 8.4.2 and 8.4.3 shall be applicable on labor colony as well

8.4.8 PROVISION OF EMERGENCY VEHICLE

Dedicated emergency vehicle shall be made available at workplace by subcontractor for evacuation of victim from site.

However, Ambulance shall be used exclusively for transporting victim to hospital

8.4.9 PEST CONTROL

Regular pest control should be carried out at all offices, mainly laboratories, canteen, labor colony and stores by the subcontractor.

8.4.10 SCRAPYARD

1. Scrapyard shall be developed by subcontractor to store metal scrap, wooden scrap, waste, hazardous waste.
2. Scrap/Waste shall be segregated as Bio-degradable and non-bio-degradable and stored separately.

8.4.11 ILLUMINATION

1. The subcontractor shall provide adequate lighting facilities e.g. flood lighting, hand lamps, area lights etc. to ensure adequate lighting at all work places & their approaches including passage ways as per IS: 3646 (Part-II) at all times. Indicative recommended values are given below:

S. No.	Location	Lux Level
A.	Construction Site	
1	Outdoor areas like store yards, entrance and exit roads	20
2	Platforms	50
3	Entrances, corridors and stairs	100
4	General illumination of work area	150
5	Rough work like fabrication, assembly of major items	150



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 36 of 162

6	Medium work like assembly of small machined parts	300
7	Fine work like precision assembly, precision measurements etc.	700
8	Sheet metal works	200
9	Electrical and instrument labs	450
B.	Office	
1	Outdoor area like entrance and exit roads	20
2	Entrance halls	150
3	Corridors and lift cars	70
4	Lift landing	150
5	Stairs	100
6	Office rooms, conference rooms, library reading tables	300
7	Drawing table	450
8	Manual telephone exchange	200

In case any area is not mentioned above, the applicable illumination for the same shall be specified by BHEL based on applicable standards and international norms

1. Level of illumination shall be checked periodically using a calibrated lux meter and recorded for each work area on minimum weekly basis as per Format No. HSEP:14-F21
2. Lamp (hand held) shall not be powered by mains supply but either by 24V or dry cells.
3. Lamps shall be protected by suitable guards where necessary to prevent danger, in case of breakage of lamp.
4. Emergency lighting provision for night work shall be made to minimize danger in case of main supply failure.

9. HSE TRAINING & AWARENESS

9.1 HSE INDUCTION TRAINING

1. All persons entering into project site shall be given HSE induction training before being assigned to work, which shall be imparted through audio-visual medium and shall be of minimum 2-hour duration.
2. Any single trainee batch size should not exceed 40.
3. Proper safety wear & gear must be issued to all the workers being registered for the induction (i.e., Shoes/Helmets/Goggles/Leg guard/Apron etc.)
 - i. They must arrive fully dressed in safety wear & gear to attend the induction.
 - ii. Any one failing to conform to this safety wear& gear requirement shall not qualify to attend.
4. In-house induction training subjects shall include but not limited to:



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 37 of 162

- i. Briefing of the Project details and importance of employee for the project and for the nation.
 - ii. Safety related cardinal rules, objectives and targets.
 - iii. Site HSE rules.
 - iv. Site HSE hazards and aspects.
 - v. First aid facility.
 - vi. Emergency Contact No. and procedures
 - vii. Details of Fire prevention and emergency response systems & procedures at site.
 - viii. Requirement of incident / near miss reporting by all.
 - ix. Accident case studies
 - x. Rules to be followed in the labor colony (if applicable)
5. Evaluation to be carried out after training and induction training to be repeated in case of failure of participant in evaluation
6. On completing subcontractor's in-house HSE induction, each employee shall sign an induction training form (format no. HSEP: 14-F03) to declare that he had understood the content and shall abide to follow and comply with safe work practices. They may only then be qualified to be issued with a personal I.D. card, for access to the work site (provided Health Checkup is over).

9.2 HSE TOOLBOX TALK

1. HSE Tool Box talk shall be conducted by frontline foreman/supervisor of subcontractor to specific work groups daily prior to the start of work. The agenda shall consist of the following:
 - i. Visual checkup of workers regarding health, any signs of fatigue, intoxication etc.
 - ii. Details of the job being intended for immediate execution.
 - iii. The relevant hazards and risks involved in executing the job and their control measures.
 - iv. Specific site condition to be considered while executing the job like high temperature, humidity, unfavorable weather etc.
 - v. Recent non-compliances observed.
 - vi. Appreciation of good work and warning for any unsafe acts done by any person.
 - vii. Any doubt clearing session at the end
2. Record of Tool box talk shall be maintained as per Format no. HSEP:14-F04

9.3 TRAINING ON HEIGHT WORK

Due to the large percentage of fall from height in incidents, training of minimum 2-hour duration on height work shall be imparted to all height workers by in- house / external faculty for every batch of new inductees. The training shall include following topics:

1. Inspection of work area, access and egress w.r.t height hazards
2. Use of PPEs; use of fall arrester, retractable fall arrester, life line, safety nets etc.
3. Safe climbing through monkey ladders.
4. Inspection of PPEs.
5. Medical fitness requirements.
6. Mock drill on rescue at height.
7. Dos & Don'ts during height work.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 38 of 162

8. Accident case studies

In case, above is organized by BHEL, proportionate cost shall be borne by subcontractors

9.4 HSE TRAINING DURING PROJECT EXECUTION

1. HSE training shall be arranged by subcontractor as per the need of the project execution and recommendation of BHEL.
2. The topics of the HSE training shall be as follows but not limited to:
 - i. Hazards identification and risk analysis & Identification of Environmental Aspects / Impacts
 - ii. Work Permit System
 - iii. Learning from past incidents
 - iv. First aid, Firefighting & Fire-warden training
 - v. EMS and OHSMS
 - vi. T & Ps fitness and operation
 - vii. Electrical & Chemical safety
 - viii. Welding, NDE & Radiological safety
 - ix. Material handling.
3. Safety awareness and on-the-job training programmes shall be carried out at site for all workers periodically. Periodicity to be decided by BHEL but shall be minimum once in six months
4. Penalty Training – In case of any incident, the involved person, group or agency shall undergo a penalty HSE training for a minimum period of 2 hrs or as decided by BHEL.
5. In case it is not possible to provide training to all workers at once, same shall be imparted in Batch-wise manner so as to cover all workers with specified periodicity.
6. An up-to-date record to be maintained with attendance of participants and trainers preferably in soft copy as per Format No. HSEP:14-F03.
7. Every employee of agency should be provided at least 2 hr. safety training in every month.

In case, above is organized by BHEL, proportionate cost shall be borne by subcontractors

10. HSE PROMOTION: SIGNAGE, POSTERS, COMPETITION, AWARDS ETC

10.1 DISPLAY OF HSE POSTERS AND BANNERS

Site shall arrange appropriate posters, banners, slogans in local/Hindi/English languages at work place.

10.2 DISPLAY OF HSE SIGNAGE

Appropriate HSE signage shall be displayed at the work area to enhance awareness of HSE workmen and passersby about the work going on and do's and don'ts to be followed.

10.3 COMPETITIONS ON HSE, AWARDS & REWARDS



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 39 of 162

1. Subcontractor shall arrange competitions (slogan, poster, essay etc.) on HSE for workers and employees from time to time (Safety day, World Environment Day etc. minimum one such function each month) and winners will be suitably awarded during the functions.
2. Subcontractor shall identify workers following good HSE practices and reward them from time to time as encouragement to follow good HSE practices.
3. Alternatively, if a common monthly function is organized at site, subcontractor shall participate in the same so that a minimum frequency of one such function per month is maintained.

10.4 HSE AWARENESS PROGRAMMES

Subcontractor shall arrange HSE awareness programmes periodically on different topics including medical awareness for all personnel working at site from time to time including officials involved in execution.

11. HSE COMMUNICATION AND PARTICIPATION

11.1 MONTHLY HSE REPORTING

1. HSE activities shall be reported to BHEL monthly as per Format no. HSEP: 14-F05. The reporting medium can be hard/soft as per BHEL requirement.
2. The period of reporting shall be 25th of the preceding month to 24th of the present month and report shall be submitted by the end of the calendar month or as conveyed by BHEL.
3. BHEL can modify the reporting requirements as per requirement

11.2 HSE EVENT REPORTING

1. Important HSE events like HSE Training, Mock / Fire/Rescue Drills, Medical camp etc. organized by subcontractor shall be reported to BHEL in detail with photographs
2. Celebration of important days like National Safety Day, World Environment Day etc. shall also be reported likewise.

11.3 HSE INCIDENT REPORTING

All incidents (near misses, property damage, first-aid cases, minor, major and fatal incidents) shall be reported to BHEL as they happen through SMS and Hard/Soft copy as per Format No. HSEP: 14-F22

11.4 HSE SUGGESTIONS

All workers and employees to be encouraged to provide suggestions for improvement in



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 40 of 162

Health, Safety & Environment at site. The suggestions to be recorded in a "Suggestions Register". Suggestions to be reviewed and those having potential of significant beneficial effects are to be implemented, and recognition / award to be given to the individual.

11.5 CLIENT COMMUNICATON

All HSE related communication from BHEL, customer / external statutory and regulatory agencies to be handled on priority. The relevant issues to be resolved in expeditious manner

11.6 RECORDS OF COMMUNICATON

Records of all communication and their responses as detailed above shall be maintained by subcontractor in hard / soft copy and produced when required.

12. INCIDENT REPORTING, INVESTIGATION & CORRECTIVE ACTION

1. A conducive environment for reporting of near misses and other incidents shall be developed at site through system of rewards etc.
2. Priority to be given to ensure medical treatment of the victim. Victim to be given immediate First Aid and transported to Medical Facility in a well-equipped Ambulance
3. All incidents, as they happen, shall be reported to BHEL immediately over phone/SMS/Whatsapp/mail and then in Format No. HSEP:14-F22 within 24 hrs. of occurrence. Immediate SMS shall be sent to concerned Package In-charge with following Details:

- a. Project & Customer Name:
- b. Subcontractor Name & Scope:
- c. Incident Area:
- d. Number of Injured / Fatalities:
- e. Date & Time of Accident:
- f. Incident Description in few lines:

No incident shall be hidden

4. Records of all incidents shall be maintained in hard / soft copy as per Format No. HSEP:14-F23.
5. For all incidents:
 - a. The incident area, equipment / tools involved, documents & records etc. shall be maintained as-it-is pending investigation
 - b. Root Cause Analysis (RCA) to be conducted and corresponding Corrective / Preventive Action (CAPA) ensured
 - c. Responsibility shall be assigned and action to be taken against the erring individual
 - d. In case presence of manufacturer of the equipment involved is required, subcontractor will arrange the same



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 41 of 162

e. All expenses pertaining to the RCA / CAPA shall be borne by the subcontractor

6. RCA and CAPA reports of all near misses and minor injuries shall be identified and report submitted to BHEL within 7 days of occurrence.
7. For incidents, where worker does not resume duty within 48 hours of occurrence, Joint investigation along with BHEL shall be conducted within 7 days, and CAPA ensured.
8. Corrective action shall be immediately implemented at the work place. Work shall be put on hold in the area till corrective actions are verified by BHEL
9. All incidents, their Root Cause Analyses and Corrective actions shall be recorded, and analyzed so as to identify weak areas and actions to be taken to reduce the incident trend.

13. SAFETY DURING WORK EXECUTION

13.1 HSE SYSTEMS AND PROCEDURES

BHEL Power Sector HSE Management System (HSEMS) shall be referred for controlling hazards, aspects, and carrying out HSE activities at site. Subcontractor shall get familiar with and follow the HSEMS documents provided by BHEL which include the follows:

13.1.1 HSE PROCEDURES:

All HSE Procedures defined in HSEMS, as referred in various sub-clauses of this Section as given in Annexure 01

13.1.2 PERMIT TO WORK (PTW) SYSTEM

1. The following activities shall be carried out by the subcontractor strictly after obtaining Permit to Work (PTW) from BHEL
 - i. General Work Permit (**Format No. HSEP14-FP01**)
 - ii. Height working (**Format No. HSEP14-FP02**)
 - iii. Hot working (**Format No. HSEP14-FP03**)
 - iv. Confined space Work (**Format No. HSEP14-FP04**)
 - v. Excavation more than 2-meter depth (**Format No. HSEP14-FP05**)
 - vi. Radiography / Radiation Work (**Format No. HSEP14-FP06**)
 - vii. Heavy / Complex / Critical Lifting Activity (**Format No. HSEP14-FP07**)
 - viii. Night / Holiday Work (**Format No. HSEP14-FP08**)
 - ix. Material Loading / Unloading Permit (**Format No. HSEP14-FP09**)
 - x. Grating / Safety Net / Safety Facility Removal Permit (**Format No. HSEP14-FP10**)
 - xi. Live Electrical Maintenance etc. - Lockout / Tag (**Format No. HSEP14-FP07**)



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 42 of 162

2. The above list is not exhaustive. BHEL reserves right to introduce additional Permits or modify requirements for usage of existing Permits. The conditions for using the Permit are specified in the Format (General Requirements).
3. Where customer is having separate Work Permit System the same shall be followed in conjunction to ensure all activities and checks are covered in all systems.
4. Permit applicant shall apply for work permit of particular work activity at particular location before starting of the work along with Job Hazard Analysis.
5. All Permit signatories shall physically visit the work area and check that all the safety control measures necessary for the activity are in place. Only then the permit shall be issued.
 - a. Signatory shall physically visit the area of work and ensure all required safeguards before signing the Permit
 - b. Signatory shall periodically visit the area to confirm the availability of required safeguards throughout the currency of the permit
 - c. In case any Permit requirement is not available, work will be stopped till it is made available
6. Permit holder shall implement and maintain all control measures during the period of permit. The permit will be closed after completion of the work and submitted to BHEL.

13.1.3 Operational Control Procedures

1. All applicable OCPs (Operational Control Procedures) as identified from outcomes of HIRA, Aspect / Impact studies and BHEL inputs will be followed by subcontractor. This will be done as part of normal scope of work.
2. Illustrative list of such OCPs is given in Table 13.1 and same will be made available to subcontractor by BHEL during work execution at site.
3. In case any other OCPs are required or existing ones need to be modified in order to control the risks / impacts associated with any activity during the execution of work subcontractor shall prepare / update and follow the same with information to BHEL.

Table 13.1 - LIST of Reference OCPs

No.	Topic	No.	Topic	No.	Topic
0	General Safety	20	Oil flushing	40	Gas distribution test
1	Handling of chemicals	21	Alkali boil out	41	Cleaning of Hotwell / Deaerator
2	Electrical safety	22	Steam blowing	42	Electrical maintenance
3	Energy conservation	23	Working in confined area	43	O&M of control of AC plant & system
4	Welding and gas cutting operation	24	Operation of passenger lift, material hoists & cages	44	Material preservation
5	Fire safety	25	Vehicle/ Crane maintenance	45	Electro-resistance heating
6	Use of hand tools	26	Radiography	46	Blasting
7	First aid	27	Waste disposal	47	Transformer charging



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 43 of 162

8	Food safety at canteen	28	Handling & storage of mineral wool	48	Handling of battery system
9	Use of cranes	29	Working at night	49	DG set
10	Storage and handling of gas cylinders	30	Computer operation	50	Sanitary maintenance
11	Manual arc welding	31	Storage in open yard	51	Piling rig operation
12	Use of helmets	32	Drilling, reaming and grinding(machining)	52	Passivation
13	Good house keeping	33	Stress relieving	53	EDTA Cleaning
14	Safe excavation	34	Hydraulic test	54	Chemical cleaning of Pre boiler system
15	Working at height	35	Trial run of rotary equipment	55	Boiler Light up
16	Filling of hydrogen in cylinder	36	Batching	56	Rolling and Synchronization
17	Illumination	37	Cable laying/tray work	57	Loading of Unit
18	Handling and erection of heavy metals	38	Spray insulation	58	Air compressor
19	Acid cleaning	39	Compressor operation	59	Hydra Operation

13.2 ACTIVITY SPECIFIC REQUIREMENTS FOR SAFETY:

All Work shall be commenced only after taking the respective Work Permits (as applicable) and precautions as per relevant codes, systems and OCPs in order to ensure safe conditions throughout the duration of work. Additionally, activity specific safeguards as per this section shall be followed.

13.2.1 WORK AT HEIGHT:

1. All work at height above 2 meter above ground level without complete platforms, handrails and other related fall protection shall require a work permit in the prescribed form. This shall require approval by the competent authority. The HSE officer of sub-contractors shall follow the checklist religiously by physically verifying the condition of the work area before recommending for approval.
2. Prior to the start of work at elevation, the HSE Officer involved with the work must meet the work supervisor to review the scope of work, and must review all the possible fall hazards and effective safety responses. The evaluation / analysis must be documented and kept on file and on site by the HSE Officer.
3. Whenever a fall hazard or other exposure exists for working at heights more than 2.0m/6ft, the nature and scope of work will be evaluated for conditions and environmental factors before selecting the appropriate fall protection system (active, passive or a combination of measures, as appropriate).



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 44 of 162

4. All Engineering and Administrative Controls including barricading, safe platform, Safety Nets etc. shall be made available at work location. Under no circumstances, there shall be total reliance on PPEs only

5. Safety Nets

- a. Contractor shall maintain sufficient stock of Safety Nets for deployment
- b. Safety Nets as per IS: 11057:1984 should be used extensively for prevention / arrest men and materials falling from height.
- c. The safety nets shall be fire resistant, duly tested and shall be of ISI marked.
- d. Safety Nets shall be deployed below all platforms where height work is envisaged. Duration of work, delay shall be no excuses for non-installation of Safety Net
6. Reaching beyond barricaded area without lifeline support, moving with support of bracings, walking on beams without support, jumping from one level to another, throwing objects and taking shortcut must be discouraged.
7. Monkey Ladder shall be fitted with cages. Rope ladder should be discouraged.
8. In case of pipe-rack, persons should not walk on pipes and walk on platforms only.
9. In case of roof work, walking ladder/ platform should be provided along with lifeline and/ or fall arrestor.
10. For chimney or structure painting, both hanging platform and men should be anchored separately to a firm structure along with separate fall arrestor.
11. The procedures for the safety response to identified fall hazards developed and rescue plans must be reviewed with all individuals exposed to the hazards.
12. The HSE Officer must establish an inspection process of fall protection systems. Some equipment requires documented inspections by its manufacture on a regular schedule. Such equipment must have evidence of the inspection and re-certification process on it. This information must be reviewed before the equipment is actually used. Individuals must visually inspect the fall protection equipment before each use. Failure to complete this inspection process could result in serious injury or death.
13. Immediately remove from service any fall protection equipment that is identified as defective, damaged, or has been subjected to an impact. Damaged fall protective equipment must be destroyed to prevent re-use and not be discarded into trash containers, as the worn or damaged equipment could be unintentionally re-used.
14. Aerial lifting devices, excluding scissor lifts require the use of full body harnesses and lanyards in any elevated position.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 45 of 162

13.2.1.1 Personnel fall protection system must include:

a. Safety Harness

All height workers must use Safety harness with double lanyards. The primary lanyard is never unhooked until the secondary lanyard is secure. The design of the working platform should be such that **under no circumstances, worker should have both lanyards unhooked while at height.**

b. Lanyard

- i. The type of work and the environment conditions determine lanyard and lifeline selection. If welding, chemical cleaning that may damage lanyards, connectors or lifelines, sandblasting, etc., either protect the components or use more appropriate type of system.
- ii. Lanyards and lifelines must incorporate, or be used with, an appropriate deceleration (shock absorbing) device. Deceleration devices include rope grabs, rip-stitch lanyards, specially woven lanyards, tearing, or deforming lanyards, automatic self-retracting lifelines and lanyards which dissipate or limit the energy imposed on the employee during fall arrest.
- iii. Once in use, the system's effectiveness is to be monitored. In some cases, a program for cleaning and maintaining the system may be necessary. Lanyard and lifelines must use locking snap hooks only and under no circumstances must two lanyard snap hooks be connected.

c. Lifeline

All lifelines in general are to be made of min 8mm dia steel rope (plastic coated) and tied to columns with 3 clamps at each end. Wherever columns are not available to tie the lifelines, the vertical posts as per the design below are to be provided after carrying out drop load test initially. A load of 240kg to be dropped off the mid-point of lifeline in this test.

d. Lifeline Post

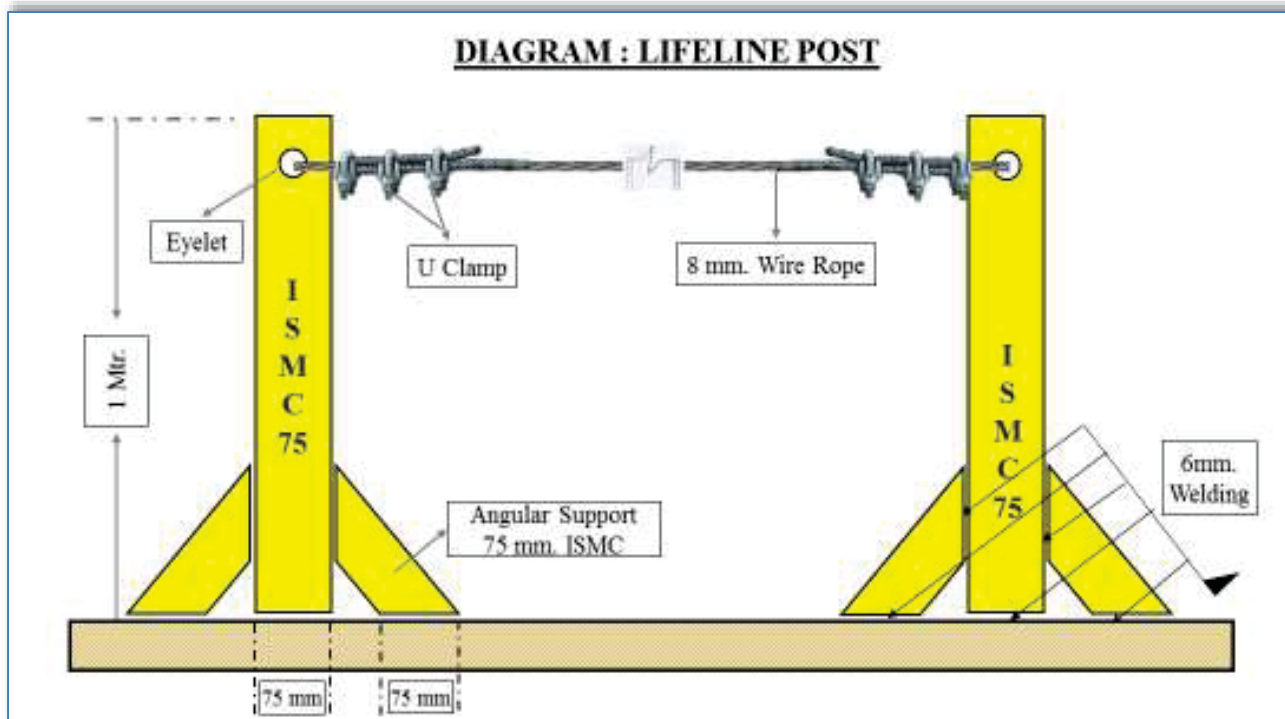


Fig. 13.2.1.1 Lifeline Post

- i. The support at vertical post shall be fixed at end-to-end. The maximum length of one end to another end shall be 18 meters
- ii. If the length of a lifeline is more than 18 meters, then intermediate vertical post(s) are to be used. Such intermediate post(s) will act as supports and the lifeline rope should simply pass through the eyelets (holes) of such supports without being anchored
- iii. The lifeline need not be wrapped / clamped to any intermediate post
- iv. Such intermediate posts must be used at an interval of every 18 meters
- v. The post(s) in which the original lifeline is to be installed should be capable of sustaining a tensile stress of 2268 Kgs
- vi. In a horizontal lifeline installation, maximum allowable sagging is 500-600 mm
- vii. For a single spun lifeline, no more than 2 persons are allowed to work; for more than two workers, another lifeline should be installed
- viii. Horizontal lifeline should be so installed that it does not impede safe movement of workers
- ix. All the installation work must be carried out by competent person with adequate knowledge

13.2.1.2 Working Platform

1. Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform gangways provided is more than 3.6 m above ground level or floor level, they shall be closely boarded and shall have adequate width, which shall not be less than 750 mm and be suitably fenced.

2. Precautions against the fall of Materials, Persons and Collapse of Structures



**POWER
SECTOR**

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date: 25.04.19
Page 47 of 162

- i. Every opening in the floor or a building or in a working platform shall be suitably barricaded to prevent the fall of persons by providing suitable fencing or railing whose minimum height shall be 90 cm.
- ii. Adequate precautions should be taken such as the provision of fencing, or barriers to protect any person who might be injured by the fall of materials, or tools or equipment being raised or lowered. Cradle may be used for lifting materials - however this shall be made of MS angles and flats only and duly certified by the HSE officer. Operators may also use designed containers for lifting small tools.
- iii. Guardrails (including scaffolding) erected over/adjacent working areas must have the guardrails screened (opening < 0.5), to prevent material from falling outside the platform/decking.
- iv. Guardrails must be able to withstand a 200-pound force exerted in any one direction.
- v. Where necessary to prevent danger, guys, stays or supports should be used or other effective precautions should be taken to prevent the collapse of structures or parts of structures that are being erected, maintained, repaired, dismantled or demolished.
- vi. All openings through which workers are liable to fall should be kept effectively covered or fenced and indicated in the most appropriate manner.
- vii. Guardrails and toe-board/barricades and sound platform conforming to IS: 4912-1978 and other Indian laws and regulations as depicted below should be provided.

Guardrail system

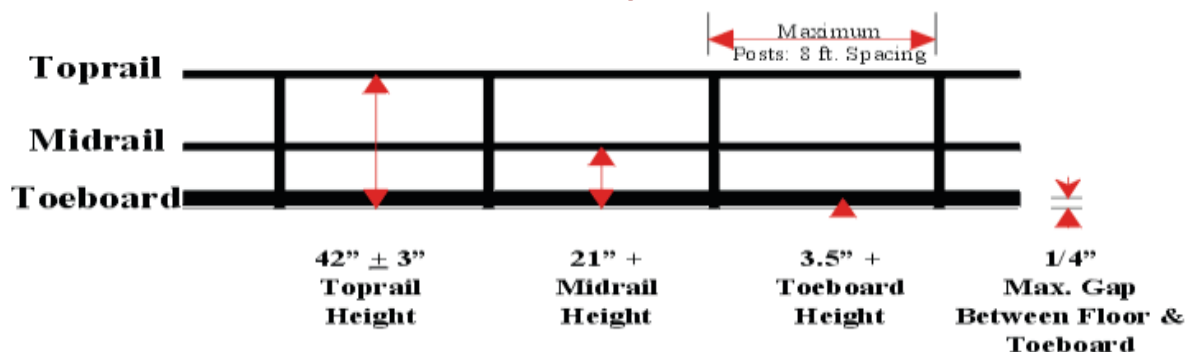


Fig. 13.2.1.2 Guard Rail System

- viii. Guardrails shall be provided to protect workers from falling from elevated work places. The rails are generally made of MS pipes of suitable dia. Rebar shall not be used for any handrails, ladder or cover purpose. Wherever the guard-rails and toe-boards cannot be provided:
 - a. adequate safety nets or safety sheets shall be erected and maintained; or
 - b. adequate safety harnesses shall be provided and used and / or
 - c. adequate fall arrestor shall be provided and used.

As mentioned under PPE clause, all these PPEs shall be defect free and regularly inspected for any defect. The full body safety harness shall have double lanyard only with max 1.8m length.

- ix. The monkey ladders shall have sufficient fall arrestors. Adequate lifelines of 8mm steel wire



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 48 of 162

rope shall be provided across the work area.

- x. The HSE officer shall recommend appropriate PPEs after analyzing hazards and risks involved.

13.2.1.3 Scaffolding

All scaffolds shall be conformant to the relevant standards including IS 3696 and IS 4014 as applicable. A sketch of the scaffolds proposed to be used shall be prepared and approval of the BHEL Engineer obtained prior to construction / use.

General

1. The scaffolding work must be carried out by a competent person, who shall train the scaffold users on safety aspects
2. All scaffolds shall be erected / dismantled by scaffolding crew under direct supervision of competent scaffolding supervisors.
3. All scaffolds shall be capable of supporting 4 times maximum intended load and erected on sound, rigid footing, capable of carrying the maximum intended load without settling or displacement. Bamboo scaffolding is not permitted for use on site.
4. Each employee on the scaffold shall use an approved safety harness attached to an independent lifeline. The lifeline is to be securely attached to substantial members of the structure (not the scaffold itself) or to securely rigged lines, which shall safely suspend a worker in event of a fall.
5. Guard rails and toe boards shall be installed on all open sides and ends of platforms more than (2) meters above ground or floor
6. Scaffold planks must be at least 5 cm x 25 cm (2" x 10") full thickness lumber scaffold grade or better.
7. Scaffold planks shall not span distances greater than 2.5 meters (8 feet).
8. Scaffold planks shall extend over end supports not less than 6 inches nor more than 12 inches and be secured to the scaffold. Scaffolding and accessories with defective parts shall be immediately repaired or replaced.
9. All scaffolding must be a minimum of two planks wide. No one may work from a single plank.
10. Scaffold planks must be inspected before use. Planks that have been damaged must be removed from the site.
11. Access ladders must be provided for each scaffold. Climbing the end frames is prohibited unless the design incorporates an approved ladder.
12. Adequate mudsills or other rigid footing capable of withstanding the maximum intended load must be provided.
13. Scaffolds more the 6 meters (20 feet) in height must be tied to the building or structure at intervals which do not exceed 4 meters (13 feet) vertically and 6 meters (20 feet) horizontally.
14. Do not overload scaffolds. Material should be brought up as needed. Scaffolding must not be loaded in excess of its rated capacity.
15. Barrels, boxes, kegs, blocks or similar unstable object must never be used as work platforms or to support scaffold.
16. Where persons must work under or pass under a scaffold then a 18 gauge wire mesh screen must be installed between the toe board and guard rail.
17. Employees exposed to overhead hazards while working on a scaffold will be protected by 5 cm (2") thick planks.
18. Wooden/bamboo ladders shall not be allowed at any cost. Ladder's rungs shall be fitted /welded properly. Before every use the rungs should be checked for safe use.



**POWER
SECTOR**

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date: 25.04.19
Page 49 of 162

19. Wooden scaffolds shall not be used in areas where fire / fire products are expected
20. Ropes made of jute / Plastic and other fire prone material shall not be used to tie up scaffolding components together
21. The platform should have permanent hand rail and mid rail with Toe board without fail.
22. All platforms are to be tightly planked for the full width of the scaffold, except as may be necessary for entrance openings. Platforms shall be secured in place.
23. On suspension scaffolds designed for a working load of 500 pounds, no more than two workers are permitted to work on the scaffold simultaneously. On suspension scaffolds with a working load of 750 pounds, no more than three workers are permitted on the scaffold simultaneously.

24. Requirements for different types of Scaffolds:

A. Suspended Scaffold

- i. Suspended scaffolds are platforms suspended by ropes, or other non-rigid means, from an overhead structure.
- ii. Requirements for use are to be preapproved by HSE Head, under a specific Permit to Work.

B. Rolling Scaffolds

- i. The height of rolling scaffolds shall not exceed three times the minimum base dimension.
- ii. The minimum base dimension of rolling scaffold will be 1.25 meters (4 feet).
- iii. Adequate help must be provided when moving a rolling scaffold.
- iv. Secure or remove all loose materials, equipment and tools before moving a rolling scaffold.
- v. No one is permitted to ride a rolling scaffold when it is being moved. Castor brakes must be locked-on when the scaffold is not being moved.

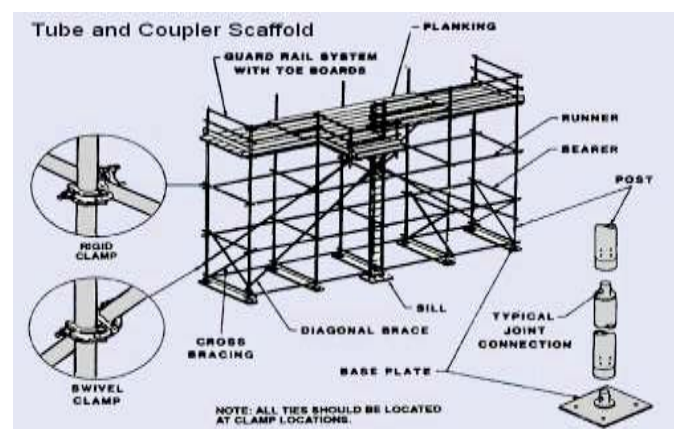
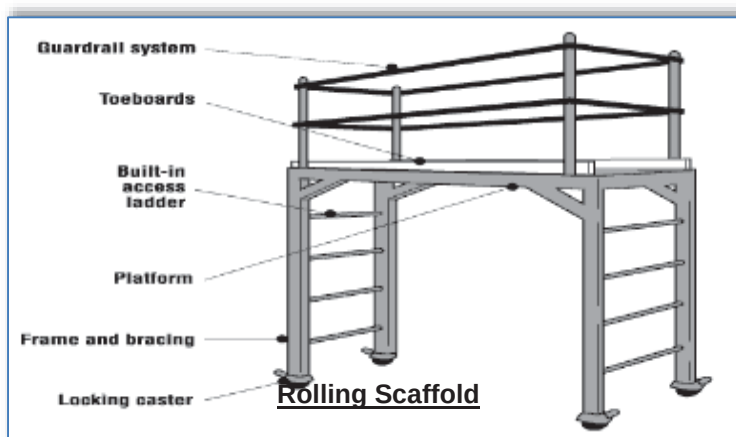


Fig. 13.2.1.3 Types of Scaffolds

25. Scaffold Tagging

Scaffolds being erected, modified or dismantled must be tagged as suitable for use. The scaffolds can only be accessed by those involved with the process.

GREEN scaffold tag- shall be fixed when scaffold is complete and safe for use, signed and dated by

the scaffolding competent person daily.

RED scaffold tag – to be fixed if scaffold is in some way defective and cannot be used or is still under erection.

Examples of scaffold tags:



Fig. 13.2.1.4 Scaffold Tagging

13.2.1.4 Ladder Safety

A sketch of the ladders proposed to be used shall be prepared and approval of the BHEL Engineer obtained prior to construction / use

Safe Use of Ladders:

1. Fall protection is required when working on a ladder above 2 meters and when climbing above nearby guardrails.
2. Ladders must be inspected prior to use and by a competent person quarterly, with documentation.
3. Use portable ladders for height up to 4 M only
4. Provide fixed ladders for height above 4 M
5. Place the ladder at an angle of 75 degrees (approx.) from the horizontal (1:4)
6. Extend ladder at least 1 M above the top landing
7. Secure top and bottom of the ladder firmly to prevent displacement- anti skid lining at the bottom
8. Ensure that the width of the ladder is not less than 300 mm and distance between rungs is not more than 300 mm
9. Provide landings of minimum size 600 x 600 mm at intervals not more than 6 M for fixed ladders. Check the ladders daily for any defects
10. Ensure that the areas around base and top of the ladder are clear. Getting on and off the ladder is more hazardous than using it. Use a mudsill if the ladder is to rest on soft, loose or rough soil
11. Do not use ladders of conducting material near power lines, and only use ladders near power line or other energize system with exposed parts if they are confirmed locked-out and de-

energized.

12. Stand no higher than the fourth rung from the top for carrying out any job standing on a ladder.
13. Never reach out from a ladder to perform work where your belt buckle protrudes past the ladder rung.
14. Always face the ladder while climbing up or down
15. Maintain three-point contact while climbing up or down a ladder i.e. two hands and one foot or two feet and one hand on the ladder at all the times.
16. Avoid climbing up or down a ladder while carrying anything in hands. Lift tools, equipment and materials with a rope.
17. Work from portable and extension ladders near guardrail where fall expose exists over the guardrail regardless of height, and above 2.0 mtr. heights from the working/walking surface will require the use of personal fall arrest equipment

13.2.2 EXCAVATION & CIVIL WORKS

All safety precautions shall be taken for foundation and other excavation marks as per IS-3764.

13.2.2.1 Excavation

The following safety measures are to be ensured before and during excavation:

1. All Excavation activities more than with depth of 1.22 meter or more shall require and Excavation Work Permit
2. Check for underground utilities like electrical / telephone cables, sewage, water lines and proper care has to be exercised to protect and prevent damage to it
3. Proper and adequate slope is maintained while excavating
4. Adequate shoring or sheeting is done wherever require to prevent soil sliding
5. Safe access through ladder or steps for exit & entry to excavation
6. No material /excavated soil is kept within one meter from the edge
7. Safe way is planned and provided for movement of HEM /transport equipment near excavation
8. Safety helmet and shoes/gum boots are provided and worn by the workmen at excavation works
9. Dewatering arrangement is made where water seepage is prevailed.
10. Stop blocks are provided to avoid vehicles reversing into the excavated trenches
11. Danger signs /Caution boards are displayed at work spot
12. Barricading is provided at excavated pits



HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-ER
Rev.: 00
Date: 25.04.19
Page 52 of 162

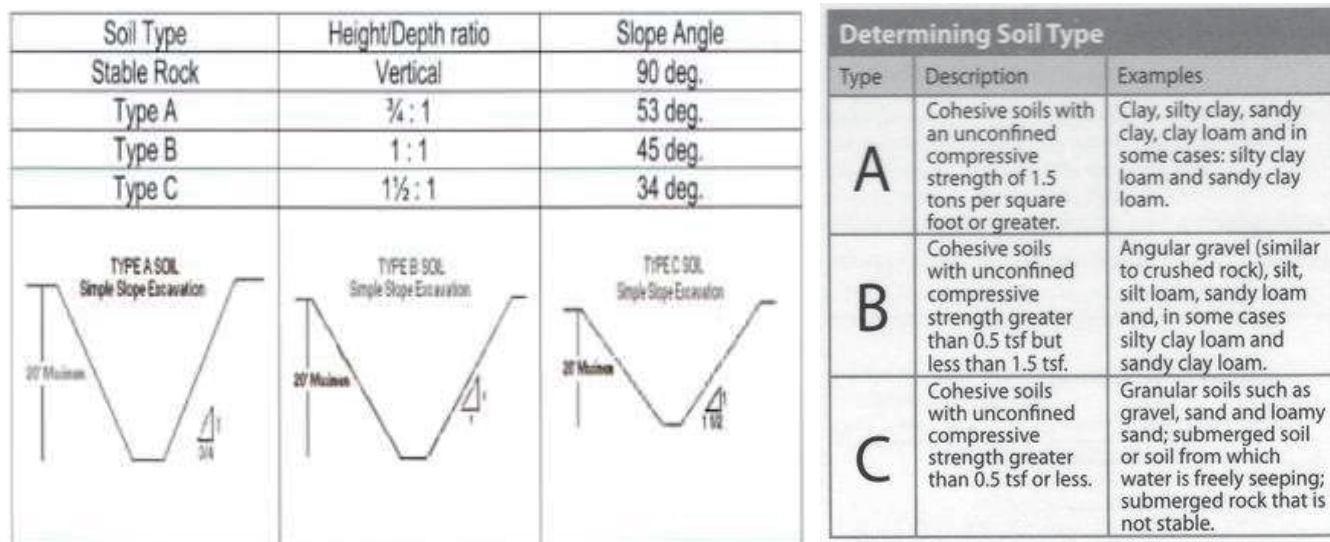


Fig. 13.2.2.1 Excavation Reference

13.2.2.2 Piling

Ensure the following precautionary measures before starting piling works:

1. Inspection of piling equipment by responsible person for its condition before initiating piling operation.
2. Checklist and OCP for piling to be prepared using manufacturer's instructions and used
3. Testing and its certification wire ropes, slings, D-shackles, chain pulley blocks using in the process of piling work by competent person
4. Adequate support and secured foundation of the piling equipment to avoid toppling
5. Hoses should be lashed and adequately secured
6. Proper work platform is to be provided on piling frame
7. Safe work procedures and close supervision to prevent unsafe acts of operators/any unsafe conditions that may arise
8. Only experienced and trained operators are engaged for the piling operation
9. Provision of Personal Protective Equipment (PPE) like safety shoes/gumshoes/safety helmet/safety belt etc. and its use by their workmen.
10. Special care and precautions If work is near electrical live cables/ electrical equipment
11. Cordoning of work area to prevent un authorized entry
12. Guarding of revolving parts
13. Specific measures to prevent over turning of pile driver/missing of hammer/ hammer movement out of range

13.2.2.3 Batching

Following Safety considerations for batching plant are to be ensured:

1. Modern type batching plant should be used in which all the moving parts are protected and



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 53 of 162

emergency and safety features are incorporated.

2. Installation of external Electric moto-vibrators in the feeding hopper of all batching plants to reduce human intervention.
3. Installation of safety devices like pull-chord on both the sides of conveyor for stopping the conveyor in emergency
4. Workers carrying cement / sand to be given appropriate PPEs like respiratory masks & gloves.
5. Conveyor belt/rotating parts must be guarded properly.
6. Safety awareness shall be inculcated in workmen about the risk involved in rotating parts.
7. The agency shall ensure to erect the batching plant as per drawing including installation of all safety devices as provided by manufacturer and witnessed by BHEL Engineer in charge before starting of machine in future.
8. Safety audit to also focus on Batching plant.
9. The site shall impose penalty on the agency who has violated the safety norms as per contract.

13.2.2.4 Mobile Plant

Mobile plant includes tractors, trailers, dumpers, excavators, bulldozers, road rollers etc. for earthmoving purpose and concrete mixers, concrete transit mixtures, concrete pumps etc for concreting purpose. Due to the very nature of their function and movement in difficult terrains, congested areas, working in tandem with manual work and other operations the danger is inherent. Reverse horn is compulsory for all earth moving machineries.

Following Safety measures to be ensured for Mobile Plant:

1. Where movement around site is involved, routes should be planned, obstruction free and well maintained
2. Observe specified speed limits
3. Operating personnel should be aware of associated risks and its preventive measures
4. Only experienced, trained and authorized persons with valid license (wherever applicable) should operate the mobile equipment/vehicles
5. Provide and use Warning lights and reverse horn for cautioning the people around
6. Operation should be on level and stable ground with adequate working clearance.
7. Loading of out riggers/stabilizers should be well within safe ground bearing capacity
8. No person should be on equipment or vehicle during loading and unloading of material
9. Operators should be protected by warning barriers or switching off power when working in close proximity of overhead power lines
10. The equipment /vehicles should be well maintained and provided with effective brake system and other safety devices (wherever require)
11. Rotating parts of equipment should be adequately guarded
12. Provide necessary personal protective appliances and ensure its use by the operating personnel. Ensure effective measures at source to control harmful emissions, dust, fumes contaminating atmosphere and cause health hazards to the operators and people in the vicinity.
13. No overloading/over stressing of vehicles/plant is allowed
14. Hoses, pipes, receivers, gauges and valves involved in carrying out hydraulic fluid/ compressed air should be checked for leaks and tested prior to operation.
15. Adequate safe clearance for swing and movement is to be judged during operation of Concrete mixer



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 54 of 162

16. Setting of machine on firm and level ground with wheel locked to prevent movement of machine
17. Proper instructions and Special precautions are to be ensured to prevent entry in to the danger zone of projectile of bucket while dropping bucket
18. Operator leaving work spot should ensure that the equipment/vehicle is kept in neutral position and place on firm and level ground.
19. The hand brake should be kept in position and block road wheels as additional safety measure
20. Blades/buckets should be kept low while moving
21. The dozer blades should not be used as brakes except in emergency
22. The ground should be examined for its bearing capacity and general safety especially when operating road roller at the edges of slopes, embankments.
23. The roller should not be moved downhill with the engine out of gear
24. If operating near excavations the following precautionary measures are to be ensured
25. Barricading, edge protection to prevent fall of persons/vehicles over running while reversing etc.
26. Suitable support system and adequate allowance to avoid the danger of side collapsing
27. Experienced signaler /attendant should be always accompanied with operator/driver for proper direction /signal and also to caution others in the working Zone during operation of mobile plant

13.2.2.5 Concrete Vibrators

1. Revolving parts/belt drives should be adequately guarded and Vibrating unit shall be completely enclosed and have suitable overload relays and effectively earthed
2. Ensure sufficient length of cable to the Vibrator.
3. Ensure electric starters and other accessories are firmly fixed adequately supported
4. Ensure locking of needle load while inserting needle in to the vibrator,
5. Ensure periodical lubrication and maintenance

13.2.2.6 Concrete Mixers

1. Setting of machine on firm and level ground with wheel locked to prevent movement of machine
2. Proper instructions and Special precautions are to be ensured to prevent entry in to the danger zone of projectile of bucket while dropping bucket

13.2.3 WELDING & GAS CUTTING SAFETY (HOT WORK)

1. All Hot Work shall require a Hot Work Permit
2. There shall be flash-back arrestors conforming to IS-11006 at both cylinder and burner ends. Damaged tube and regulators must be immediately replaced.
3. All safety precautions shall be taken for welding and cutting operations as per IS-818.
4. When possible, items to be welded, cut, heated, etc. shall be moved to a safe location free of combustible or flammable material. If this is not possible, then all combustibles/ flammables that can be removed from the area shall be removed within a 35-foot circumference and a positive means of confining arcs and sparks generated by the process shall be ensured and additional person(s) shall be stationed as fire-watch for the area(s) still exposed, along with obtaining the Hot Work Permit as applicable.
5. Appropriate fire-fighting equipment is to be available in close proximity of any welding and gas cutting operations at all times suitable for the type of Fire.
6. Drums, tanks, and similar containers that have contained flammable or toxic material shall not be welded, cut, or heated until they have been made safe by water filling, thorough cleansing or similar accepted practices. The container shall also be ventilated during the welding, cutting, or heating process.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 55 of 162

7. Proper ventilation is required for any welding or torch operations performed in a confined space.
8. Any welding or gas cutting operations performed on metals of toxic compounds or coating such as zinc, stainless steel, lead, cadmium, chromium, and beryllium shall be properly ventilated and/or proper respiratory protection shall be worn by any person that could be exposed to fumes, vapors, and gasses created by the welding and gas cutting processes.
9. Wherever it is practical, all arc welding operations shall be shielded to prevent direct light rays or sparks from contacting persons in the vicinity or from reaching areas normally used to travel through or into the vicinity. Where this is not practical, persons who shall be in the area are to use proper eye and skin protection. Other persons who are not participating in the welding or gas cutting operations are not to be allowed into the hazard zone.
10. Welders and other employees who are exposed to arc welding radiation shall wear suitable clothing and protective apparel to prevent burns and other types of ultraviolet radiation damage to the skin.
11. Arc welding machines shall be shut down when being moved or when they are not in continuous use. Electrode holders left unattended shall have electrodes removed and shall not be left where they might contact employees or conducting objects.
12. Arc welding power supply cable shall be of proper rating and material, e.g. copper.
13. Welders shall guard against allowing materials adjacent to or behind them to reflect radiation back toward them or towards others in the area. Reflected radiation can cause skin burns and eye flash burns.
14. Valve caps shall be in place when cylinders are not in use. Valve caps shall never be used for lifting the cylinder vertically.
15. Torches shall only be lit by approved strikers; never with matches, cigarette lighters, or hot-work.
16. **Splatter / Slag Collector**

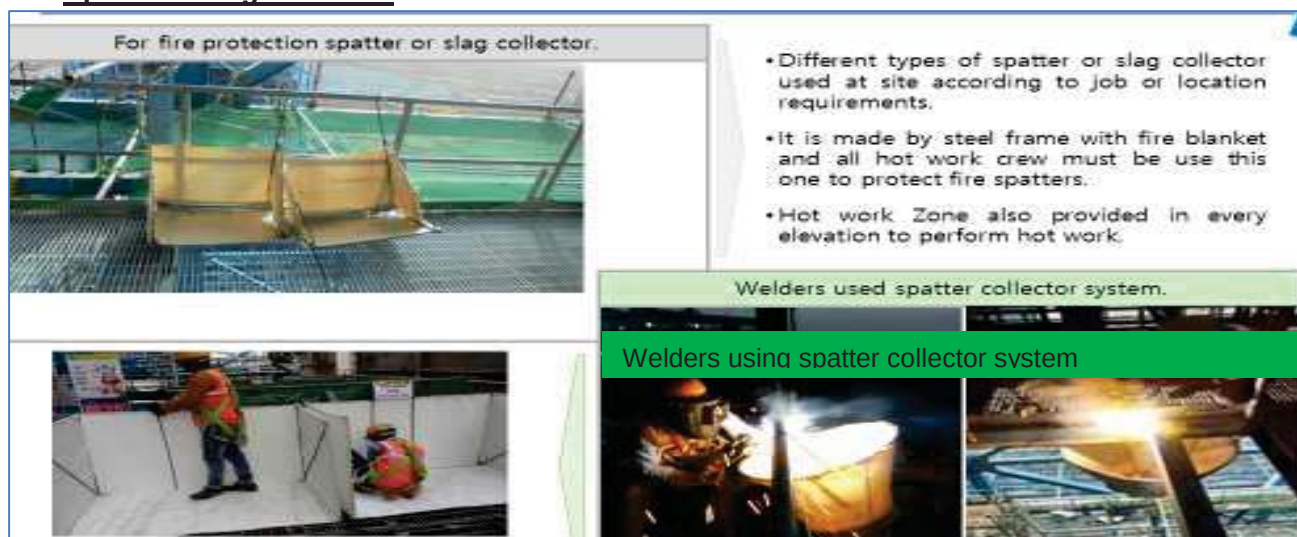


Fig. 13.2.3.1 Splatter / Slag Collector

While carrying out job at height, the sparks or molten slag shall be prevented from falling down by putting a fire-resistant (non-asbestos) sheet or patter/ slag collector or even MS Sheet. The passage of falling sparks or molten slag shall be barricaded till ground floor and any cable/ tubes/ any other objects interfering in the passages hall either be removed or covered with Fire-resistant sheet or MS Sheet.

13.2.3.1 COMPRESSED GAS

1. All cylinder valves shall be closed when any work is finished and when any Cylinders are empty or being moved. Valve protection caps shall be placed and secured properly before gas cylinders are transported, moved or stored.
1. Compressed gas cylinders shall be secured in an upright position with chain or appropriate means during storage & use. However, a trolley shall be used for transportation.
2. Compressed gas cylinders shall always be secured from tipping or falling, whether in use, in storage or in transit. The cylinders shall always be secured upright, except during times when actually being hoisted or carried.
3. When cylinders are transported by powered vehicle they shall be secured in a vertical position.
4. Regulators shall be removed when cylinders are not in use or are in transit, unless the cylinder is firmly secured on a special carrier designed for this purpose.
5. Gas cylinders are not allowed to be used in man-basket when occupied.
6. Cylinders containing oxygen or fuel gasses shall not be taken into confined spaces.
7. Oxygen cylinders shall be stored a minimum of 6 meters from fuel gas cylinders or shall have an approved firewall between them.
2. All cylinders shall be kept at a safe distance from welding or cutting operations or shielded from arc/ sparks / slag.
3. All cylinders shall be placed where they cannot become part of the electrical circuit.
4. Oxygen and acetylene shall not be stored together. Oxygen must be separated from acetylene (or ANY fuel gas) or combustible material by at least 20ft or a barrier with a 30 minute fire resistance rating.
5. All Cylinders should be stored upright in a designated area with labels for the type of gas. All applicable precautions to be ensured during storage
6. Oxygen and fuel gas regulators, hoses and associated equipment shall not be altered and shall be in proper working order while in use.
7. Compressed air can be extremely dangerous if allowed to penetrate the skin. As such, the use of compressed air to clean off yourself or other workers shall be strictly prohibited.
8. All gas cylinders shall be stored in upright position. Suitable trolley shall be used for cylinder movement, the design of which shall be submitted to BHEL Engineer for approval.
9. No of cylinders shall not exceed the specified quantity as per OCP
10. Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dragged, struck or permitted to strike each other violently.
11. All cylinder should be kept only in cylinder trolley.
12. Cylinder shall be transported in upright vertical position by suitable mean.

13.2.4 LIFTING & RIGGING SAFETY

1. All Heavy / Complex Lifting operations as defined in Clause 6.12 shall require a Lifting Work Permit.
2. All the cranes and lifting tools & tackles shall be inspected on daily / weekly basis as well as



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 57 of 162

monthly by expert as per applicable formats.

3. In addition, inspection / certification as mandated by law shall be carried out wherein these shall be tested and certificates of fitness shall be obtained from 3rd party State Govt. approved competent agency before deploying at site and later periodically. BHEL shall be given advance intimation of any such inspections
4. The last date of Third Party Inspection and the next Due date shall be conspicuously displayed on all cranes. A copy of certificate shall be pasted on operator's cabin of all the lifting equipment.
5. Following requirements shall be mandatorily followed, wherever applicable:
 - a. The manufacturer's instruction for maintenance shall also be followed. All safety measures shall be followed.
 - b. All tools tackles, lifting appliances; material-handling equipment etc. used by the subcontractor shall be of safe design and construction.
 - c. The operators, slingers and signalers shall be qualified as per IS 13367 (part-1):2003 "Safe use of cranes- code of practices".
 - d. There shall be a person responsible for co-ordination among cranes where multiple cranes are used, and lifting over 75% of the crane capacity to be avoided.
 - e. Mobile phone should be banned for crane operator and lifting operation. Only walki talki shall be allowed in rigging/Lifting purpose.

13.2.4.1 Personnel Lifts (Man-Basket / Jhoola):

The design of personnel man basket shall be submitted to BHEL Engineer for approval before use. Relevant permit (Height work & others as applicable) shall be completed prior to lifting any people, along with a rigging plan.

- a. A separate Lifeline / Fall arrestor anchored to a fixed structure outside of Jhoola shall be provided for the workers inside the basket. All occupants of the basket shall have Safety Harnesses equipped with rope grabs, which are to be hooked to the vertical lifeline.
- b. Man-basket shall be used where access through ladders or scaffolding is not feasible.
- c. Man-baskets shall be designed and engineered by a manufacturer (job made man-baskets are not allowed, unless designed and tested by a certified engineer), and built robust with MS Angles and flats or plates or channels only.
- d. Guard rails top and mid, must be in place and screened-in to avoid material from falling out of basket. The factor of safety shall be 200%.
 - e. It shall have a door with double latches and shall open inside. Anchor points shall be identified within the man-basket.
- f. The man-basket shall be thoroughly inspected and load tested and a trial run performed without personnel before being put to job.
- g. It shall be treated as a lifting tool (T&P Item) and shall undergo same certification cycle and inspection as other lifting equipment.
- h. An additional sling of required lifting capacity shall be fixed the man-basket main lifting point and attached to the crane above the ball or block.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 58 of 162

- i. While lifting man-basket, the crane shall maintain a uniform speed of lift without any swing.
- j. Once man-basket reaches the destination, the lift brakes shall be locked as long as the basket remains at that point. The same care shall be taken in its descent.
- k. As for hanging man-basket, the same shall be hung off a rigid structure with help U-shaped handle welded to man-basket. This shall be tested once in a year by a competent person.
- l. Use of Rebar steel for making and monkey-ladder must be avoided.

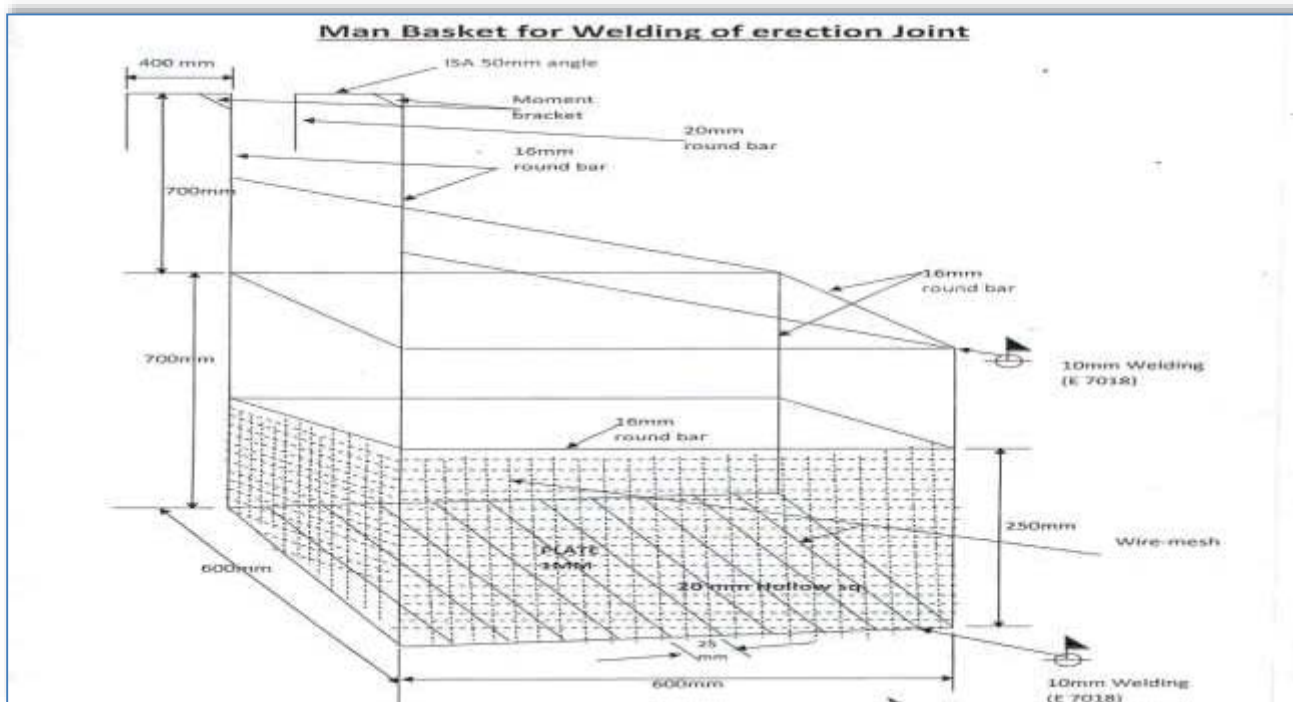


Fig. 13.2.4.1 Man Basket for Welding Erection Joint

13.2.4.2 Cranes & Hoisting Equipment:

This section provides the guidelines to ensure proper rigging and lifting activities are accomplished safely and in accordance with applicable specifications, codes, and regulations.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 59 of 162

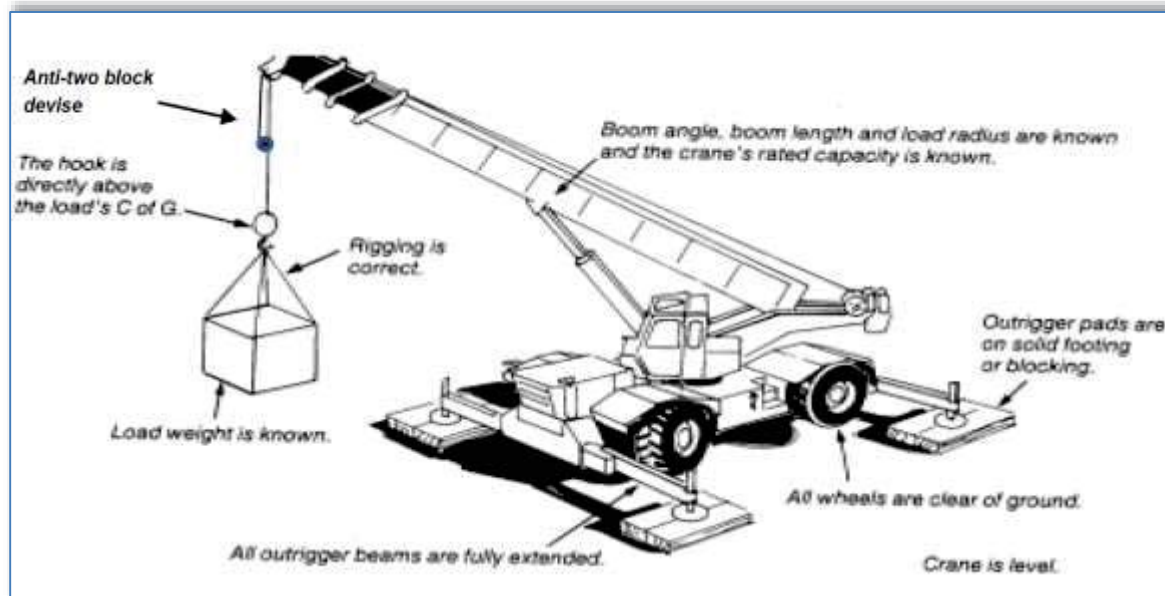


Fig. 13.2.4.2 Proper Crane Setup

- On every crane or piece of hoisting equipment notices of all rated load capacities, recommended operating speeds, and any hazard warnings or special instructions shall be conspicuously posted. All instructions and warning shall be visible from the equipment operator 's station.
- Cranes shall have an Anti-Two-block safety device installed
- All mobile cranes shall have overload and backup alarms, load angle indicators and limit switches
- All areas within swing radius of cranes that are potentially accessible by pedestrian, vehicular, or equipment movement shall be barricaded to prevent anyone or any vehicle or equipment from being struck by the crane or hoisting equipment, or its load(s).
- No part of the lifting equipment or its load shall be within the distance as specified in the Indian Electricity Act from an energized power line
- Cranes shall have annual certified third party inspection and be inspected before use by the operator. Any defects shall be corrected before use. Logs of crane inspection shall be kept with the crane.
- Make certain that the rigging personnel, material, and equipment have the necessary capabilities for the job and are in safe condition.
- Communicate with person(s) directly responsible for accomplishing the work and / or work area to establish requirements/responsibilities and make certain that all preparatory work is complete.
- Mats/Pads must be used on all lifting equipment, equipped with out riggers.
- Pick and carry must have the load secured to the rig in front.
- Only BHEL Approved Plate Lifting Spreader Beam configuration shall be used (Sample in Fig. 13.2.4.2)



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER

Rev.: 00

Date:25.04.19

Page 60 of 162

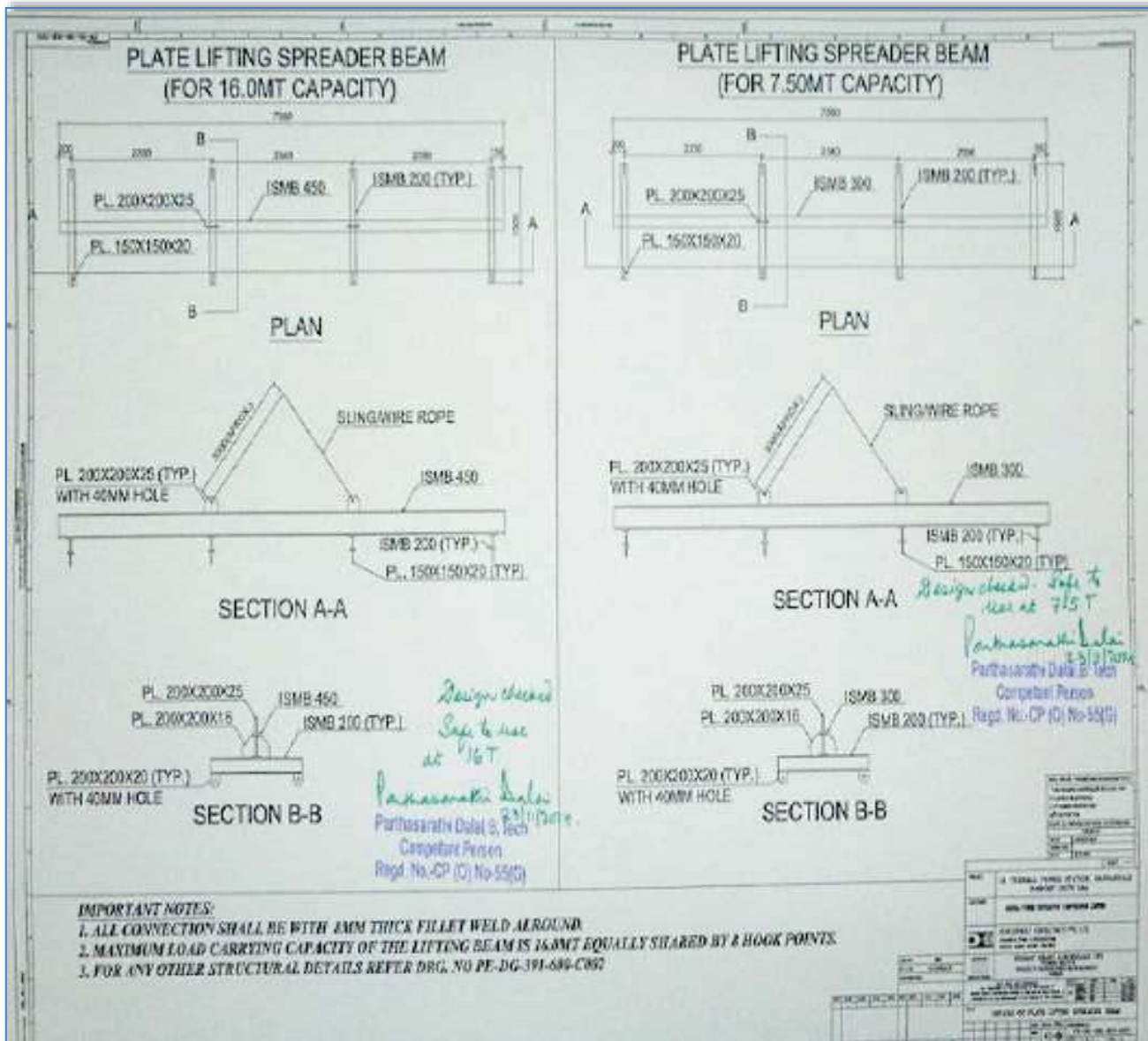


Fig. 13.2.4.3 Typical Plate Lifting Spreader Beam Configuration for 7.5 MT and 15 MT Loads

I. Crane operators must follow the following:

1. Pass an annual Operator's Physical examination
2. Carry a valid training certification card at all time while operating issued by the Govt. or other recognized institute.



HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 61 of 162

13.2.4.3 SAFE RIGGING PRACTICES

13.2.4.4

- a. Review the planned operation and requirements with the operator and rigging crew.
- b. Ensure a pre-lift meeting is conducted with crane operator, tagline operator, signal personnel, and Safety Manager.
- c. Designate a qualified person from the rigging crew to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.
- d. Clear the lift area of all unnecessary personnel.
- e. Hydras shall only be allowed for loading & unloading works & shall not be allowed to move with load

13.2.4.4.1 RULES FOR SAFE RIGGING

1. Use loops, thimbles and corner pads to prevent damage to slings when used around corners or on cutting edges.
2. Never allow wire rope to lie on the ground for any length of time or on rusty steel or near solvents, chemicals or corrosive substances.
3. Slings must not be pulled from between or under loads with load resting on the sling.
4. Keep all rope away from flame cutting or welding operations.
5. Never use rope as sling material.
6. Never wrap a wire rope completely around a hook.
7. Do not bend wire rope near any attached fitting.
8. The sling must be selected to suit the most heavily loaded leg rather than the total weight when using multi-legged sling to lift loads in which one end is heavier than the other.
9. When using 3 and 4 legged sling configurations, any two legs must be capable of supporting the entire load.
10. Where possible, wire rope choker hitches must include a shackle with the eye around the shackle pin to prevent breaking wires of the choke. The choker hitch must be "snugged down" prior to lifting, not after tension is applied.
11. Unless authorized by the hook manufacturer when more than two rope eyes are placed over a hook, install a shackle, pin resting in the hook, and place the rope eyes in the bowl of the shackle.
12. Properly rig all loads to prevent dislodgment of any part.
13. Use guide ropes or tag lines to prevent the rotation or uncontrolled motion of the load when necessary.
14. Loads must be safely landed and properly blocked before being unhooked and unslung. Tag lines must not be used in situations that jeopardize the safety of the lift.
15. Lifting beams must be plainly marked with their weight and designed working load and must only be used in the manner for which they were designed.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 62 of 162

16. The hoist rope or chain must never be wrapped around the load. The load must be attached to the hook by slings or other rigging devices that are adequate for the load being lifted.
17. Multiple part lines must not be twisted around each other.
18. The hook must be brought over the center of gravity of load before the lift is started.
19. If there has been a slack rope condition, determine that the rope is properly seated on the drum and in the sheaves prior to lifting.
20. Keep hands away from pinch points as the slack is being taken up.
21. Leather gloves are recommended when handling wire rope.
22. Avoid impact loading caused by sudden jerking when lifting or lowering. Lift the load gradually until the slack is eliminated.
23. Never ride on a load that is suspended.
24. Avoid allowing the load to be carried over the heads of any personnel.
25. Never work under a suspended load until the load has been adequately supported from the floor and all conditions have been approved by the supervisor in charge of the operation.
26. Never leave a load suspended unless emergency evacuation is required.
27. Never make temporary repairs to sling.
28. The capacity of a sling is determined by its angle, construction, type of hitch and size.
29. Never lift loads with one leg of a multi-leg sling until the unused legs are made secure.
30. Never point load a hook unless it is especially designed and rated for such use.
31. Make certain that the load is broken free before lifting and that all legs are taking the load.
32. When using two or more slings on a load make certain all slings are made from the same materials.
33. Lower the loads on to adequate blocking to prevent damage to the slings.
34. Materials and equipment being hoisted must be loaded and secured to prevent any movement which could create a hazard in transit.
35. The weight of the hook, load block and any material handling devices must be included when determining crane capacity.
36. Calculated weights cannot exceed 75% of the chart without written approval.
37. Personnel must be completely clear of loads being picked up or set down by crane. Tag lines will be used to control the loads. Loads must not be touched by hand while placing/ moving.

13.2.4.4.2 SLINGS

a. Synthetic Slings

The following are rules for safe use of synthetic slings:

- i. Synthetic slings must be marked to show the rated capacity for each type of hitch and type of web material.
- ii. Nylon web slings must not be used where fumes, vapors, sprays or mists or liquids of acids or phenolic are present. Web slings with aluminum fittings must apply in this category.
- iii. **Synthetic web slings must be removed from service and destroyed if any of the following conditions are present:**



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 63 of 162

- a. Acid or caustic burns
- b. Melting or charring of any part of the sling surface
- c. Snags, punctures, tears or cuts
- d. Broken stitches
- e. Distortion of fittings
- f. Synthetic web slings of polyester or nylon must not be used at or come in contact with temperatures in excess of 82°C
- g. Polypropylene web slings must not be used at or come in contact with temperatures in excess of 93°C
- h. Insulated hooks must be tested yearly to insure insulation integrity to at least manufacturer's specifications.

iv. Wire Rope Slings must be removed from service and destroyed if any of the following conditions are present:

- a. In (10) randomly distributed wires broken in one (1) rope lay, or five (5) broken wires in one (1) strand in one (1) rope lay.
- b. Wear or scraping of one-third the original diameter of outside wires.
- c. Kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope structure such as:
- d. Evidence of heat damage.
- e. End attachments that are cracked, deformed worn.
- f. Corrosion of the rope or end attachments.

v. Metal mesh slings must be immediately removed from service if any of the following conditions are present:

- a. A broken weld or broken brazed joint along the sling edge.
- b. Reduction in wire diameter of 25 percent due to abrasion or 15 percent due to corrosion.
- c. Lack of flexibility due to distortion or corrosion.

vi. Synthetic web slings must be removed from service and destroyed if any of the following conditions are present:

- a. Acid or caustic burns
- b. Melting or charring of any part of the sling service
- c. Snags, punctures, tears or cuts
- d. Broken stitches
- e. Distortion of fittings

vii. Requirements of Plate Clamps:

- 1. The rated load of the plate clamp must be marked on the main structure.
- 2. Care must be taken to make certain the load is correctly distributed for the plate clamp being used.
- 3. Do not allow load or plate clamp to come into contact with any obstruction.
- 4. The plate clamp must not be used for side pulls or sliding the load.
- 5. When lifting stainless steel or special alloys, ensure plate clamp is designed for use on



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 64 of 162

the specific metal.

13.2.4.4.3 SIGNALING PRACTICES:

- The "slinger" is responsible for attaching and detaching the load to and from the crane. He shall:
 - have received appropriate training on general safe lifting operations;
 - be capable of selecting lifting gears suitable for the loads;
 - liaise with the operator and direct the movement of the crane safely.
- The "signaller" is responsible for relaying the signal from the slinger to the crane operator. He shall:
 - have received appropriate training on general safe lifting operations;
 - be able to direct the movement of the crane and loads.

Suggested hand signals



Note: During the lifting operation, either the slinger or signaller shall communicate with the operator. Other communication methods (e.g., wireless walkie-talkies, telephones, etc.) may also be used.

Fig. 13.2.4.4 Recommended Signalling Practices

13.2.5 DEMOLITION WORK

Before any demolition work is commenced and also during the process of the work the following shall be ensured, besides using the Work Permit:

1. All roads and open areas adjacent to the work site shall either be closed, suitably protected or restricted for movement
2. No electric cable or apparatus which is liable to be a source of danger nor a cable or an apparatus used by the operator shall remain electrically charged.
3. All practical steps shall be taken to prevent danger to persons employed from the risks of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render them unsafe.

13.2.6 T&Ps General

1. All T&Ps/ MMEs should be of reputed brand/appropriate quality & must have valid test /calibration certificates bearing endorsement from competent authority of BHEL.
2. Subcontractor to also submit monthly reports of T&Ps deployed and validity test certificates to BHEL safety Officer as per the format/procedure of BHEL.
3. Tagging and punching in all lifting tool is compulsory with SWL, sr. no. and due date.
4. All T&Ps shall be inspected by authorized Third Party agency as per applicable frequency. BHEL shall be kept informed of any such scheduled inspection
5. All T&Ps shall be internally inspected in each quarter and colour coded as below.

13.2.6.1 T&P Color Coding Procedure:

Inspections and tests shall be documented by means of color coding which shall verify that inspections or testing are current and that all receptacles, portable Power tools, Lifting Tools & Tackles have been inspected and tested as required. The color codes used on the project shall be:

GREEN	BLUE	YELLOW	RED
January February March	April May June	July August September	October November December

Table. 13.2.6.1 T&P Color Coding Procedure

- i. The cycle of colors shall be Quarterly as a minimum or as decided by BHEL. The color code tape / Sticker shall be clearly visible to designate the period for which the inspections and tests were conducted.

- ii. Following the initial inspection, the equipment must be color-coded quarterly as per color-coding instructions that will be issued by the subcontractor.
- iii. Fire extinguisher with the current month color-coding inspection sticker must be provided and secured in the platform.
- iv. All slings shall be regularly inspected in accordance with the requirement of the project for frequent and periodic inspections and discard immediately if they fail to meet the minimum requirements of the project.
- v. The Subcontractor's Safety Officer shall ensure that all PPE is inspected prior to its issue. He is to ensure all subcontractor personnel are using safe and proper PPE equipment. Regular inspections on the PPE shall be carried out and personnel not adhering to those inspections shall be removed immediately from the site.
- vi. A five (10) day interval period shall be given into each monthly color code change. During this five (10) day period either color shall be acceptable.

13.2.7 CHEMICAL HANDLING

1. Displaying safe handling procedures & MSDS for all chemicals such as lube oil, acid, alkali, sealing compounds etc, at work place.
2. Where it is necessary to provide and/or store petroleum products or petroleum mixture & explosives, the subcontractor shall be responsible for carrying out such provision / storage in accordance with the rules & regulations laid down in the relevant petroleum act, explosive act and petroleum and carbide of calcium manual, published by the chief inspector of explosives of India. All such storage shall have prior approval if necessary from the chief inspector of explosives or any other statutory authority. The subcontractor shall be responsible for obtaining the same.
3. The used containers of chemicals shall be segregated and disposed off suitably
4. In case the used containers need to be re-used, all traces of the chemical to be removed by thorough cleaning with detergents etc. under trained supervision

13.2.8 ELECTRICAL SAFETY

1. Only electricians licensed by appropriate statutory authority shall be employed by the subcontractor to carry out all types of electrical works. The subcontractor shall maintain adequate number of qualified electricians to maintain his temporary electrical installations.
2. Power supply to all equipment at site to be routed through MCBs of appropriate rating. A 'Power Supply Distribution Plan' shall be prepared and submitted to BHEL Engineer for approval



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 67 of 162

3. All power supplies through cables shall be underground or overhead with height > 3mtrs.
4. All distribution boxes shall be locked and the key controlled by site management of concerned subcontractor.
5. All individual equipment & tools at site shall be powered through Earth Leakage Circuit Breakers of 30 mA sensitivity.
6. These MCBs and ELCBs shall be regularly tested as per Clause 14
7. All fuses and fuse wires shall be of standard size and rating.
8. All electrical appliances used in the work shall be in good working condition and shall be properly double earthed other than armour earthing.
9. All extension boards shall have separate switches for all sockets / connections
10. All portable electric tools used by the subcontractor shall have safe plugging system to source of power and be appropriately earthed.
11. Providing adequate no. of 24 V sources and ensure that no hand lamps are operating at voltage level above 24 Volts especially in confined spaces like inside water boxes, turbine casings, condensers etc.
12. Electrical appliance shall have proper earthing and for appliances equal to & more than 415V shall have two separate earthing (as per IS-3043-1987)
13. Details of earth resource and their test date to be given to BHEL safety officer as per the prescribed formats of BHEL
14. The subcontractor shall use only properly insulated and armoured cables and conform to the requirement of Indian Electricity Act and Rules for all wiring, electrical applications at site.
15. BHEL reserves the right to replace any unsafe electrical installations, wiring, cabling etc. at the risk & cost of the subcontractor.
16. No maintenance work shall be carried out on live equipment
17. Adequate precautions shall be taken to prevent danger for electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public
18. The subcontractor shall carefully follow the safety requirement of BHEL/ the purchaser with the regard to voltages used in critical areas.
19. Wiring and Branch Circuits Must be protected by a proper amperage over-current device such as a HRC fuse or circuit breaker. Such installations must be located so as to prevent physical damage to the wire conductors & panels.

20. Portable Electric Lights

- a. Portable electric lights used in wet or potentially wet locations must be either low voltage type (24 volts or less) or protected by a GFI (ground fault interrupter).
- b. They must be visually checked before each use and periodically while in use to assure their original integrity is maintained.
- c. Cords with cuts, breaks, deep abrasions, etc. shall be taken out of service immediately.
- d. Repairs to extension cords shall only be performed by qualified/ licensed electricians.
- e. Must not be allowed to lie in wet or potentially wet areas.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 68 of 162

21. Underground Cables:

- a. Every electric line or cable of unknown origin that is discovered or exposed during a digging, drilling, probing, or similar operation is to be considered as energized and life threatening.
 - b. The senior company employee on the site will ensure that all necessary safety precautions are taken in order to isolate the line from all workers and the public.
 - c. Such precautions may include halting the operation if appropriate.
 - d. The senior company employee on the site is to then contact the proper authorities to have the line identified and either confirmed to be abandoned and/or made safe for continuing the work.
 - e. Any and all underground lines that are discovered or become severed must be considered energized on both sides, and be treated accordingly.
22. In general, equipment or machinery being moved or transported must maintain minimum clearances of 25 ft. to all power lines.
 23. TAG IN/ TAG OUT must be in force in Switch Room and all Distribution Boxes for live power line. The authorized person's name and contact no shall be displayed
 24. Ensure "double insulated" three - core cables and three pin connectors are used and are properly ground "all insulated" types, all electrical tools and appliances must be manufactured for industrial use.
 25. All connections shall be electrically and mechanically sound and properly insulated. Taped joints are not permitted. Connections to socket outlets must be made with proper plugs.
 26. Splices in electrical cords are not permitted. Repairs must be made at the socket connection and retain the same mechanical and dielectric condition of the original connection.
 27. Damaged or defective electric tools, equipment and extension cords, etc. must not be used and shall be tagged out of service, removed from the work area and taken back to stores.
 28. Only licensed electricians are authorized to repair and work on electrical equipment. Tampering with electric tools or equipment by others could result in termination.
 29. Temporary electric cabling should be elevated 2.2 meters above the floor/ground or covered for protection. It must be kept clear of walkways and other locations where it may be exposed to damage or create a tripping hazard.
 30. Energized wiring in junction boxes, circuit breaker panels and similar places must be covered and locked at all times.
 31. Areas with live high voltage wires or terminals must be barricaded against entry and warning signs posted Danger – High Voltage and Authorized Personnel Only.
 32. Personnel should never work on energized equipment, de-energizing (lockout/tag out) the equipment is always the first requirement.
 33. The lockout and tag out procedure will be used when testing or working on, or around, energized installation.
 34. Working around energized equipment should never be done alone. A second electrician must always be available for assistance.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 69 of 162

35. If lockout/tag out of the work is infeasible (must be demonstrated), work on energized electrical circuits must be approved by the Site In-charge. All safety precautions necessary must be taken, PPE use must be evaluated per the exposure and used, i.e high/low voltage gloves, insulated shoes, overcoats/aprons, face shields, and other protective equipment like insulated tools, blankets, mats, etc. must be used.
36. The welding machines earth leads shall be properly fixed without loose contacts. The earth cable only has to be used. No steel members shall be used as earth leads.
37. Electrical crews must be qualified for the equipment and tools they work on, including being trained in Cardio-Pulmonary Resuscitation (CPR) methods and First Aid for rendering help in the event of electric shock.

38. Qualified Persons for Electrical Works

One who is trained and wiremen licensed to Govt of State and familiar with the construction, operation and safety hazards of the equipment upon which they are permitted to work.

- i. Qualified persons are intended to be only those who are well acquainted/experienced with and thoroughly conversant in the electric equipment and electrical hazards involved with work being performed.
- ii. Only qualified persons may be permitted to work on or near exposed energized parts. Such persons are required to have been trained in three specific areas:
- iii. Qualified persons must be capable of working safely on energized circuits;
- iv. Must be familiar with the proper use of special precautionary techniques and procedures based on equipment and exposure; and
- v. Must be familiar with required personal protective equipment, insulating and shielding materials, and insulated tools.
- vi. Qualified persons are expected to be able to evaluate unknown situations and adjust their activities in such a way that only safe work practices are used. Such behavior is the responsibility of the qualified person.
- vii. It is possible and likely for an individual to be 'qualified' with regard to certain equipment in the work place, and unqualified on other equipment they must know their limitation and stop work if not qualified on what equipment they were to work on.
- viii. An employee who is undergoing on-the-job training, who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training, and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties. The process must be documented as proof.

13.2.9 USE OF HAND TOOLS AND POWER-OPERATED TOOLS

13.2.9.1 General Provisions

- a. All hands and power tools and similar equipment, shall be maintained in safe condition.
- b. When power operated tools are designed to accommodate guards, they shall be equipped
- c. with such guards, when in use;
- d. Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains and other reciprocating, rotating or moving parts of the equipment shall be similarly guarded;
- e. Personnel using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases shall be



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 70 of 162

provided with the particular personal protective equipment necessary to protect them from the hazards;

- f. All hand-held powered platen sanders, grinders, grinders with wheels of 5 cm or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws and jigsaws with blade shanks of 0.5 cm wide or less shall be equipped with only a positive on-off control.
- g. All hand-held powered drills, tappers, fastener drivers, horizontal, vertical or angle grinders with wheels greater than 5 cm in diameter, disc sanders, belt sanders, reciprocating saws, saber saws and other operating powered tools shall be equipped with a momentary contact on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

13.2.9.2 Hand Tools

- a. The subcontractor shall not issue or permit the use of unsafe hand tools;
- b. Wrenches including adjustable pipe end and socket wrenches shall not be used when saws are sprung to the point that slippage occurs;
- c. Impact tools such as drift pins, wedges and chisels shall be kept free of mushroomed heads;
- d. The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight on the tools.

13.2.9.3 Power Operated Tools

- a. Electric power operated tools shall be either of the approved double-insulated type or shall be grounded;
- b. The use of electric cords for hoisting or lowering loads shall not be permitted;
- c. Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming incidentally disconnected;
- d. Safety clips or retainers shall be securely installed or maintained on pneumatic impact (percussion) tools to prevent attachments from being incidentally expelled;
- e. All pneumatically riveting machine staplers and other similar equipment provided with automatic fastener feed, which operate at more than 7 kg/cm² pressure at the tool a safety device on the muzzle to prevent the tool from ejecting the fasteners unless the muzzle is in contact with the work surface;
- f. Compressed air shall not be used for cleaning purposes except when the pressure is reduced to less than 2 kg/cm² and that too with effective chip guarding. The 2 kg/cm² pressure requirement does not apply to concrete form, mill scale and similar cleaning purposes;
- g. The manufacturer's safe operating for hoses, pipes, valves, filters and other fittings shall not be exceeded;
- h. Only personnel who has been trained in the operation of the particular tool shall be allowed to operate power-actuated tools;
- i. The tool shall be tested each day before loading to see that the safety devices are in proper working condition. The method of testing shall be accordance with the manufacturer's



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER

Rev.: 00

Date:25.04.19

Page 71 of 162

recommended procedure;

- j. Any tool found not in proper working order, or that which develops a defect during use, shall be immediately removed from service and not used until properly repaired;
- k. Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any other person. Hands shall be kept clear of the open barrel end;
- l. Loaded tools shall not be left unattended;
- m. Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tiles, surface hardened steel, glass block, live rock, face brick or hollow tiles;
- n. Driving into materials that can be easily penetrated shall be avoided unless backed by a
- o. substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side;
- p. No fastener shall be driven into a palled area caused by an unsatisfactory fastening;
- q. Only non-sparking tools shall be used in an explosive or flammable atmosphere;
- r. All tools shall be used with the correct shield, guard or attachment as recommended by the manufacturer.

13.2.9.4 Abrasive Wheels and Tools

- a. All grinding wheel must be ISO certified only.
- b. All grinding machines shall be supplied with sufficient power to maintain the spindle speed at safe levels under all conditions of normal operation;
- c. Grinding machines shall be equipped with suitable safety guards;
- d. The maximum angular exposure of the grinding wheel periphery and sides shall not be more than 900, except that when the work requires contact with the wheel below the horizontal plane of the spindle, the angular exposure shall not exceed 1200. In either case, the exposure shall begin not more than 8.650 above the horizontal plane of the spindle. Safety guards shall be strong enough to withstand the bursting of the wheel;
- e. Floor and bench-mounted grinders shall be work-rests, which shall be rigidly supported and readily adjustable. Such work-rests shall be kept at a distance not to exceed 5 mm from the surface of the wheel;
- f. Cup type wheels used for external grinding shall be protected by either revolving cup guard or a band type guard;
- g. When safety guards are required, they shall be mounted as to maintain proper alignment with the wheel and the guard and the guard and its fastening shall be adequate strength to retain the fragments of the wheel in case of incidental breakage. The maximum angular exposure of the grinding wheel periphery and sides shall not exceed 1800;
- h. Portable abrasive wheel used for internal grinding shall be provided with suitable safety flanges;
- i. When safety flanges are required, they shall be used only with wheels designed to fit the flanges. Only safety flanges, of a type and design and properly assembled so as to ensure that the pieces of the wheel will be retained in case of incidental breakage, shall be used;
- j. All abrasive wheels shall be closely inspected and ring tested before mounting to ensure that



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 72 of 162

they are free from cracks or defects;

- k. Grinding wheels shall fit freely on the spindle and shall not be forced on. The spindle nut shall be tightened only enough to hold the wheel in place;
- l. All employees using abrasive wheels shall be protected by suitable eye protection equipment.

13.2.9.5 Wood Working Tools

- a. All fixed power driven woodworking tools shall be provided with a disconnect switch that can either be locked or tagged in the off-position;
- b. The operating speed shall be attached or otherwise permanently marked on all circular saws over 0.5 m in diameter or operating at over 3000 peripheral rpm. Any saw so marked shall not be operated at a speed other than that marked on the blade. When a marked saw is re-tensioned for a different speed, the marking shall be corrected to show the new speed;
- c. Automatic feeding devices shall be installed on machines wherever the nature of the work will permit. Feeder attachments shall have the feed rolls or other moving parts covered or guarded so as to protect the operator from hazardous points;
- d. All portable power driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.

13.2.10 START UP, COMMISSIONING AND TESTING:

There are various activities involved prior to commissioning- the major ones are -Hydraulic Test, Steam Blowing, Transformers Charging, Boiler Light Up, Rolling and Synchronisation and Full loading of unit.

- a. These activities shall be personally supervised by the site executive along with the commissioning engineer.
- b. Appropriate Work Permits shall be taken as applicable
- c. The readiness of upstream and downstream system shall be ensured before taking up.
- d. These shall be handled strictly by the authorized persons only and the team shall be suitably briefed about the activity including hazards & risks involved and control plan by the concerned executive-in-charge before start.
- e. Entry of persons to the area of activity shall be suitably restricted and the emergency functions like Ambulance, first aid center and Fire station shall be intimated about the plan well in advance.
- f. Tag-in/ Tag-out shall be in place while charging transformer and whenever necessary.
- g. Electricians with valid wiremen license only shall be permitted to work on power lines.
- h. The area and the passage shall be adequately illuminated.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date: 25.04.19
Page 73 of 162

13.2.11 FIRE SAFETY

Numbers and types of Fire Extinguishers shall be ensured as follows:

Sl. No	Type of Fire Risk (Class of Fire)	Extinguishing Medium & Relevant Indian Standard		Scale of Equipment (Minimum recommended)
1.	CLASS 'A' Fires involving ordinary combustible materials like wood, paper, textiles, rubber etc. (Ordinary hazard or low fire load)	WATER Soda acid type, water type (gas pressure) and water type (constant air pressure) IS: 934 -1976; IS: 940 -1976; IS: 6234 -1971		For every 600 square meter floor area or part, one 9-litre capacity. Minimum 4 numbers per floor or room; should not be required to travel more than 15 meter to reach any extinguisher.
2.	CLASS 'A' (Extra hazard & high fire load)	-do		-do – (Also, consult local fire authority).
3.	CLASS 'A' (Special hazards)	-do	-do – Extra provision For every 100 square meter floor area or part, one 4.5 Kg. CO ₂ ; minimum 2 numbers per room; should not be required to travel more than 10 meter to reach any extinguisher.	
4.	CLASS 'B' (Fires in flammable liquids like oils, solvents, petroleum, products, varnishes, paints, etc. where blanketing effect is essential) (Storage and handling in small quantities)	FOAM / CARBON DIOXIDE / DRY CHEMICAL POWDER IS: 933 -1976; IS: 2878 1976; IS: 2171 1976; IS: 4308 -1982		For every 50 square meter floor area or part, 2 numbers 9 -liters foam or 5 kg dry powder; should not be required to travel more than 10 m in the area of storage to reach any extinguisher.
5.	CLASS 'B' (Bulk storage other than in tank form)	-do -		-do- (but minimum 3 numbers per room)
6.	CLASS 'C' (Fires involving gaseous substances under pressure where it is necessary to dilute the burning gas at a very fast rate with an inert gas or powder) (locations of storage and handling of gas cylinders)	CARBON DIOXIDE / DRY CHEM. POWDER. The best way to extinguish such fire is by stopping the flow of fuel gas to the fire. Container is kept cool with water spray. IS: 2878 1976; IS: 2171 -1976; IS: 4308 -1982		For every 100 square meter floor area or part; 2 numbers, 10 kg powder extinguisher or 6 kg CO ₂ ; minimum 3 nos. per room; should not be required to travel more than 10 meter to reach any extinguisher.
7.	CLASS 'D' Fires involving metals like magnesium, aluminum, zinc, potassium etc. where the burning metal is reactive to water and which require special extinguishing media or technique	SPECIAL DAY POWDER IS: 2171 -1976 IS: 4861 -1968		For every 50 square meter floor area or part, 2 nos. 5 kg special dry powder; minimum 3 nos. per room; should not be required to travel more than 10 meter to reach any extinguisher.
8.	MIXED OCCUPANCY (electrical); Generators; Transformers; etc.	CARBON DIOXIDE DRY POWDER, IS: 2878 -1976; IS: 2171 -1976		For every 100 square meter floor area or part one 10 kg CO ₂ . Minimum 2 numbers for every location should not be required to travel more than 10 meter to reach an extinguisher.

Note: Due to peculiarities of the power plant construction sites, there would be locations in the construction areas of Boiler, Turbine, Generator, Transformer, etc. where different types of fire risk (classes of fire) may co-exist. Special



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 74 of 162

care shall be taken while selecting and installing portable fire extinguishers for such locations so that all types of fire risk that may co-exist, are adequately covered. Similar special care shall be taken for storage areas.

1. All Electrical welding booths shall be equipped with appropriate Fire Extinguisher
2. Appropriate Fire Extinguishers shall be made within easy reach of all welding operations
3. Fire extinguishers shall be regularly tested and last checked date to be indicated on each.
4. Providing appropriate firefighting equipment at designated work place and nominate a fire officer/warden adequately trained for his job.
5. Subcontractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, temporary structure in labour colony etc. Such fire protection equipment shall be easy and kept open at all times.
6. The fire extinguishers shall be properly refilled and kept ready which should be certified at periodic intervals. The date of changing should be marked on the Cylinders.
7. All other fire safety measures as laid down in the "codes for fire safety at construction site" issued by safety coordinator of BHEL shall be followed.
8. Non-compliance of the above requirement under fire protection shall in no way relieve the subcontractor of any of his responsibility and liabilities to fire incident occurring either to his materials or equipment or those of others.
9. Emergency contacts nos. must be displayed at prominent locations
10. Tarpaulin being inflammable should not be used (instead, only non-infusible covering materials shall be used) as protective cover while preheating, welding, stress relieving etc. at site.

13.2.12 HSE PREPAREDNESS FOR ADVERSE CLIMATES AND WEATHER

Subcontractor to remain updated on possible adverse weather conditions through reliable sources and all precautions taken accordingly.

13.2.12.1 SUMMER

1. The Working Time and Lunch Hour will be as per instruction of Statutory Authorities (no work between 11am to 3:30pm). However, in case temp comes down due to rain/cloudy weather work will continue as per normal routine.
2. During long lunch break, worker will be allowed to go back home for rest. Those who will like to stay back will avail at the facility of rest shed or other designed area.
3. They will be allowed to take small break during work as per their need.
4. Water sprinkling will be done on roads to reduce dust concentration.
5. Workers will be provided with adequate cool drinking water and Butter milk/Lemon water etc.
6. Adequate ORS stock will be made available at the work location in the First-Aid Box for use as needed and at First-aid Center for emergency need.
7. Fire prevention shall be on high alert, with removal of dry grass and bushes, etc, inside and outside the surrounding work areas. No smoking, and control of open flame/sparks shall be maintained and monitored.
8. Worker will be informed about the Do's and Don'ts to be followed during summer in the Pre Job Brief.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 75 of 162

Do's & Don'ts

9. Drink plenty of cool water and other non-alcoholic fluid and keep body well hydrated.
10. Eat salt in food to replenish loss of salt through sweating.
11. Avoid over physical exercise.
12. Have adequate sleep at night.
13. Eat light and less spicy food
14. Avoid eating food which was cooked long time ago.
15. Nobody should use small water bodies such as pits, running rain water through crevices etc. for drinking and cleaning purpose as it may be unhygienic.

Emergency Handling

In case of emergency due to heat disorder:

16. Rescue the victim from workplace and place under shed.
17. If to be rescued from height, use stoke basket or rescue kit.
18. Inform Ambulance immediately.
19. If nearby any air conditioned room/shed is available, place him inside the room/shed.
20. Administer First aid by trained First aider for Heat Disorder
21. If conscious, give him ORS solution to drink.
22. If required send the victim hospital immediately.

13.2.12.2 Monsoon

A. Height Work & Structural Safety:

1. Ensure that all height work platforms are barricaded and avoid any highly hazardous
2. height work.
3. Ensure that all personnel have good quality and intact safety shoes
4. Stop all dangerous height work during rain
5. Explain Do's and Don'ts to workers during Tool Box Meetings
6. Ensure that there are no weak structures, boards etc. that can fall during high winds
7. Do not allow any loose material (e.g. GI sheet, Ply board, empty cement bag, aluminum foil, foam sheets etc.) on roof sheds or top of structures.
8. Do not permit any one to ride up or come down scaffolds frame work during heavy wind or rain.
9. Provide "anchor" of adequate strength to scaffolds and other high-rise structures.
10. All rest sheds and GI sheds will be anchored into the round and wall and roof panels will be secured with J hook to prevent shed from blowing over or parts/pieces becoming airborne. Proper earthing per IS standard is also to be installed.
11. Do not go alone nor permit anyone to stay at tower-tops, roof-tops, high structures or on electrical poles during the course of stormy weather or heavy rain.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 76 of 162

B. Electrical:

1. All electrical connections / loads have to be routed through ELCB / RCCB (residual current circuit breaker) whose rating should be 30mA.
2. RCCB operational checks need to be done DAILY / WEEKLY during monsoon season.
3. Avoid joints on power cables which need to be laid over-head or under-ground, better not to have any joint at all. In case joints become essential, such cables must be housed rigidly and insulation must be provided as per approved standard. The joint shall be suitable for outdoor use.
4. All electrical distribution board shall be properly covered at top and sides to protect from rain water. Extension boards shall be protected from rain water.
5. Ensure proper "earthing" for each and every electrical appliance.
6. Double earthing need to be provided for 3-phase power supply and for voltage more than 220V.
7. Provide lightening arrestors at the top of Boiler 3 and boiler 4 and rest sheds which are not covered by existing lightening arrestor of other installation.

C. Others:

1. Maintain smooth flow on open drains. i.e. no obstruction or blockade shall be made on storm water drains. If required, make temporary drains.
2. Arrange back-filling of excavated pits on war-footing basis.
3. Arrange bringing down booms of all cranes, hydra machines during stormy weather (wind speed 40-50 kmph)
4. Confirm that all gantry cranes are effectively choked to prevent rolling and toppling.
5. Do not forget to deep ready a dew battery operated lights at site-offices during rainy season.
6. Avoid using wet damp clothes.
7. Barricade excavated zone filled with water.
8. Engage diesel operated water pump to dewater work area. For electrically operated water pump, the starter shall be protected from rain water. All rotating parts shall be guarded. Ensure availability of sufficient water pumps.

D. Health and hygiene:

1. Monsoon reduces the immunity of our body and makes us vulnerable to many diseases which are commonly associated with this season. It is time for us to keep our body challenging against disease by boosting our immunity and taking safety measures against these diseases.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 77 of 162

2. The diseases associated with monsoon are Malaria, Jaundice, Gastro-intestinal infections, like typhoid, cholera etc. apart from these viral infections like cold and cough also make their presence felt. Majority of above said diseases are on account of:
3. Puddle of water formed due to rain become breeding grounds for mosquitoes which spread disease like, malaria and dengue fever. As a precautionary measure against mosquito-bite disease one can use mosquito net around the end which is better choice to mosquito repellants like mats and coils.
4. Pollution of drinking water during monsoon is very common. It is very necessary to drink clean and pure water when water-borne monsoon diseases like diarrhea and gastro-intestinal infections threaten us.
5. Walking in dirty water during rainy season leads of numerous fungal infection which affect toes and nails. Diabetic patients have to take a special care about their feet. Keeping feet always dry and clean is very necessary. Avoid walking in dirty water. Keep shoes socks and raincoats dry and clean.

E. Workmen will be made aware of following Do's and Don'ts:

1. Do not sleep in daytime.
2. Avoid over physical exertion.
3. During lightning and thunder storm, do not take shelter under tree. Take shelter inside rest shed or store room.
4. Wash vegetables with clean water and steam them well to kill germs.
5. Avoid eating un-cooked foods and salads should be washed properly before consumption.
6. Drink plenty of water and keep body well-hydrated.
7. Always keep the surrounding area dry and clean. Don't allow to get water accumulated around.
8. Keep body warm as viruses attack immediately when body temperature goes down.
9. Do not enter air conditioned room with wet hair and damp cloths.
10. Dry your feet and webs with soft dry cloth whenever they are wet.
11. Eat light and less spicy food.
12. Avoid eating food which was cooked long time ago.
13. Eat salt in food to replenish loss of salt through sweating.

13.2.12.3 Emergency Weather Conditions

A. Cyclone/Severe thunder storm

In the event of Cyclone/Severe thunder storm, alert will be issued by subcontractor on notification received by Govt. authorities/Metrological departments Customer or BHEL.

The actions required during cyclone/rough weather:

1. Check and advice subcontractors to cleanup work area. Pick up all loose and unused material of respective supervisor's area.
2. Tie to secure all gas cylinders to avoid displacement and unsafe conditions which could be due to wind pressure.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 78 of 162

3. Secure portable electricity generating sets and other equipment, pumps, hoses etc.
4. Make preparation for removal of water logging.
5. Take review of work activity and make preparation for removal of equipment and material from vulnerable areas.
6. Isolate/turn off all electrical power from the main panel/switches. Secure and anchor panels properly.
7. Recheck anchorage/tie of all temporary structures/sheds, tall objects, cranes, rigs, scaffolds etc. to avoid toppling due to wind force.
8. Cranes boom shall be secured, either locked or lowered the booms as reasonably and practicably possible and rigs to safe position for the safety point of view.
9. Group up all trash barrels, wooden pallets, forms; wooden decks etc. and anchor properly.
10. Welding machines, air compressors and such equipment are to be grouped together and secured to the stable objects. Welding leads, electrical cables, hoses are to be rolled up and secured properly.
11. Set on site vehicles on high ground in the site area with brakes set firmly.
12. Anchor all tanks, vessels, gas cylinders that may be moved by high wind and water.
13. Evacuate job site.

Personnel Evacuation:

14. Personnel Evacuation will be required if predicted wind speed and storm surge heights are beyond acceptable limits as per the instructions from Govt. Authorities/ Metrological departments or Customer.
15. Once the warning is received for personnel evacuation, an emergency response team shall be formed. The team will work with local authorities and other agencies formed/deployed to evacuate and transport all personnel involved in the project to the cyclone shelter.
16. Cyclone may be followed by the calm "EYE", be aware of it. If the wind suddenly drops, don't assume the cyclone is over. Violent wind may resume from the opposite side direction. Wait for the official "All clear Signal".
17. After the cyclone, do not go outside until officially communicated about safe situation outside. Use recommended routes for returning. Do not panic or rush while returning.
18. Checking of gas leaks and well being of electrical appliances is essential before leaving the site.
19. Follow local communications for official warning and advice. The construction Manager shall also obtain updates from customer/metrological departments and communicate to the personnel on project site.

13.2.12.4 Preparedness for Other Adverse Climates and Weather Conditions

All Preventive and Precautionary measures to ensure Health & Safety of workers in all possible adverse weather conditions based on the analysis of the local area conditions to be taken by the subcontractor

13.3 ENVIRONMENTAL CONTROL

1. Environment protection has always been given prime importance by BHEL. Environmental



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 79 of 162

damage is a major concern of the principal subcontractor and every effort shall be made, to have effective control measures in place to avoid pollution of Air, Water and Land and associated life.

2. Subcontractor shall list out all applicable environmental aspects and impacts, and ensure control measures to manage the same.
3. Chlorofluorocarbons such as carbon tetrachloride and trichloroethylene shall not be used.
4. Waste disposal shall be done in accordance with the guidelines laid down in the project specification.
5. Any chemical including solvents and paints, required for construction shall be stored in designated bonded areas around the site as per MSDS.
6. In the event of any spillage, the principle is to recover as much material as possible before it enters drainage system and to take all possible action to prevent spilled materials from running off the site. Subcontractor shall use appropriate MSDS for clean-up technique. Subcontractor shall be responsible for the cleanliness of their own areas.
7. Subcontractor shall ensure that noise levels generated by plant or machinery are as low as reasonably practicable. Where the subcontractor anticipates the generation of excessive noise levels from his operations the subcontractor shall inform BHEL accordingly so that reasonable & practicable precautions can be taken to protect other persons who may be affected.
8. It is imperative on the part of the subcontractor to join and effectively contribute to environmental protection measures such as tree plantation and towards social causes and maintaining good relations with local populace.
9. The subcontractor shall carry out periodic air and water quality check and illumination level checking in respective area of work place and take suitable control measure to maintain the same as per applicable laws / standards

13.3.1 WASTE MANAGEMENT

1. Subcontractor shall take suitable measures for waste management and fulfilling requirements of environment related laws/legislation as a part of normal construction activities.
2. Compliance with the legal requirements on storage/ disposal of paint drums (including the empty ones), Lubricant containers, Chemical Containers, and transportation and storage of hazardous chemicals will be strictly maintained.
3. Details of E-Waste, Hazardous Waste, shall be submitted to BHEL as per Format No. HSEP: 14-F18 and HSEP: 14-F19 respectively

13.3.1.1 BINS AT WORK PLACE

1. Sufficient rubbish bins shall be provided close to workplaces.
2. Bins should be painted yellow and numbered.
3. Sufficient nos. of drip trays shall be provided to collect oil and grease.
4. Sufficient qty. of broomsticks with handle shall be provided.
5. Adequate strength of employees should be deployed to ensure daily monitoring and service for waste management.

13.3.1.2 STORAGE AND COLLECTION

1. Different types of rubbish/waste should be collected and stored separately.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 80 of 162

2. Paper, oily rags, smoking material, flammable, metal pieces should be collected in separate bins with close fitting lids.
3. Rubbish should not be left or allowed to accumulate on construction and other work places.
4. Do not burn construction rubbish near working site.

13.3.1.3 SEGREGATION

1. Earmark the scrap area for different types of waste.
2. Store wastes away from building.
3. Oil spill absorbed by non-combustible absorbent should be kept in separate bin.
4. Clinical and first aid waste stored and incinerated separately.

13.3.1.4 DISPOSAL

1. Sufficient containers and scrap disposal area should be allocated.
2. All scrap bin and containers should be conveniently located.
3. Provide self-closing containers for flammable/spontaneously combustible material.
4. Keep drainage channels free from choking.
5. Make schedule for collection and disposal of waste.

13.3.1.5 WARNING AND SIGNS

1. Appropriate signage to be displayed at scrap storage area
2. No toxic, corrosive or flammable substance to be discarded into public sewage system.
3. Waste disposal shall be in accordance with best practice.
4. Comply with all the requirements of Pollution Control Board (PCB) for storage and disposal of hazardous waste.

13.4 HOUSEKEEPING

1. Keeping the work area clean/ free from debris, removing unused scaffoldings, scraps, insulation/ sheeting wastage /cut pieces temporary structures, packing woods etc. will be in the scope of the subcontractor.
2. Such cleaning has to be done by subcontractor within quoted rate, on daily basis by dedicated identified groups equipped with all require PPEs and training. The details of housekeeping group shall be provided to BHEL.
3. If such activity is not carried out by subcontractor / BHEL is not satisfied, then BHEL may get it done by other agency and actual cost along with BHEL overheads will be deducted from subcontractor's bill. Such decisions of BHEL shall be binding on the subcontractor.
4. Pests, such as beehives etc. shall be periodically removed in a humane fashion
5. **Following are to be taken care of on daily basis.**
 - i. All surplus earth and debris are removed/disposed of from the working areas to identified locations.
 - ii. Unused/Surplus cables, steel items and steel scrap lying scattered at different places /elevation within the working areas are removed to identify locations.
 - iii. All wooden scrap, empty wooden cable drums and other combustible packing materials, shall



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 81 of 162

be removed from workplace to identified locations. Sufficient waste bins shall be provided at different work places for easy collection of scrap/waste. Scrap chute shall be installed to remove scrap from high locations

- iv. Access and egress (stair case, gangways, ladders etc.) path should be free from all scrap and other hindrances.
- v. Workmen shall be educated through tool box talk about the importance of housekeeping and encourage not to litter.
- vi. Labor camp area shall be kept clear and materials like pipes, steel, sand, concrete, chips and bricks, etc. shall not be allowed in the camp to obstruct free movement of men and machineries.
- vii. Fabricated steel structures, pipes & piping materials shall be stacked properly.
- viii. No parking of trucks/trolleys, cranes and trailers etc. shall be allowed in the camp, which may obstruct the traffic movement as well as below LT/HT power line.
- ix. Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas

13.5 TRAFFIC MANAGEMENT

13.5.1 SAFE WORKPLACE TRANSPORT SYSTEM

1. Traffic routes in a work place shall be suitable for the persons or vehicles using them.
2. Traffic routes for pedestrians and vehicles shall be clearly demarcated and indicated
3. Traffic routes shall never intersect the area of work and shall not endanger the site personnel
4. For internal traffic, lines marked on roads / access routes and between buildings shall clearly indicate where vehicles are to pass.
5. Temporary obstacles shall be brought to the attention of drivers by warning signs / hazard cones.
6. Power cables shall be maintained at a minimum height above ground as specified in Indian Electricity Act & Rules.
7. Sensible speed limits shall set and clearly displayed. Painted Speed ramps preceded by a warning signs or marker are necessary for stretches of roads exceeding 50 meters.
8. The traffic route should be wide enough to allow vehicles to pass and re-pass oncoming or parked traffic and it may be advisable to introduce on-way system or parking restrictions.
9. Safest route shall be provided between places where vehicles have to call or deliver.
10. Avoid vulnerable areas/items such as fuel or chemicals tanks or pipes, open or unprotected edges and structures likely to collapse
11. Safe areas shall be provided for loading and unloading of material. Loading / Unloading Permit shall be taken from BHEL prior to any significant loading / unloading activity
12. Avoid sharp or blind bends. If this is not possible hazards should be indicated e.g. blind corner.
13. Ensure road crossings are minimum and clearly signed.
14. Entrance and gateways shall be wide enough to accommodate a second vehicle without causing obstruction.
15. Forklift trucks shall not pass over road hump unless of a type capable of doing so.

16. Overhead electric cable, pipes containing flammable hazardous chemical shall be shielded by using goal posts height gauge posts or barriers.
17. The height of Power cables above areas of movement shall conform to Indian Electricity Rules
18. Road traffic signs shall be provided on prominent locations for prevention of accidents and hazards and for quick guidance and warning to employees and public.
19. Safety signs shall be displayed as per the project working requirement and guideline of the state in which project is done.
20. Vehicles hired or used shall not be parked within the 15m radius of any working area. Any vehicle, that is required to be at the immediate/near the vicinity, shall be approved by the person in-charge of the site.

13.5.2 TRAFFIC ROUTE FOR PEDESTRIANS

1. Where traffic routes are used by both pedestrians and vehicles road shall be wide enough to allow vehicles and pedestrians safely.
2. Separate routes shall be provided for pedestrians to keep them away from vehicles. Provide suitable barriers/guard at entrances/exit and the corners or buildings.
3. Where pedestrian and vehicle routes cross, appropriate crossing shall be provided.
4. Where crowd is likely to use roadway e.g. at the end of shift, stop vehicles from using them at such times.
5. Provide high visibility clothing for people permitted in delivery area.

13.5.3 WORK VEHICLES

Work vehicles shall be as safe stable efficient and roadworthy as private vehicles on public roads. Subcontractors shall ensure that drivers are suitably trained and have valid license and experience for the designated class of vehicle. All vehicle e.g. heavy motor vehicle forklift trucks dump trucks mobile cranes shall ensure that the work equipment conforms to the following:

1. A high level of stability.
2. A safe means of access/egress.
3. Suitable and effective service and parking brakes.
4. Windscreens with wipers and external mirrors giving optimum all round visibility.
5. Provision of horn, vehicle lights, reflectors, reversing lights, reversing alarms.
6. Provision of seat belts.
7. Guards on dangerous parts.
8. Driver protection - to prevent injury from overturning and from falling objects/materials.
9. Driver protection from adverse weather.
10. No vehicle shall be parked below HT/LT power lines in conformance to Indian Electricity Act & Rules.
11. Valid Pollution Under Control certification for all vehicles



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 83 of 162

13.5.4 DAILY CHECKS BY DRIVER

There should also be daily safety checks containing below mentioned points by the driver before the vehicle is used. Subcontractors should ensure that drivers carry out these checks as a minimum.

Brakes	Mirrors	Warning signals
Tires	Windscreen waters	Specific safety system i.e. control interlocks
Steering	Wipers	

13.5.5 TRANSPORTATION OF PERSONNEL AND MATERIALS BY VEHICLES

1. All drivers shall hold a valid driving License for the class of vehicle to be driven and be registered as an authorized BHEL driver with the Administration Department.
2. Securing of the load shall be by established and approved methods, i.e. chains with patented tightening equipment for steel/heavy loads. Sharp corners on loads shall be avoided when employing ropes for securing.
3. All overhangs shall be made clearly visible and restricted to acceptable limits
4. Load shall be checked before moving off and after traveling a suitable distance.
5. On no account is construction site to be blocked by parked vehicles Drivers of vehicles shall only stop or park in the areas designate by the stringing foreman.
6. Warning signs shall be displayed during transportation of material.
7. All vehicles used by Subcontractor shall be in worthy condition and in conformance to the Land Transport requirement

13.5.6 MAINTENANCE

All Vehicles used for transportation of man and material shall undergo scheduled inspections on frequent intervals to secure safe operation. Such inspections shall be conducted in particular for steering, brakes, lights, horn, doors etc. Site management shall ensure that work equipment is maintained in an efficient, working order and in good repair. Inspections and services carried out at regular intervals of time and or mileage. No maintenance shall be carried below HT/LT power lines.

13.6 EMERGENCY PREPAREDNESS AND RESPONSE

1. Subcontractor shall develop Emergency preparedness and response capability and Emergency Response Team as per [HSEP06: HSE Procedure for Emergency Preparedness and Response](#)
2. Availability of adequate number of first aiders and fire warden shall be ensured
3. All the subcontractor's supervisory personnel and sufficient number of workers shall be trained for fire protection systems. Enough number of such trained personnel must be available during the tenure of contract. Subcontractor should nominate his supervisor to coordinate and implement the safety measures and communicate the same to BHEL.
4. Assembly point shall be earmarked and access to the same from different location shall be shown
5. Fire exit shall be identified and pathway shall be clear for emergency escape.
6. Appropriate type and number of fire extinguisher shall be deployed as per Clause No. 13.2.11 and validity shall be ensured periodically through inspection
7. Adequate number of first aid boxes shall be strategically placed at different work places to cater



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 84 of 162

- to all emergency needs. Holder of the first aid box shall be identified on the box itself who will have the responsibility to maintain the same.
8. First aid center shall be developed at site with trained medical personnel and ambulance
 9. Emergency contact numbers of the site shall be displayed at prominent locations.
 10. Tie up with fire brigade shall be done in case customer is not having fire station.
 11. Tie up with hospital shall be ensured in order to ensure the availability of following services to victims quickly without wasting precious time:
 - a. Intensive Care Unit with Ventilator and other necessary life support systems
 - b. Facility of specialized Orthopedic Surgery – in case of fracture / amputation
 - c. Facility of specialized brain / neuro surgery – in case of head trauma
 - d. Facility of specialized burn unit / ward – in case of Fire / burn injury
 - e. and other facilities as per requirement at site location
- In case tie up with multiple hospitals is required to cover all possible accidents, same shall be done. The list of facilities to be regularly checked and updated.
12. A detailed emergency services (Fire / Medical etc.) tie up plan shall be submitted to BHEL in monthly report Format No. HSEP:14-F05
 13. Mock drill shall be conducted on different emergencies periodically to find out gaps in emergency preparedness and taking necessary corrective action

14 HSE INSPECTION

Inspection on HSE for different activities being carried out at site shall be done to ensure compliance to HSEMS requirements. The subcontractor shall maintain necessary safety equipment as applicable, to enable inspection personnel/agency perform Inspection. If any test equipment is found not complying with proper safety requirements then the Inspection Agency may withhold inspection, till such time the desired safety requirements are met.

The requirements of respective work permits are to be ensured by respective supervisors, safety personnel and area in-charges. In addition, the formats & checklists as per Clause 21 of this document provided by BHEL shall be used for inspection by Safety personnel (as a minimum), and records of inspection to be maintained. BHEL shall reserve the right to modify any Format in this document or introduce additional checklists / formats to ensure regular inspection of all equipment as per requirement.

14.1 DAILY HSE CHECKS

Both the Site Supervisors and HSE Supervisors are to conduct daily site Safety inspection around work activities and premises to ensure that work methods and the sites are maintained to an acceptable standard. The following are to form the common subjects of a daily safety inspection:



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 85 of 162

1. Height Work:

- Safe, barricaded platform
 - PPEs
 - Proper method
 - Awareness
- Personal Safety wears & gear compliance.
 - Complying with site safety rules and permit-to-work (PTW).
 - Positions and postures of workers.
 - Use of tools and equipment etc. by the workers.
 - The inspection shall be carried out just when work starts in beginning of the day, during peak activities period of the day and just before the day's work ends.

14.2 INSPECTION OF HEIGHT WORKING

- Any kind of height work (above 2 meters) shall not be carried out without active physical supervision by concerned supervisor or safety personnel. All non-conformances related to height work shall be handled on priority and closed immediately after halting the work.
- A roster of personnel deployed for inspection of height work and other critical activities shall be prepared and submitted to BHEL in monthly report Format No. HSEP:14-F05, in order to ensure effective supervision at all times
- Inspection on height working shall be conducted **daily** by supervisors before start of work to ensure safe working condition including provision of:

a. Fall arrestor	d. Fencing and barricading	g. Proper scaffolding with valid
b. Lifelines	e. Warning signage	Tags, access and egress.
c. Safety nets	f. Covering of opening	h. Illumination

- Inspection on height working shall be conducted once in a week by HSE officer as per
- Format no. HSEP: 14-F10.
- Medical fitness, including vertigo test of height worker shall be ensured.
- Height working shall not be allowed during adverse weather.

14.3 INSPECTION OF PPE

PPEs shall be inspected by HSE officer at random once in a week as per Format no. HSEP: 14-F06 for compliance to standard and provisions and any adverse observation shall be recorded in the PPE register.

14.4 INSPECTION OF T&Ps

- All T& Ps being used at site shall be inspected by HSE officer once in a month as per specific Formats in this document, or (if not available) general Format no. HSEP: 14-F07 for its healthiness and maintenance.
- A master list of T&Ps and validity of their inspection certificates shall be maintained by each agency and details shall be submitted to BHEL in monthly format no. HSEP:14-F05.
- The T&Ps which require third party inspection shall be checked for its validity during inspection.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 86 of 162

The third party test certificate should be accompanied with a copy of the concerned competent person's valid qualification record. BHEL shall be given advance intimation of Third Party Inspection. BHEL shall associate with Inspection as per discretion.

14.5 INSPECTION OF CRANES AND WINCHES

1. Cranes and winches shall be inspected by the operator through a daily checklist for its safe condition (as provided by the equipment manufacturer) before first use of the day.
2. Cranes and Winches shall be inspected by HSE officer once in a month as per Format no. HSEP: 14-F08 & F09 for healthiness, maintenance and validity of third party inspection.
3. The date of third party inspection and next due date shall be painted on cranes and winches.
4. The operators/drivers shall be authorized by sub-contractor based on their competency and experience and shall carry the I-card.
5. The operator should be above 18 years of age and should be in possession of driving license of HMV man & goods), vision test certificate and should have minimum qualification so that he can read the instructions and check list.

14.6 INSPECTION ON WELDING AND GAS CUTTING OPERATION

1. Supervisor shall ensure that no flammable items are available in near vicinity during welding and gas cutting activity.
2. Gas cylinders shall be kept upright.
3. Use of Flash back arrestor shall be ensured at both ends.
4. Inspection during welding and gas cutting operations shall be carried out by HSE officer once a month as per Format no. HSEP: 14-F11.
5. Use of fire blanket to be ensured to avoid falling of splatters during welding or gas cutting operation at height.
6. Availability of fire extinguisher in vicinity shall be ensured.

14.7 INSPECTION ON ELECTRICAL INSTALLATION / APPLIANCES

1. Ensure proper earthing in electrical installation
2. Use of ELCB at electrical booth
3. Electrical installation shall be properly covered at top where required
4. Use appropriate PPEs while working
5. Use portable electrical light < 24 V in confined space and potentially wet area.
6. Monthly inspection shall be carried out as per Format no. HSEP: 14-F12.

14.8 INSPECTION OF ELEVATOR

1. Elevators shall be inspected by concerned supervisors once in a week as per Format no. HSEP: 14-F13.
2. All elevators shall be inspected by competent person and validity shall be ensured.
3. The date of third party inspection and next due date shall be painted on elevator.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 87 of 162

14.9 MONTHLY SITE INSPECTION

Subcontractor shall carry out monthly HSE inspection of all work areas as per Format No. HSEP:14-F20 and submit to BHEL

14.10 NON-CONFORMITY HANDLING:

Any serious non-conformances identified during inspection observed shall be addressed immediately.

In case immediate closure of non-conformities is not possible:

- work to be halted in the area
- Non-conformance to be generated and submitted to responsible person and BHEL
- non-conformance to be resolved through responsible agency / person
Only after closure of serious non-conformances, work to be allowed to resume.

All non-conformances & safety violations to be recorded and closed in a time bound manner.

15 HSE PERFORMANCE

HSE performance of subcontractor shall be monitored as per BHEL criteria, based on which, marks will be awarded. Marks can be used to evaluate and rate the contractor as per BHEL internal systems

HSE performance of the subcontractor shall be monitored as per the following parameters: (For each contract-wise package). **Periodicity:** RA Bill period

Sl. No.	Parameters of measurement	Ref Clauses	Weightage	Actual
1	Availability of safety officers at site – absence up to 15% permissible. Score proportionately gets reduced with higher rate of absence. Availability to be reckoned from start date of manpower mobilization	7.1	10	
2	Attendance by the safety officer and site CM (as applicable) in the meeting convened by BHEL	20	5	
3	Level of compliance w.r.t decisions taken in previous meetings/audit/inspection/as reported.	-do-	5	
4	Timely submission of monthly report on safety in the prescribed format	11	3	
5	Timely reporting any incident including near-miss to BHEL /Customer/statutory authority (if required) and submission of investigation report of all LTIs/	12	10	



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 88 of 162

	Major Property Loss incident and HSE events			
6	Degree of PPE compliance, Fall protection arrangements and safety net coverage	8.3, 14	15	
7	Level of compliance w.r.t safety rules	13,14	25	
8	Availability of proper first-aid facility, ambulance, hygienic labor colony and other adequate labor welfare initiatives, conducting of health check-up as per BOCW requirements	8	6	
9	Conducting induction training, skill training, tool box meeting, mock-drills, HSE Promotion, Emergency Preparedness and Response. Participation in BHEL training also counted	9.0	6	
10	Level of House-keeping, Environmental Control	13.3, 13.5	10	
11	Level of general illumination	8.4.11	5	
A	TOTAL Obtained		100	

Penalty score:

- i. For each fatality: -10
- ii. For each Major Incident: -07

NET TOTAL score will be arrived after deducting penalty score from Total score.

Subcontractor shall make available all data required for evaluation to BHEL as and when demanded.

1. If safety record of the subcontractor in execution of the awarded job is to the satisfaction of safety department of BHEL, issue of an appropriate certificate to recognize the safety performance of the subcontractor may be considered by BHEL after completion of the job.
2. 1.5% of running bill shall be cleared subject to certification of desired safety performance by BHEL

16 HSE PENALTIES FOR NON-COMPLIANCE

1. Nonconformity of safety rules and safety appliances will be viewed seriously and BHEL has right to impose fines on the subcontractor for every instance of violation noticed.
2. The applicable penalties for HSE violations are given in Format No. HSEP14-F14 of this document



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 89 of 162

3. The list of non-compliances given in above format is not exhaustive. The BHEL site in-charge has liberty to impose a penalty for any other non-compliance and incidents of any nature.
4. If principal customer or statutory and regulatory bodies impose penalty on ground of statutory non-compliance or non-compliance of HSE rules by the subcontractor or any incident of any nature including fatality or permanent disability, the same shall be passed on to the subcontractor with appropriate overhead
5. The penalty amount shall be recovered from subcontractors from the RA Bill, otherwise Final bill.

17 COMPENSATION TO ACCIDENT VICTIMS

1. 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 employees as detailed below.
 - b. **Victim:** Any person who suffers permanent disablement or dies in an accident as defined below.
 - c. **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.
 - d. **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. (ii) In the event of other permanent disability: Rs. 7,00,000/- (Rs. Seven Lakh)
 - e. **Permanent Disability:** A disablement that is classified as a permanent total disablement under the proviso to Section 2 (I) of the Employee's Compensation Act, 1923. "
2. In addition to above, contractor shall provide appropriate compensation to victims of major and fatal incidents as per Employee Compensation Act, 1923, ESIC Act, 1948 or as per any existing Acts and guidelines



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 90 of 162

18 INTERNAL & EXTERNAL HSE AUDITS

1. Subcontractor shall extend full co-operation and maintain necessary documents & records as required by Internal & External HSE Audit carried out by BHEL. / Third Party
2. All non-conformities and observations on HSE shall be disposed of-by subcontractor in a time bound manner as detailed in Audit Report.
3. All required corrective actions shall be taken by the subcontractor in order to avoid recurrence

19 OTHER REQUIREMENTS

1. In case of any delay in completion of a job due to mishaps attributable to lapses by the subcontractor, BHEL shall have the right to recover cost of such delay from the payments due to the subcontractor, after holding an appropriate enquiry and notifying the subcontractor suitably.

2. **RISK & COST:**

If the subcontractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so and/or if the subcontractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instruction regarding safety as per contractual requirements, BHEL shall have the right to take corrective steps at the risk and cost of the subcontractor after giving a notice of not less than 7 days indicating the steps that would be taken by BHEL.

3. If the subcontractor succeeds in carrying out its job in time without any fatal or disabling injury incident and without any damage to property BHEL may, at its sole discretion, favourably consider to reward the subcontractor suitably for the performance.
4. The subcontractor shall take all measures at all the sites of work to protect all persons from incidents and shall be bound to bear the expenses of every suit, action or other proceeding of law that may be brought by any persons for injury sustained, death or damage to environment



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 91 of 162

owing to neglect of the HSE precautions by the subcontractor; and shall be liable to pay any such persons such compensation, should such claim proceeding be filed against BHEL.

The subcontractor hereby agrees to indemnify BHEL against the same.

20 HSE REVIEW

BHEL shall hold HSE review meeting every month or as per requirement in order to discuss and resolve HSE issues of site and improve HSE performance. It will also discuss the incidents occurred since previous meeting, its root cause and Corrective action. The indicative agenda is given below:

1. Implementation of earlier MOM
2. HSE performance review
3. HSE inspection review w.r.t non-conformances observed and their status
4. HSE audit and CAPA
5. HSE training conducted and requirement
6. Health check-up camp
7. HSE planning for the erection and commissioning and installation activities in the coming month
8. HSE reward and promotional activities
9. HSE data analysis and improvement – Data analyzed will include non-conformances closed and pending, incident data, training data etc.

Subcontractor shall ensure presence of site in-charge, all package in-charges and safety officers, as communicated by BHEL in the meeting.

Subcontractor shall take requisite actions as per record notes and as decided in the meeting, in a time bound manner and submit compliance report to BHEL.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-A)

Doc. No.: HSEP:14-
ER
Rev.: 00
Date:25.04.19
Page 92 of 162

21 FORMATS USED

This is minimum list of Formats to be used for reporting by the subcontractor. Other Formats are indicated in respective HSE Procedures, Work Permits, OCPs or as specified by BHEL. The medium of reporting can be hard / soft as indicated by BHEL.

BHEL can modify these Formats or introduce new Formats to the extent necessary to get the desired performance data of all HSE activities.

SN	Format Name	Format No.	Frequency of check	Rev
1	Work at Height Permit	HSEP:14-FP01	Before start of work and regularly thereafter as per Permit conditions	00
2	Hot Work Permit	HSEP:14-FP02		00
3	Confined Space Work Permit	HSEP:14-FP03		00
4	Excavation Work Permit	HSEP:14-FP04		00
5	Radiation Work Permit	HSEP:14-FP05		00
6	Lifting Activity Work Permit	HSEP:14-FP06		00
7	Lockout-Tagout Work Permit	HSEP:14-FP07		00
8	Inspection of First Aid Box	HSEP:14-F01	Weekly	00
9	Health Check Up	HSEP:14-F02	With new Induction & as per requirement thereafter	00
10	HSE Induction / Regular / On-the-Job Training	HSEP:14-F03	With new Induction & as per requirement thereafter	00
11	Tool Box Talk	HSEP:14-F04	Daily before job start	00
12	Site HSE Report	HSEP:14-F05	Monthly	00
13	PPE Inspection	HSEP:14-F06	Weekly	00
14	PPE Issue and Receipt	HSEP:14-F06A	With new Induction	
15	Inspection of T&Ps (General)	HSEP:14-F07	Monthly / As per requirement	00
16	Inspection of Cranes	HSEP:14-F08	Monthly / As per requirement	00
17	Inspection of Winches	HSEP:14-F09	Monthly / As per requirement	00
18	Inspection of Height Working	HSEP:14-F10	Daily / As per requirement	00
19	Inspection on Welding & Gas Cutting	HSEP:14-F11	Weekly / As per requirement	00
20	Inspection on Electrical Installation	HSEP:14-F12	Weekly / As per requirement	00
21	Inspection on Elevator	HSEP:14-F13	Weekly / As per requirement	00
22	HSE Penalty	HSEP:14-F14	-	00
23	Initial Verification of PPE's & Lifting Tools & Tackles	HSEP:14-F15	As and when new PPEs and T&Ps are received	00
24	Inspection of Labor Colony	HSEP:14-F16	Monthly / as per requirement	00
25	Recording of First Aid Injuries	HSEP:14-F17	As and when such injuries occur	00
26	E-waste Handled / Generated	HSEP:14-F18	Half Yearly	00
27	Hazardous Waste at the Facility	HSEP:14-F19	Half Yearly	00
28	HSE Checklist-cum-Compliance Report	HSEP:14-F20	As per Audit Calendar	00
29	Illumination Levels	HSEP:14-F21	Weekly / As per requirement	00
30	Incident Reporting	HSEP:14-F22	-	00
31	Incident Recording	HSEP:14-F23	-	00



HSEP:14-FP01

WORK AT HEIGHT PERMIT		Permit No. & Date
Project & Unit:		Emergency Contact Nos:
BHEL Sub-contractor:		

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Sub-Contractor Performing the Work: _____

Name of Sub-Contractor's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Sub-Contractor's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1	All workers on job are competent and medically fit (No Height Phobia) for working at height		
2	Hazards in the vicinity are identified, controlled and communicated to the worker.		
3	Scaffolding soundness inspected is available for use with valid tag		
4	Work platform is not made of bamboo or weak material. Barricading is available with Top, Mid Rails and Toe Guard.		
5	Working platform is clean without any unwanted material. Floor openings are covered.		
6	Access and exit to workplace are safe, marked and without obstruction.		
7	Adequate lighting provided (for dark hours) as per applicable lux standards (Refer HSEP:13)		
8	Safety nets are provided below working area.		
9	Area below the working platform has been cleared of all activity		
10	Ladders have been secured, inspected and provided as per BHEL standard/contract.		
11	Horizontal life lines are provided to cater to design specification of 2300 kg per person.		
12	Safety harness with life line support/ fall arrester are checked and available in working condition		
13	Safety shoes (non-slip), Helmet with chin strip available with employees		
14	Visible Signboards provided on working platforms in workers' understandable language		
15	All lifting / tightening tools, hand tools/equipment checked and in good condition		
16	ELCB provided for Electrical connections individually. Electrical cable, welding Hose/Compressed air hose properly secured and laid down without obstruction. Earth resistance is OK.		
17	Crane / Winch / Hydra operator is qualified and experienced		
18	Emergency response team & Medical Facilities available. Work area is cordoned off.		
19	Job Safety Analysis Submitted		
20	Additional Permits to be taken (Please specify & attach):		

Declaration: All the points mentioned in the above checklist have been checked and found OK**Permit Receiver:**

Site Engineer (Sub- Contractor):	Site Safety Officer (Sub-Contractor):
Signature: _____	Signature: _____
Name: _____ Designation: _____	Name: _____ Designation: _____

Permit Issuer:

Engineer of Concerned Execution Department (BHEL):	Site Safety Officer (BHEL):
Signature: _____	Signature: _____
Name: _____ Designation: _____	Name: _____ Designation: _____
Package-in-charge (BHEL):	
Signature: _____	
Name: _____ Designation: _____	

Verified by Customer Representative (if applicable), Name: _____ Sign: _____ Date: _____ Time: _____

(* Permit valid for 7 days, subject to daily renewal, and extension as per overleaf instructions / record formats)

Daily Work Area Condition Endorsement

Sl. No.	Date	Signature with Date & Time		Remarks
		Agency Safety	BHEL Safety	
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date & Time)	To..... (Date & Time)		Agency Site Engineer	Agency Safety Officer	BHEL Site Engineer (PIA)	BHEL Safety Officer
1.							
2.							
3.							
4.							
5.							
6							

TO BE SIGNED BY THE BHEL HSE & EXECUTION AFTER THE WORK IS OVER

Permit is here by returned after completing the job & ensuring safe removal of men and material.

Site Engineer, BHEL		Site HSE Engineer, BHEL	
Signature:		Signature:	
Name:		Name:	

General Instructions:

1	This Permit is required for working at height of 2 mtr. and above or above excavation of 2 mtr or deeper.
2	This permit must be available at the work site all the times of the work.
3	Location and description of the work must be clearly indicated by the permittee.
4	Terms applicable must be clearly indicated by the permittee.
5	This permit shall be endorsed each day only after checking all the compliance jointly by the contractor and BHEL safety.
6	Permit shall be issued for not more than 7 days including the issue date.
7	Permit shall be returned to the HSE Department of BHEL after completion of the job.
8	Before engaging anybody to work at height, height phobia needs to be ascertained and proper fitness certificate to be ensured.
9	All safety precautions to be taken as per work site HSE plan.
10	Distribution of copy:
	Original- Permittee, Duplicate –Department HOS, Contractor, Triplicate - Site HSE Dept.,



HSEP:14-FP02

HOT WORK PERMIT		Permit No. & Date
Project & Unit:		Emergency Contact Nos:
BHEL Sub-contractor:		

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Sub-Contractor Performing the Work: _____

Name of Sub-Contractor's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Sub-Contractor's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Welder is trained and qualified with good attendance in on-the-job training		
2.	Area ensured safe and free from all hazards (explosives etc.) with barricading and safe inlet / exit		
3.	Proper ventilation and lighting provided (in case of dark hours).		
4.	Gas hoses are in good condition and not cut / leaking		
5.	Pressure gauges/Flash back arrestor (at both ends) provided and in working condition.		
6.	Gas pressure in cylinder is within limits and hydraulic test certificate is available		
7.	Gas cylinders are stacked vertically and not below the welding / cutting area. Regulator key is available with cylinder. Gas cylinders covered with shields to prevent falling splinters.		
8.	Power supply to welding machine is through ELCB of 30 mA rating, which is tested and found ok; Earthing is tested and found OK		
9.	Welding machine input/output cables, welding holder and weld return clamp (Holder) are insulated and in good condition.		
10.	In case of welding in enclosed / confined spaces, the integrity of the structure and supports are ensured, Gas Testing done and evacuation system ensured in place		
11.	Emergency STOP buttons are in working condition. Welder /Helper knows how to operate it.		
12.	Welder & Fitter trained to connect ground/work return clamps (Holder) to work place prior to energization of welding machine.		
13.	Personal Protective equipment Minimum applicable: safety helmet, safety goggles, welding helmet, safety (rubber) shoes, leather gloves, long sleeve and nose mask -provided		
14.	In case of pits, water removed from the pit and wood/rubber insulation provided.		
15.	Safety signboards / cautions are in place.		
16.	Adequate and Suitable nos. of applicable firefighting extinguisher provided.		
17.	Nearby combustible material removed. Housekeeping done.		
18.	All workers explained about the hazards		
19.	First aid in attendance.		
20.	Any other Precautions or Permits required (Height Work, Confined Space etc.), give details and attach		

Declaration: All the points mentioned in the above checklist have been checked and found OK**Permit Receiver:**

Site Engineer (Sub- Contractor):	Site Safety Officer (Sub-Contractor):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____

Permit Issuer:

Engineer of Concerned Execution Department (BHEL):	Site Safety Officer (BHEL):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____
Package-in-charge (BHEL):	
Signature:	
Name: _____ Designation: _____	

Verified by Customer Representative (if applicable), Name: _____ Sign: _____ Date: _____ Time: _____

(* Permit valid for 7 days, subject to daily renewal, and extension as per overleaf instructions / record formats)

Daily Work Area Condition Endorsement

Sl. No.	Date	Signature with Date & Time		Remarks
		Agency Safety	BHEL Safety	
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date & Time)	To..... (Date & Time)		Agency Site Engineer	Agency Safety Officer	BHEL Site Engineer (PIA)	BHEL Safety Officer
1.							
2.							
3.							
4.							
5.							
6.							

TO BE SIGNED BY THE BHEL HSE & EXECUTION AFTER THE WORK IS OVER

Permit is here by returned after completing the job & ensuring safe removal of men and material.

Site Engineer, BHEL		Site HSE Engineer, BHEL	
Signature:		Signature:	
Name:		Name:	

General Instructions:

1	This Permit is required for all kinds of Hot Work eg. Welding, cutting etc..
2	This permit must be available at the work site all the times of the work.
3	Location and description of the work must be clearly indicated by the permittee.
4	Terms applicable must be clearly indicated by the permittee.
5	This permit shall be endorsed each day only after checking all the compliance jointly by the contractor and BHEL safety.
6	Permit shall be issued for not more than 7 days including the issue date.
7	Permit shall be returned to the HSE Department of BHEL after completion of the job.
8	Before engaging anybody to work, competency and fitness to be ensured.
9	All safety precautions to be taken as per work site HSE plan.
10	Distribution of copy:
	Original- Permittee, Duplicate –Department HOS, Contractor, Triplicate - Site HSE Dept.,



HSEP:14-FP03

CONFINED SPACE WORK PERMIT		Permit No. & Date
Project & Unit:		Emergency Contact Nos:
BHEL Sub-contractor:		

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Sub-Contractor Performing the Work: _____

Name of Sub-Contractor's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Sub-Contractor's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Has the equipment been Isolated from Power/Steam/Air?		
2.	Has the equipment been Isolated from liquid or gases?		
3.	Has the equipment been de-pressurized &/or drained?		
4.	Has the equipment been Blanked/blinded or disconnected?		
5.	Has the equipment been water flushed &/or steamed?		
6.	Whether man ways open and ventilated?		
7.	Whether constant Inert gas flow arranged?		
8.	Whether mechanically ventilated and adequately cooled?		
9.	Whether 24 V lighting provided inside the confined space?		
10.	Whether Radiation sources removed?		
11.	Whether training on confined space provided to the individual / group?		
12.	Whether required PPEs (hand gloves, goggles, face shield, ear plug/muff, protective clothing etc.) used?		
13.	Whether Safety harness and Lifeline used?		
14.	Whether Dust/Gas/Air Line mask used?		
15.	Whether attendant with SCBA/Air mask available?		
16.	Whether grounded air Exhaust/Blower/ AC provided?		
17.	Whether Personal Gas alarm provided?		
18.	Whether communication Equipment Provided?		
19.	Whether rescue equipment/team available?		
20.	Whether firefighting arrangement done		
21.	Any other Precautions or Permits required (Height Work, Confined Space etc.), give details and attach		

Declaration: All the points mentioned in the above checklist have been checked and found OK**Permit Receiver:**

Site Engineer (Sub- Contractor):	Site Safety Officer (Sub-Contractor):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____

Permit Issuer:

Engineer of Concerned Execution Department (BHEL):	Site Safety Officer (BHEL):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____
Package-in-charge (BHEL):	
Signature:	
Name: _____ Designation: _____	

Verified by Customer Representative (if applicable), Name: _____ Sign: _____ Date: _____ Time: _____

(* Permit valid for 7 days, subject to daily renewal, and extension as per overleaf instructions / record formats)

Daily Work Area Condition Endorsement

Sl. No.	Date	Signature with Date & Time		Remarks
		Agency Safety	BHEL Safety	
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date & Time)	To..... (Date & Time)		Agency Site Engineer	Agency Safety Officer	BHEL Site Engineer (PIA)	BHEL Safety Officer
1.							
2.							
3.							
4.							
5.							
6							

TO BE SIGNED BY THE BHEL HSE & EXECUTION AFTER THE WORK IS OVER

Permit is here by returned after completing the job & ensuring safe removal of men and material.

Site Engineer, BHEL		Site HSE Engineer, BHEL	
Signature:		Signature:	
Name:		Name:	

General Instructions:

1	This Permit is required for all confined space tasks, where injury can happen due to lack of oxygen, or chances of fire are there due to gas accumulation.
2	This permit must be available at the work site all the times of the work.
3	Location and description of the work must be clearly indicated by the permittee.
4	Terms applicable must be clearly indicated by the permittee.
5	This permit shall be endorsed each day after checking all the compliance jointly by the contractor and BHEL safety.
6	Permit shall be issued for not more than 7 days including the issue date.
7	Permit shall be returned to the HSE Department of BHEL after completion of the job.
8	Before engaging anybody to work, competency and fitness to be ensured.
9	All safety precautions to be taken as per work site HSE plan.
10	Distribution of copy:
	Original- Permittee, Duplicate –Department HOS, Contractor, Triplicate - Site HSE Dept.,



HSEP:14-FP04

EXCAVATION WORK PERMIT		Permit No. & Date
Project & Unit:		Emergency Contact Nos:
BHEL Sub-contractor:		

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Sub-Contractor Performing the Work: _____

Name of Sub-Contractor's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Sub-Contractor's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1	Precautions taken for Underground Electrical Cable		
2	Precautions taken for Under / Above ground sewer/Drinking Water Line		
3	Precautions taken for Underground Telecommunication Line		
4	Precautions taken for Underground Product/Utility Line		
5	Precautions taken for Underground Fire Water Line		
6	Shoring / Shuttering / Sheet piling done to prevent collapse of excavation walls. Strength of Excavation wall ensured at all times		
7	Hard Barricading & Edge Protection provided		
8	Separate Safe Access for Man and Vehicle		
9	Lighting arrangement		
10	Banks Man Provided		
11	Required basic PPEs provided		
12	Slope Cutting/Benching Maintained		
13	Excavated soil / Construction Material / equipment kept away from the edge.		
14	First aid in attendance.		
15	Any other Precautions or Permits required (Height Work, Confined Space etc.), give details and attach		

Declaration: All the points mentioned in the above checklist have been checked and found OK**Permit Receiver:**

Site Engineer (Sub- Contractor):	Site Safety Officer (Sub-Contractor):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____

Permit Issuer:

Engineer of Concerned Execution Department (BHEL):	Site Safety Officer (BHEL):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____
Package-in-charge (BHEL):	
Signature:	
Name: _____ Designation: _____	

Verified by Customer Representative (if applicable), Name: _____ Sign: _____ Date: _____ Time: _____

(* Permit valid for 7 days, subject to daily renewal, and extension as per overleaf instructions / record formats)

Daily Work Area Condition Endorsement

Sl. No.	Date	Signature with Date & Time		Remarks
		Agency Safety	BHEL Safety	
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date & Time)	To..... (Date & Time)		Agency Site Engineer	Agency Safety Officer	BHEL Site Engineer (PIA)	BHEL Safety Officer
1.							
2.							
3.							
4.							
5.							
6							

TO BE SIGNED BY THE BHEL HSE & EXECUTION AFTER THE WORK IS OVER

Permit is here by returned after completing the job & ensuring safe removal of men and material.

Site Engineer, BHEL		Site HSE Engineer, BHEL	
Signature:		Signature:	
Name:		Name:	

General Instructions:

1	This Permit is required for all excavation tasks 1.22 mtr or deeper
2	This permit must be available at the work site all the times of the work.
3	Location and description of the work must be clearly indicated by the permittee.
4	Terms applicable must be clearly indicated by the permittee.
5	This permit shall be endorsed each day after checking all the compliance jointly by the contractor and BHEL safety.
6	Permit shall be issued for not more than 7 days including the issue date.
7	Permit shall be returned to the HSE Department of BHEL after completion of the job.
8	Before engaging anybody to work, competency and fitness to be ensured.
9	All safety precautions to be taken as per work site HSE plan.
10	Distribution of copy:
	Original- Permittee, Duplicate –Department HOS, Contractor, Triplicate - Site HSE Dept.,



HSEP:14-FP05

RADIATION WORK PERMIT		Permit No. & Date
Project & Unit:		Emergency Contact Nos:
BHEL Sub-contractor:		

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Sub-Contractor Performing the Work: _____

Name of Sub-Contractor's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Sub-Contractor's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All the persons at the site informed/removed from the area.		
2.	Area around the source of radiation cordoned off with the rope/chord.		
3.	Radiation warning symbol/boards displayed around radiography work on rope/chord.		
4.	Radiographer worn radiation badges during testing and is within safe limits.		
5.	Radiography camera and carrying case box having radiation symbol.		
6.	Radiation Survey Meter is in working condition, calibrated & within validity period.		
7.	Radiographer has valid certificate from BARC.		
8.	Blinking light provided on road during radiography (in dark hours).		
9.	Proper required Illumination provided		
10.	Safe access and working platform provided to conduct RT work		
11.	All the persons involved in Radiography work are aware of the hazard of radiation		
12.	Any other Precautions or Permits required (Height Work, Confined Space etc.), give details and attach		

Declaration: All the points mentioned in the above checklist have been checked and found OK**Permit Receiver:**

Site Engineer (Sub- Contractor):	Site Safety Officer (Sub-Contractor):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____

Permit Issuer:

Engineer of Concerned Execution Department (BHEL):	Site Safety Officer (BHEL):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____
Package-in-charge (BHEL):	
Signature:	
Name: _____ Designation: _____	

Verified by Customer Representative (if applicable), Name:	Sign:	Date:	Time:

(* Permit valid for 7 days, subject to daily renewal, and extension as per overleaf instructions / record formats)

Daily Work Area Condition Endorsement

Sl. No.	Date	Signature with Date & Time		Remarks
		Agency Safety	BHEL Safety	
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date & Time)	To..... (Date & Time)		Agency Site Engineer	Agency Safety Officer	BHEL Site Engineer (PIA)	BHEL Safety Officer
1.							
2.							
3.							
4.							
5.							
6.							

TO BE SIGNED BY THE BHEL HSE & EXECUTION AFTER THE WORK IS OVER

Permit is here by returned after completing the job & ensuring safe removal of men and material.

Site Engineer, BHEL		Site HSE Engineer, BHEL	
Signature:		Signature:	
Name:		Name:	

General Instructions:

1	This Permit is required for all activities in which there is danger of exposure to harmful radiation
2	This permit must be available at the work site all the times of the work.
3	Location and description of the work must be clearly indicated by the permittee.
4	Terms applicable must be clearly indicated by the permittee.
5	This permit shall be endorsed each day after checking all the compliance jointly by the contractor and BHEL safety.
6	Permit shall be issued for not more than 7 days including the issue date.
7	Permit shall be returned to the HSE Department of BHEL after completion of the job.
8	Before engaging anybody to work, competency and fitness to be ensured.
9	All safety precautions to be taken as per work site HSE plan.
10	Distribution of copy:
	Original- Permittee, Duplicate –Department HOS, Contractor, Triplicate - Site HSE Dept.,



HSEP:14-FP06

LIFTING ACTIVITY WORK PERMIT		Permit No. & Date
Project & Unit:		Emergency Contact Nos:
BHEL Sub-contractor:		

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Sub-Contractor Performing the Work: _____

Name of Sub-Contractor's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Sub-Contractor's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Crane used for lifting activity TPI tested, certified and approved for rated lifting		
2.	All lifting tackles, gears/appliances are tested and certified for lifting works.		
3.	Crane operator is trained and competent for lifting operation.		
4.	Lifting sling/ belt is protected against sharp edge of the jobs to be lifted.		
5.	Lifting hook is properly latched to prevent material falling over		
6.	Access and exit marked and without obstruction.		
7.	In case of lifting multiple materials at once, same are tied up with strong rope / material		
8.	Area below lifting activity barricaded to prevent movement		
9.	Minimum 2 guidelines have been provided for balancing and guiding jobs to be lifted.		
10.	Periphery area of crane booms as well as lifting job is barricaded and unauthorized/no-entry sign board posted.		
11.	Rigger and signal man is trained and competent for lifting work. Signal is clearly visible to the operator and understood		
12.	No lifting activity to be carried out during lightening, heavy wind/rain. No forecast of these conditions during work period		
13.	If scaffolding to be used during lift, scaffolding with valid tag available for use.		
14.	Add drawing /procedure etc. relevant for the lifting.		
15.	Any other Precautions or Permits required (Height Work, Confined Space etc.), give details and attach		

Declaration: All the points mentioned in the above checklist have been checked and found OK**Permit Receiver:**

Site Engineer (Sub- Contractor):	Site Safety Officer (Sub-Contractor):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____

Permit Issuer:

Engineer of Concerned Execution Department (BHEL):	Site Safety Officer (BHEL):
Signature:	Signature:
Name: _____ Designation: _____	Name: _____ Designation: _____
Package-in-charge (BHEL):	
Signature:	
Name: _____ Designation: _____	

Verified by Customer Representative (if applicable), Name: _____ Sign: _____ Date: _____ Time: _____

(* Permit valid for 7 days, subject to daily renewal, and extension as per overleaf instructions / record formats)

Daily Work Area Condition Endorsement

Sl. No.	Date	Signature with Date & Time		Remarks
		Agency Safety	BHEL Safety	
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date & Time)	To..... (Date & Time)		Agency Site Engineer	Agency Safety Officer	BHEL Site Engineer (PIA)	BHEL Safety Officer
1.							
2.							
3.							
4.							
5.							
6							

TO BE SIGNED BY THE BHEL HSE & EXECUTION AFTER THE WORK IS OVER

Permit is here by returned after completing the job & ensuring safe removal of men and material.

Site Engineer, BHEL		Site HSE Engineer, BHEL	
Signature:		Signature:	
Name:		Name:	

General Instructions:

1	This Permit is required for all Heavy Lifting Activities that are either / all of the following: 1. Above 50 Tons; 2. Tandem Lifting; 3. Total Load exceeding 75% of capacity of crane; 4. Lift of unusual difficulty or geometry or rigging; 5. Lift over operating Units; 6. Any other Lift as decided by Site HSE / Erection
2	Job Safety Analysis (JSA) to be created for every Lift above 5 Tons.
3	This permit must be available at the work site all the times of the work.
4	Location and description of the work, and terms applicable must be clearly indicated by the permittee.
5	This permit shall be endorsed each day after checking all the compliance jointly by the contractor and BHEL safety.
6	Permit shall be issued for not more than 7 days including the issue date.
7	Permit shall be returned to the HSE Department of BHEL after completion of the job.
8	Before engaging anybody to work, competency and fitness to be ensured.
9	All safety precautions to be taken as per work site HSE plan.
10	Distribution of copy: Original- Permittee, Duplicate –Department HOS, Contractor, Triplicate - Site HSE Dept.



HSEP:14-FP07

**LOCKOUT/TAGOUT (LIVE ELECTRICAL
MAINTENANCE) WORK PERMIT**

Permit No. & Date

Project & Unit:

Emergency Contact Nos:

BHEL Sub-contractor:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Sub-Contractor Performing the Work: _____

Name of Sub-Contractor's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Sub-Contractor's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned as under during the currency of the Permit.

Tag No.	Device to be Tagged / Locked I.D. No.	Device Location	Device Position OPEN / CLOSED - ON/OFF	Lock No.	Tag Lock Placed by Name/Sign - Date/Time	Tag / Lock Removed by Name/Sign - Date/Time

Declaration: All the points mentioned in the above checklist have been checked and found OK**Permit Receiver:**

Site Engineer (Sub- Contractor):	Site Safety Officer (Sub-Contractor):
Signature:	Signature:
Name: Designation:	Name: Designation:

Permit Issuer:

Engineer of Concerned Execution Department (BHEL):	Site Safety Officer (BHEL):
Signature:	Signature:
Name: Designation:	Name: Designation:
Package-in-charge (BHEL):	
Signature:	
Name: Designation:	

Verified by Customer Representative (if applicable), Name:
Sign:
Date:
Time:

(* Permit valid for 7 days, subject to daily renewal, and extension as per overleaf instructions / record formats)

Daily Work Area Condition Endorsement

Sl. No.	Date	Signature with Date & Time		Remarks
		Agency Safety	BHEL Safety	
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date & Time)	To..... (Date & Time)		Agency Site Engineer	Agency Safety Officer	BHEL Site Engineer (PIA)	BHEL Safety Officer
1.							
2.							
3.							
4.							
5.							
6							

TO BE SIGNED BY THE BHEL HSE & EXECUTION AFTER THE WORK IS OVER

Permit is here by returned after completing the job & ensuring safe removal of men and material.

Site Engineer, BHEL		Site HSE Engineer, BHEL	
Signature:		Signature:	
Name:		Name:	

General Instructions:

1	This Permit is required for all maintenance and erection activities with danger of electrocution from Live Electric Power
2	This permit must be available at the work site all the times of the work.
3	Location and description of the work, and terms applicable must be clearly indicated by the permittee.
4	This permit shall be endorsed each day after checking all the compliance jointly by the contractor and BHEL safety.
5	Permit shall be issued for not more than 7 days including the issue date.
6	Permit shall be returned to the HSE Department of BHEL after completion of the job.
7	Before engaging anybody to work, competency and fitness to be ensured.
8	All safety precautions to be taken as per work site HSE plan.
9	Distribution of copy: Original- Permittee, Duplicate –Department HOS, Contractor, Triplicate - Site HSE Dept.

**POWER SECTOR****Inspection of First Aid Box**FORMAT NO: **HSEP:14-F01**

REV NO.: 00

PAGE NO. 01 OF 02

Name of Site :	
Name of Sub-Contractor:	
Inspected by :	
Date of Inspection:	

Number of employees in the site: - _____

Sl. No.	Item	No. Available	Remarks
1	No. of small sterilized dressings		
2	No of medium sized sterilized dressings		
3	No of large sized sterilized dressings.		
4	No of large sized sterilized burn dressings		
5	No of (15 grams) packets sterilized cotton wool		
6	No of pieces of sterilized eye pads in separate sealed packets.		
7	No of roller bandages 10 cm wide.		
8	No of roller bandages 5 cm wide.		
9	Whether tourniquet available		
10	Whether supply of suitable splints available.		
11	No of packets of safety pins.		
12	Whether kidney tray available		
13	Whether sufficient number of eye wash bottles, filled with distilled water or suitable liquid, clearly indicated by a distinctive sign which shall be visible at all times, available.		
14	Whether 4%-xylocaine eye drops, and boric acid eye drops and soda by carbonate eye drops available.		
15	Whether (60ml) bottle containing a two percent alcoholic solution of iodine available		
16	Whether (two hundred ml) bottle of mercurochrome (2 per cent) solution in water available.		
17	Whether 120ml bottle containing Sal volatile having the dose and mode of administration indicated on the label,		
18	Whether roll of adhesive plaster (6 cm X 1 meter) available		

**POWER SECTOR****Inspection of First Aid Box**

FORMAT NO: **HSEP:14-F01**
REV NO.: 00
PAGE NO. 01 OF 02

Sl. No.	Item	No. Available	Remarks
19	No of rolls of adhesive plaster (2 cm X 1 meter)		
20	Whether snake bite lancet available.		
21	Whether (30 grams) bottle of potassium permanganate crystals available.		
22	Whether a pair scissors available		
23	Whether copy of the First-Aid leaflet issued by the Director-General, Factory Advice service and labor Institutes, Government of India available.		
24	Whether bottle containing 100 tablets (each of 5 grains) of aspirin available		
25	Whether Ointment for burns available		
26	Whether bottle of a suitable surgical anti-septic solution available		
27	Whether List of Contents pasted on First Aid Box along with respective expiry dates		

Signature of Subcontractor's Site I/C

Date:

**POWER SECTOR****Health Check-Up**

FORMAT NO: HSEP:14-F02

REV NO.: 00

PAGE NO. 01 OF 02

Name of Site :	
Name of Sub-Contractor:	
Name of Employee :	
Age:	

History Of Past Illness	H/O Epilepsy:
	H/O Drug Allergy:
	H/O Diabetics/ Hypertension:
	H/O Unconsciousness:
Personal History	

EXAMINATION	OBSERVATION

General Physical Examination

Height		
Weight		
BMI		
Built And nourishment		
Pallor		
Temperature		
Chest Expansion	Inspiration	Expansion
Lymph Node Enlargement		
Upper Limbs Strength & Function		
Lower Limbs Strength & function		
Spine Adequately flexible for the job concerned (Yes/No)		
Mental alertness and stability with good eye, hand and foot co-ordination.		

Ear, Nose, Throat

Ear / Hearing	
Nose	
Throat	
<u>Vision</u>	
Left Eye	Right Eye

**POWER SECTOR****Health Check-Up**

FORMAT NO: HSEP:14-F02

REV NO.: 00

PAGE NO. 02 OF 02

EXAMINATION		OBSERVATION	
<u>Cardiovascular System Examination</u>			
Inspection			
Palpation	Pulse	BP	
Auscultation (Heart Sounds)			
<u>Respiratory System</u>			
Inspection	Respiratory Rate		
Palpation:			
Percussion			
Auscultation (Breath Sounds)			
<u>Examination of Abdomen</u>			
Inspection			
Palpation			
Auscultation (Bowel Sounds)			
Any Other			
Clinical Impression			

Signature of the examining doctor

Date:

**POWER SECTOR****HSE Induction / Regular / On-the-Job
Training Records**

FORMAT NO: HSEP:14-F03

REV NO.: 02

PAGE NO. 01 OF 01

Name of Site :					
Name of Sub-Contractor :					
Date of Training (dd/mm/yyyy) :		Duration (Hrs)			
		From		To	
Name & Details of Trainer:					
Subject of Training	Induction		On-The-Job Training (Give details)		
Name of Training Co-ordinator:					

Sl. No.	Name	Designation	Organization	Signature

I certify that Training has been carried out as per HSEP04: HSE Procedure for Training & Awareness

Signature of Training Coordinator

Date:

**POWER SECTOR****Toolbox Talk**

FORMAT NO: HSEP:14-F04

REV NO.: 00

PAGE NO. 01 OF 01

Name of Site :**Sub-Contractors Name :****Date :**

Topic	Name of person delivered Tool Box Talk	No. of Participants attended	Remarks

Signature of Site I/C of Subcontractor**Date:**

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 00

Page 01 of 6

Name of subcontractor:	Report Month:

A) Accidents/Incidents Details: -

a	Lost time in Accidents	No. of incidents	Man Hours Lost	No. of People Involved	No. of person reported to Govt.	
	For the Month					
	Cumulative					
b	Minor Injuries					
	For the Month					
	Cumulative					
c	Fires	No. of Near-Misses	No. of First- Aid cases	No. of persons injured	No. of equipment damaged	No. of Fire reported Outside
	For the Month					
	Cumulative					
d	Other mishaps not covered in a, b, c.	No. of Near-Misses	No. of First- Aid cases	No. of persons injured	No. of equipment damaged	Total near misses and First-Aid
	For the Month					
	Cumulative					

B) Data for Man-hours worked:

Details	Value	Remarks if any
No. of people		
Man Hours worked		
O.T. Hours		
Total Man Hours		
Grand Total of man hours worked during the month(A+B)		
Cumulative man-hours (from _____ to _____):		
(Since commencing of operations)		

Signature of Subcontractor Site In-charge

Signature of Subcontractor HSE Officer

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 00

Page 02 of 6

C) Status of Deployment of Work force, Safety Officers/Supervisors & Construction Medical Officer(s) & Electricians:

Description	Name	Qualification & Experience
Safety Officers		
Safety Supervisors		
Construction Medical Officer		
Nursing Staff.		
Electricians		
Scaffolding Inspectors		
T&P Inspectors		

D) Status of deployment of manpower for critical HSE activities:

(All height work and other hazardous activities to be actively supervised by trained personnel. Area to be divided in manageable sections to ensure effective supervision at all times. For example, multiple elevations in a structure can be divided among multiple supervisors)

Activity	Location	Shift Timings	Personnel deployed	Remarks
Height Work	Boiler Unit- (Level 1-3)			
	Boiler Unit- (Level 4-6)			
	ESP			
Housekeeping	Boiler Unit-			
	ESP Unit			
Others				

Signature of Subcontractor Site In-charge

Signature of Subcontractor HSE Officer

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 00

Page 03 of 6

E) Lifting Tools, Tackles, Equipment and Pressure Vessels:

Item	Nos. Deployed	Nos. Tested by competent person	Identification Nos. (Comma separated) (A)	Validities of Test Certificates (Comma separated – corresponding to column A)	Whether internal testing using Color Coding or similar system done
Winches					
Chain Blocks					
Wire Rope Slings					
Man Cages					
D-Shackles					
Air Compressors					
Crawler Cranes					
Mobile Cranes					
Hydra Cranes					
Hydraulic Jack					
Others					

F) Reverse Horns in Construction Vehicles:

Item	Nos. Deployed with serial numbers (Comma separated) (A)	Nos. Having Functional reverse horns	Inspection Dates (Comma separated corresponding to column A)
Transit Mixers			
Hydra Cranes			
Dumpers/Trippers			
Backhoes			
Other Vehicles			

G) ELCBs:

No. Of ELCBs provided with Serial Nos. (Comma separated) (A)	Nos. Functional	When They were last Tested (Comma separated corresponding to column A)

H) Electrical Earthing:

No. Of Earth resources with serial numbers and locations (Comma separated) (A)	Whether Double Earthing provided to all equipment	When they were last tested (Comma separated corresponding to column A)

Signature of Subcontractor Site In-charge

Signature of Subcontractor HSE Officer

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 00

Page 04 of 6

I) Fire Extinguishers

Name & designation of person responsible for maintenance of Extinguishers at different locations : (Individual subcontractor's Safety Officers).

A. FIRE EXTINGUISHERS AT ERECTION SITE:

Type (Add more rows if required)	Sizes	Qty + Serial numbers (Comma separated) (A)	Healthiness – Last checked dates (Comma separated corresponding to column A)	Locations (Comma separated corresponding to column A)
FOAM TYPE				
SODA TYPE				
DRY TYPE (DCP)				
CO2 TYPE				

B. FIRE EXTINGUISHERS AT SITE OFFICES & STORES:

Type	Size (Add more rows if required)	Qty + Serial numbers (Comma separated) (A)	Healthiness – Last checked dates (Comma separated corresponding to column A)	Locations (Comma separated corresponding to column A)
FOAM TYPE				
SODA TYPE				
DRY TYPE (DCP)				
CO2 TYPE				

J) Tie-Ups with Emergency Services

Service (Add more rows if required)	Name, location & distance from site	Emergency contact details	Remarks
Hospital with ICU and facilities for orthopedic, neurological etc. trauma			
Fire services			
Others:			

Signature of Subcontractor Site In-charge

Signature of Subcontractor HSE Officer

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 00

Page 05 of 6

K) Implementation of Checklist, Work Permits:

Item	Numbers During the Month	Major Deviations

Note:- Please attach photocopies of all filled Checklists & Work permits for that month.**L) Personal Protective Equipment Issued (Extend table for each subcontractor):**

Item	Issued this Month	Nos. Issued up to the Month	Percentage of usage at Site (as per physical verification)
Name of subcontractor:			
Safety Helmet			
Safety Shoes			
Full Body Harness			
Fall Arrestor			
Safety Nets			
Hand Gloves			
Face shield			
Welder shield			
Nose Mask			
Reflective Jacket			
Other PPEs.			

M) Safety Observations by Subcontractor Executives- Observations package wise:

Topic	Date Of Programme	No. Of Participants	Level Of Participants

• Tool-Box talks on Safety:

Date	Tool Box Talk - No of Participants	Topic	Remarks

• Safety Induction Trainings:

Date	Safety Induction No. of Participants	Topic	Remarks

Signature of Subcontractor Site In-charge

Signature of Subcontractor HSE Officer

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 00

Page 06 of 6

N) Progress of Management Programmes at Site

SL	Description Of MPs	Annual Plan	Achievement In This Month	Cumulative Achievement
A. Environment Improvement Programme				
1	Plantation of Trees			
2	Installation of Scrap Bins			
3	Chemical Storage & Handling system			
B. Improvement of Working Environment				
4	Increasing LTI free days			
5	Air Quality Monitoring			
6	Water Quality Monitoring			
7	Illumination level Monitoring			

O) HR Information:

Designation	Total No. Inducted	Total no. of Induction Balance	Total no. of Gate Pass Issued	Total no. of Gate Pass Balance	Total no. of Gate Pass Cancelled	Medical Checkup Completed	Medical Checkup Balance

P) Rewards on Account of Good Safety Performance

Serial Number	Reward Issued to	Details of Reward Issued (Amount etc.)	Brief Reason

Note: Photos of Reward Functions to be attached

Q) Other Safety initiatives / Safety Activities conducted (with photos, if any):

Signature of Subcontractor Site In-charge

Signature of Subcontractor HSE Officer

**POWER SECTOR****Personal Protective Equipment Inspection**

FORMAT NO: HSEP:14-F06

REV NO.: 00

PAGE NO. 01 OF 01

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection:	

Item	Total Checked	Numbers Found in Order	Remarks
Safety Helmet			
Safety Shoes			
Full Body Harness			
Fall Arrestor			
Safety Nets			
Hand Gloves			
Face shield			
Welder shield			
Nose Mask			
Reflective Jacket			
Other PPEs (Specify)			

Signature of Site I/C of Subcontractor:

Date:



POWER SECTOR

Format for Register of Issue and Receipt of PPEs

FORMAT NO: HSEP-14-F06
REV NO.: 00
PAGE NO. 01 OF 1

Site:

Subcontractor

[illegible]

**POWER SECTOR****Inspection Of T&Ps**FORMAT NO: **HSEP:14-F07**

REV NO.: 00

PAGE NO. 01 OF 01

Name of Site :	
Name of Sub-Contractor :	
Date of Inspection :	

Sl.No.	Description	Remarks
1.0	Name of equipment	
2.0	Basic Information of equipment	
2.1	Specification	
2.2	Sr. No. of equipment	
2.3	Make	
2.4	Year of manufacture	
3.0	Major repairs / overhauls(Furnish details of work carried out)	Date(s) of major repair/overhaul
3.1		
3.2		
3.3	Repairs carried out at site	
4.0	Any performance test conducted	Yes/No
5.0	Document Submitted	Yes/No
6.0	Manufacturer's test / guarantee certificate	Available/ Not available
7.0	Performance test	Done/ Not Done
8.0	Acceptance Norms	
9.0	Committee Observations	
10.0	Date of next review (if accepted)	
Signature-Subcontractor HSE Officer		Signature-Subcontractor Site In-charge

**POWER SECTOR****Inspection Of Cranes**

FORMAT NO: HSEP:14-F08

REV NO.: 00

PAGE NO. 01 OF 01

Name of Site :

Name of Sub-Contractor :

Inspected by :

Date of Inspection:

Crane Reg. No (Make/Model)

Name of Driver/Operator

Sl.no.	Description	Observation	Measures
1	Valid Driving license		
2	Hook & Hook Latch		
3	Over Hoist limit switch		
4	Boom limit switch		
5	Boom Angle Indicator		
6	Boom limit cutoff switch		
7	Condition of Boom		
8	Condition of ropes		
9	Number of load lines		
10	Size and condition of the slings		
11	Stability of the cranes		
12	Soil Condition		
13	Swing Break And Lock		
14	Proper Break And Lock		
15	Hoist Break And Lock		
16	Boom Break And Lock		
17	Main Clutch		
18	Leakage in Hydraulic Cylinders		
19	Out riggers fully extendable		
20	Tyre pressure		
21	Condition of Battery And Lamps		
22	Guards of moving and rotating parts		
23	Load chart provided		
24	Number and position of pedant ropes		
25	Reverse Horn		
26	Load Test Details		
27	Operator's fitness		
28	Pollution under control certificate		
29	Fire extinguisher of appropriate type.		
30	Training of the operator		

Signature of Site I/C of Subcontractor:

Date:

**POWER SECTOR****Inspection Of Winches**

FORMAT NO: HSEP:14-F09

REV NO.: 00

PAGE NO. 01 OF 01

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection:	

Winch Reg. No (Make/Model) _____

Name of Operator _____

Name of Operator:					
Sl. No.	Description	YES	NO	NA	Remarks
1	Has the copy of Third Party Inspection certificate been provided in winch machine shed?				
2	Is safe operating instructions displayed near winch?				
3	Is winch machine operator experienced enough to operate the winch machine?				
4	Is the winch machine operated by someone other than the winch machine operator?				
5	Is there guard provided in all moving parts like wheel and motor's shaft?				
6	Will it protect against unforeseen operational contingencies?				
7	Are brakes, clutch and locking arrangement working properly?				
8	Has it been ensured that the guard does not constitute a hazard by itself?				
9	Are the cranks and the connecting rods protected by guardrails?				
10	Is there provision for fully covered shed with wooden plank roof?				
11	Is wire rope free from any kind of damage or wear and tear?				
12	Is split pin provided for the protection of clutch and brake locking arrangement?				
13	Is pulley inspected by competent person and certified before use?				
14	Is pulley free from any wear and tear visually?				
15	Is winch rope barricaded with clipsheet for the protection of rope and person?				
16	Is the wire rope lubricated by cardium oil?				
17	Is there any friction in wire rope which may damage the wire rope rather than the rolling parts?				
18	Is there any oil leakage in the hydraulic system of the winch machine?				
19	Has it been ensured that the guard will not cause discomfort or inconvenience to operator?				
Total NO		Total NA		% Compliance	

Signature of Site I/C of Subcontractor:

Date:

**POWER SECTOR****Inspection of Height Working**

FORMAT NO: HSEP:14-F10

REV NO.: 00

PAGE NO. 01 OF 2

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection:	

Sl. No.	Descriptions	Observation (Yes/No)	Remarks
A. General			
1	All the workers have been explained safe work method?		
2	Adequate illumination has been ensured.		
3	Work area inspected prior to the start of the work.		
4	Is the work area barricaded to prevent fall and platforms are of adequate strength (bamboo, jute / plastic ropes not to be used).		
5	The temporary work platforms & structures for height work including those used in Boiler structures, water walls, ESP, Powerhouse are fully barricaded with railings (as per IS 3696)		
6	Fabricated makeshift arrangements are checked for quality and type of material welding, anchoring etc.		
7	Are floor gaps, permanently covered and barricaded		
8	Area below the work place barricaded, particularly below hot work.		
9	Workers provided with bags /box to carry bolts, nuts and hand tools		
10	Arrangement for fastening hand tools made.		
11	All work platforms ensured to be of adequate strength and ergonomically suitable.		
12	Work at more than one elevation at the same segment is restricted.		
13	An established communication system has been established and explained to the workers.		
B. Access/Egress			
1	Walkways provided with handrail, mid-rail and toe guard?		
2	All checkered plates, gratings properly welded/ bolted?		
3	Are ladders inspected and they are in good condition?		
4	Are ladders spliced?		
5	Are ladders properly secured to prevent slipping, sliding or falling?		
6	Stairs erected above and below 1 tier column for safe access?		
7	Do side rails extend 36" above top landing?		

**POWER SECTOR****Inspection of Height Working**

FORMAT NO: HSEP:14-F10

REV NO.: 00

PAGE NO. 02 OF 2

Sl. No.	Descriptions	Observation (Yes/No)	Remarks
8	Are built up ladders constructed of sound materials?		
9	Are rugs and cleats not over 12" on center?		
10	Metal ladders not used around electrical hazards.		
11	Proper maintenance and storage.		
12	Ladders placed at right slope.		
13	Ladders / staircases welded/ bolted properly.		
14	Any obstruction in the stairs.		
15	Are landing provided with handrails, knee rails, toe boards etc.?		
16	Whether ramp is provided with proper slope.		
17	Proper hand rails / guards provided in ramps.		
C. Housekeeping			
1	Walkways, aisles & all overhead workplaces cleared of loose material.		
2	Is any nut bolt/scrap left on beam/column?		
3	Flammable materials, if any, are cleared.		
4	All the de shuttering materials are removed after de shuttering is done.		
5	Platforms and walkways free from oil/grease or other slippery material.		
6	Collected scrap are brought down or lowered down and not dropped from height.		
D. PPE And Safety Devices			
1	Use of safety helmet, safety belts ensured for all workers		
2	Anchoring points provided at all places of work.		
3	Common lifeline provided wherever linear movement at height is required.		
4	Safety nets are use wherever required.		
5	Proper fall arrest system is deployed at critical workplaces.		
6	Crawler boards/Safety system or works on fragile roof are used.		
7	Is man-lift being used for personnel lifting?		
8	Does man basket / personnel lift system has an independent lifeline and all occupants safety harnesses connected to it with rope grab?		

Signature of Site I/C of Subcontractor:

Date:

**POWER SECTOR**

FORMAT NO: HSEP:14-F11
REV NO.: 00
PAGE NO. 01 OF 02

Inspection of Welding and Gas Cutting

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection :	

Welding				
Sl.no.	Description	Y e s	N o	Remarks
1	Is electric connection given through 30 mA ELCB/RCCB to welding m/c?			
2	Is welding machine more than 10 years old?			
3	Is there provision of fuse and is it bypassed?			
4	Is electric cable fitted properly in junction box on m/c?			
5	Is electrical cable free from joints?			
6	Are the joints attached firmly & insulated with tape?			
7	Is double earthing given to body of m/c?			
8	Is the physical condition of the m/c good?			
9	Is ON/OFF switch connected to the m/c is working and in good condition?			
10	Are indication lamps on m/c working?			
11	Is the electrode holder in good condition?			
12	Are the cables of the welding m/c lugged & tight properly?			
13	Is cable to welding machine terminal joint loose / burnt / glowing?			
14	Are return lead connected properly (Rod, Angle, Channels shall not be used)			
	Total No of NO			
	Total No of YES			

Signature of Site I/C of Subcontractor:**Date:**

**POWER SECTOR****Inspection of Welding and Gas Cutting**FORMAT NO: **HSEP:14-F11**

REV NO.: 00

PAGE NO. 02 OF 02

Gas Cutting				
Sl.no	Description	Yes	N o	Remarks
1	Are Cylinders kept on trolleys?			
2	Physical condition of Gas cylinders Good?			
3	Is there Oil/Grease on valve of the cylinder?			
4	Are pressure regulators in good condition?			
5	Condition of hose pipe OK?			
6	Are hose pipe clamped with hose clip?			
7	Is flash back arrestor & NRV fitted on torch both for O2 and LPG cylinder?			
8	Is nozzle of the torch cleaned?			
	Total Number of NO			
	Total No of YES			
	% Compliance			

Signature of Site I/C of Subcontractor:

Date:

**POWER SECTOR****Inspection Of Electrical Installation**

FORMAT NO: HSEP:14-F12

REV NO.: 00

PAGE NO. 01 OF 02

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection :	

Sr. No.	Contents	Yes/No	Remarks
A	Cable		
1.	Whether the condition of cable is checked?		
2.	Are cables received from other sites checked for insulation resistance before putting them into use?		
3.	Are all main cables taken either underground / overhead?		
4.	Are welding cables routed properly above the ground?		
5.	Are welding and electrical cables overlapping?		
6.	Is any improper joining of cables/wires prevailing at site?		
B	DBs/SDBs		
1.	Is earth conductor continued up to DB / SDB?		
2.	Whether DBs and extension boards are protected from rain / water?		
3.	Whether DB and extension board have separate MCB/ELCB		
4.	Is there any overloading of DBs / SDBs?		
5.	Are correct / proper fuses & CBs provided at main boards and sub-boards?		
6.	Is energized wiring in junction boxes, CB panels & similar places covered all times?		
C	ELCB		
1.	Whether the connections to all equipment are routed through individual ELCBs?		
2.	Is sensitivity of each ELCB maintained at 30 mA?		

**POWER SECTOR****INSPECTION OF ELECTRICAL INSTALLATION**

FORMAT NO: HSEP:14-F12

REV NO.: 00

PAGE NO. 02 OF 02

Sr. No.	Contents	Yes/No	Remarks
3.	Are the ELCB numbered and tested periodically & test results recorded in a logbook countersigned by a competent person?		
D	Grounding		
1.	Is natural earthing ensured at the source of power (main DB at Generator or Transformer)?		
2.	Whether the continuity and tightness of the earth conductor are checked?		
3.	Mention the gauge of the earth conductor used at the site.		
4.	Mention the value of Earth Resistance.		
E	Electrically operated Machines or Accessories.		
1.	Whether the plug top is provided everywhere.		
2.	Are all metal parts of electrical equipment and light fittings / accessories grounded / double earthed?		
3.	Is there any shed or cover for welding machines?		
4.	Are halogen lamps fixed at proper places?		
5.	Are portable power tools maintained as per norms?		
6.	Any other information:		

Signature of Site I/C of Subcontractor:

Date:

**POWER SECTOR****Inspection of Elevator**

FORMAT NO: HSEP:14-F13

REV NO.: 00

PAGE NO. 01 OF 01

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection :	

Sr. No.	Description	Remarks
1.0	Name of equipment	
2.0	Basic Information of equipment	
2.1	Specification	
2.2	Sr. No. of equipment	
2.3	Make	
2.4	Year of manufacture	
3.0	Major repairs/overhauls(Furnish details of work carried out)	Date(s) of major repair/overhaul
3.1		
3.2		
3.3	Repairs carried out at site	
4.0	Any performance test conducted	Yes/No
5.0	Document Submitted	Yes/No
6.0	Manufacturer's test / guarantee certificate	Available/ Not available
7.0	Performance test	Done/ Not Done
8.0	Acceptance Norms	
9.0	Committee Observations	
10.0	Date of next review (if accepted)	

Signature-Subcontractor/ Subcontractor's Safety Officer

Signature-Site Safety Officer (BHEL)

**POWER SECTOR****HSE Penalty Format**

FORMAT NO: HSEP:14-F14

REV NO.: 00

PAGE NO. 01 OF 2

Sub: MEMO for Penalty for non-compliances in Safety and Fabrication Quality requirement

Following lapse (tick marked) was observed and penalty is imposed as stated at the bottom of this memo. It is requested that such occurrences may please be avoided in future.

S. No	Nature of Non - Compliance	Penalty (in Rs.)	Remarks
A. PPEs			
1.	Not wearing safety helmet / wearing without chin straps	500	Per Person/ day
2.	Not Wearing safety shoes	500	Per Person/ day
3.	Not wearing gloves, nose masks where required	350	Per Person/ day
4.	Not using grinding goggles while doing grinding operations	500	Per Person/ day
B. Height Work			
1.	Not providing Lifelines for height work	1000	Per location per day
2.	Not ensuring barricading of working platforms	1000	Per location per day
3.	Not using temporary platform during work at height	1000	Per case per day
4.	Not wearing safety belt while working at height (> 2 meters) or not anchoring to lifeline	2000	Per Person/ day
5.	Not providing proper barricades (caution tape at 2 elevations)	500	Per location per day
	Use of mobile phones by Height worker / Crane / Hydra Operator	1000	Per case per day
C. Electrical			
1.	Not using 24 V supply for lighting in confined spaces	500	Per case per day
2.	Lack of Electrical Earthing	2000	Per case per day
3.	Improper earthing of welding & Other electrical Machines. Earth resistance not OK	500	Per Machine per incidence
4.	Electrical plug not used for connection/ hand machines	500	Per connection per incidence
5.	Unsafe electrical practice like not installing ELCB/ RCCB	500	Per case per day
6.	Using frayed/ broken welding cables	500	Per machine per week
D. Lifting			
1.	Use of lifting equipment without having valid Third Party Test certificate	5000	Per equipment per seven days
2.	Lifting hooks without latches	500	Per hook per day
3.	Using damaged slings or not slinging properly	2000	Per event Per T&P
4.	Lifting cylinders without cage or rolling of cylinders	500	Per Event per incidence
5.	Non removal of scrap from platforms	1000	Per Event Per location per 7 days
E. Hot Work / Cylinder Handling			
20.	Gas cutting without flash back arrestor	2000	Per machine per incidence
21.	Gas cutting at height without sheet below	500	Per event
22.	Not keeping gas cylinders vertically / in trolley on ground	500	Per event
23.	Gas cutting with damaged hose pipes	500	Per event
	Not covering welding cylinder with top cover	500	Per event
F. Construction Vehicles			
24.	Not having valid driving license for the type of vehicle/ T&P	2000	Per driver per event
25.	Two wheeler entry in construction area	500	Per vehicle
26.	Using Hydra for material movement at site in unsafe manner	1000	Per case
27.	Using Two Hydra in Tandem for material movement	2000	Per case
28.	Vehicles, Hydras, Cranes, Dumpers and Earth Movers not having automatic back horns linked to gear	1000	Per Equipment per day
29.	Not using guide rope while moving material using Hydra or Crane	1000	Per event
30.	Violating speed limit during vehicle movement	1000	Per event

	POWER SECTOR	FORMAT NO: HSEP:14-F14 REV NO.: 00 PAGE NO. 02 OF 2
	HSE Penalty Format	

	Nature of Non - Compliance	Penalty in Rs.)	Remarks
Engineering / Administrative Controls / General			
31.	Major Accident – Victim not reporting for work within 48 hours – resulting in partial loss in earning capacity & termination / demotion in employment	200000	
32.	Fatal Accident/Accidents Resulting in total Loss in Earning Capacity #	500000	Per victim#
33.	Unsafe Act in violation of standards / clauses of this document	500-5000	Per case
34.	Activity carried out without safety work permit where applicable	2000	Per person per event
35.	Using untrained / unqualified personnel for hazardous work	2000	Per event
36.	Not maintaining proper hygiene in canteen as per BOCW	1000	Per event

or as deducted by customer, whichever is higher.

For repeated **major and** fatal incidents under the same subcontractor for the same package in the same Unit, the subcontractor will pay 2 times the penalty compared to previously paid

Details (if any) related to non- compliance (Name of persons, Nature of deficiency, etc.)

Penalty imposed:

1, Rate as per above chart _____

2. No. of Persons/ machine/ event/ labor _____

3. Total Penalty= 1. X 2. = _____

BHEL Personnel:

Signatures:

Name _____

Attachments: Photographs & Documentary proof (if available) for violation

Distribution: 1 Copy: to Sub- contractor Site In-charge,
1 Copy to Site Construction Manager (BHEL)

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection :	

S. No	Particulars (Serial Number, make, model of PPE, T&P)	Accepted / Rejected	Remarks
Checked (Name & Sign. Of Subcontractor HSE Officer)		Verified (Name & Sign. Of Subcontractor Site In-charge)	

**POWER SECTOR****Format for Inspection of Labor Colony**

FORMAT NO: HSEP:14-F16

REV NO.: 00

PAGE NO. 01 OF 1

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection :	

S. No	Particulars	No	Yes	Comments
1	Sufficient living space ensured for each occupant with Kitchen area			
2	Area cleanliness ensured through regular cleaning			
3	Toilet facility sufficient for all occupants available, in order with adequate lighting, cleaned regularly and in hygienic condition			
4	Washing facilities available with adequate water supply			
5	Availability of sufficient drinking water in protected tanks with weekly tank cleaning and source tested annually as per IS10500 ensured			
6	Adequate drainage to remove waste and rain water, no flooding			
7	"Unsafe for Drinking" posted near accessible non-potable water and sources; posted in language of occupants or universal symbol			
8	Prevention of mosquitoes, flies, and rodents in immediate housing area through insecticide sprays if required			
9	Electricity provided & electrical connections safety ensured			
10	Fans, Coolers / Quilts, Heaters provided as required to cater to weather conditions along with adequate electricity supply			
11	Houses Walls and roof tight and solid; floors rigid and durable, with smooth, cleanable finish in good repair			
12	Availability of nominal rate ration / common use items shop within / nearby the colony			
13	Emergency medical plan developed: (A) Potential injuries determined (B) Local EMS response determined (C) Qualified first-aid person on site, if required			
14	Emergency plans posted where employees gather			
15	Transportation to nearest suitable facility			

Any other checks:

Remarks:		Name & Sign. Of Subcontractor HSE Officer		



POWER SECTOR

Format for Recording of First Aid Injuries

FORMAT NO: HSEP-14-F17
REV NO.: 00
PAGE NO. 01 OF 1

Name of Site:

Name of Subcontractor:

[illegible]

**POWER SECTOR****Format for Maintaining Records of E-waste
Handled / Generated**

FORMAT NO: HSEP:14-F18

REV NO.: 00

PAGE NO. 01 OF 1

(Generated Quantity in Metric Tons (MT) per year)

Site		
Subcontractor		
Date		
Types & Quantity of e-waste handled/generated**	Category	Quantity
	Item Description	
Types & Quantity of e-waste stored	Category	Quantity
	Item Description	
Types & Quantity of e-waste sent to collection center authorized by producer/dismantler/recycler/refurbisher or authorized dismantler/ recycler or refurbisher **	Category	Quantity
	Item Description	
Types & Quantity of e-waste transported*	Category	Quantity
	Item Description	
Name, address and contact details of the destination		
Types & Quantity of e-waste refurbished*	Category	Quantity
	Item Description	
Name, address and contact details of the destination of refurbished materials		
Types & Quantity of e-waste dismantled*	Category	Quantity
Name, address and contact details of the destination		
Types & Quantity of e-waste recycled*	Category	Quantity
Types & Quantity of materials recovered	Item Description	
	Quantity	
Name, address and contact details of the destination		
Types & Quantity of e-waste sent to recyclers by dismantlers	Category	Quantity
	Item Description	
Name, address and contact details of the destination		
Types and Quantity of other waste sent to respective recyclers by dismantlers / recyclers of e-waste	Category	Quantity
	Item Description	
Name, address and contact details of the destination		
Types and Quantity of e-waste treated & disposed	Category	Quantity
	Item Description	
Name, address and contact details of the destination		

Signature of Subcontractor Site In-charge:**Date**

**POWER SECTOR****Format for Maintaining Records of Hazardous Waste at the Facility**

FORMAT NO: HSEP:14-F19

REV NO.: 00

PAGE NO. 01 OF 1

1. Name of Site:
2. Name of the Subcontractor:
3. Date:
4. Description of hazardous waste:

Physical form with description	Chemical form	Total volume and weight (in kg.)

5. Description of storage and treatment of hazardous waste:

Date	Method of storage of hazardous wastes	Date	Method of treatment of hazardous wastes

6. Details of transportation of hazardous waste:

Name & address of consignee of package	Mode of packing/of the waste for transportation	Mode of transportation to site of disposal	Date of transportation

7. Details of disposal of hazardous waste:

Date of disposal	Concentration of hazardous material in the final waste form	Site of disposal (identify the location on the relevant layout drawing for reference)	Method of disposal	Persons involved in disposal

8. Data of environmental surveillance:

Date of measurement	Analysis of ground water			Analysis of soil samples			Analysis of air sampling			Analysis of any other samples (give details)
	Location of sampling	Depth of sampling	Data	Location of sampling	Depth of sampling	Data	Location of sampling	Data		

9. Details of the hazardous wastes reused and recycled:

Date	Total quantity of hazardous waste generated	Details of hazardous waste minimization activity	Material received	Final quantity of waste generated	Net reduction in waste generation quantity and percentage

Signature of Subcontractor Site In-charge:

Date:

**POWER SECTOR****HSE Audit / Inspection Checklist-cum-Compliance Report**

FORMAT NO: HSEP:14-F20

REV NO.: 00

PAGE NO. 01 OF 3

PROJECT: _____

CONTRACTOR: _____

DATE: _____

OWNER : _____

INSPECTION BY: _____

Note : write 'NA' wherever the items is not applicable

Item	Y e s	N o	Remarks	Action
HOUSEKEEPING				
Waste containers provided and used				
Passageways and walkways clear				
General neatness of working area				
Other				
PERSONNEL PROTECTIVE EQUIPMENT				
Goggles; shields				
Face protection				
Hearing protection				
Respiratory masks etc.				
Safety belts				
Other				
EXCAVATIONS / OPENINGS				
Openings properly covered or barricaded				
Excavations shored				
Excavations barricaded				
Overnight lighting provided				
Other				
WELDING, CUTTING				
Gas cylinders chained upright				
Cable and hoses not obstructing				
Fire extinguisher (s) accessible				
Others				
SCAFFOLDING				
Fully decked platforms				
Guard and intermediate rails in place				
Toe boards in place				
Adequate shoring				
Adequate access				
Others				
LADDER				
Extension side rails 1 m above				
Top of landing				
Properly secured				
Angle + 70° from horizontal				
Other				



POWER SECTOR

HSE Checklist-cum-Compliance Report

FORMAT NO: HSEP:14-F20

REV NO.: 00

PAGE NO. 02 OF 3

HOISTS, CRANES AND DERRICKS				
Condition of cables and sheaf OK				
Condition of slings, chains, hooks OK				
Inspection & maintenance log maintained				
Outriggers used				
Signals observed and understood				
Qualified operators				
Others				
MACHINERY, TOOLS & EQUIPMENT				
Proper instruction				
Safety devices				
Proper cords				
Inspection and maintenance				
Other				
VEHICLE AND TRAFFIC				
Rules and regulations observed				
Inspection and maintenance				
Licensed drivers				
Other				
TEMPORARY FACILITIES				
Emergency instructions posted				
Fire extinguishers provided				
Fire-aid equipment available				
General neatness				
Others				
FIRE PREVENTION				
Personnel instructed				
Fire extinguishers checked				
No smoking in prohibited areas.				
Hydrants				
Clearance				
Others				
ELECTRICAL				
Proper wiring				
ELCB's provided				
Ground fault circuit interrupters				
Protection against damage				
Prevention of tripping hazards				
Other				
HANDLING & STORAGE OF MATERIALS				
Properly stored or stacked				
Passageways clear				
Other				
FLAMMABLE GASES AND LIQUIDS				
Containers clearly identified				
Proper storage				
Fire extinguisher nearby				
Other				

**POWER SECTOR****HSE Checklist-cum-Compliance Report**

FORMAT NO: HSEP:14-F20

REV NO.: 00

PAGE NO. 03 OF 3

WORKING AT HEIGHT				
Safety nets				
Safety belts				
Safety helmets				
Anchoring of safety belt to the life line rope				
ENVIRONMENT				
Lubricant waste/engine oils properly dispose.				
Waste from Canteen, offices, sanitation etc. disposed properly.				
Disposal of surplus earth, stripping materials, expired batteries, oily rags and combustible materials done properly.				
HEALTH CHECKS				
Hygienic conditions at labor camps O.K.				
Availability of first-aid facilities				
Proper sanitation at site, office & labor camps.				
Arrangement of medical facilities.				
Measures for dealing with illness.				
Availability of potable drinking water for workmen & staff.				
Provision of crèches for children.				

Signature of Subcontractor Site In-charge:

Date:

**POWER SECTOR****Format for Inspection of Illumination / Lux Levels**

FORMAT NO: HSEP:14-F21

REV NO.: 00

PAGE NO. 01 OF 1

Name of Site :

Name of Sub-Contractor :

Inspected by :

Date of Inspection :

Details of Lux Meter Used for Illumination Checking

Serial Number

Last inspection Date

Inspection Due Date

S. No	Location	Applicable Lux Value	Measured Lux Value	Comments
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Any other checks:

Remarks:

Name & Sign. Of Subcontractor HSE Officer

**POWER SECTOR****Format for Incident Reporting**

FORMAT NO: HSEP:14-F22

REV NO.: 00

PAGE NO. 01 OF 2

Type of incident: Fatal/Major//Fire/Property damage (Tick what is applicable)

1	Name Of Site		3	Activity Area	
2	Scope Of Work		4	Name Of Contractor	
			5	NAME & DESIGNATION OF BHEL ACTIVITY I/C	
6	Date & Time Of Accident		7	Date Resumed	
8	No. Of Work-Days Lost by Victim (If Duty Not Resumed, Give Estimated Figure)				
9	No. Of Man-hours Lost By Others				
10	Personal Details Of Injured and/or Details Of Materials/Equipment/ Property Damaged				
Name			Name Of Material / Equipment / Property		
Period Of Employment					
Age	Yrs.	Sex	Male/Female	Estimated Cost	Actual Cost
Marital Status		Single/ Married			
Occupation				Nature Of Damage	
Part Of Body Injured					
Nature Of Injury					
Agency (Object / Equipment / Substance) Most Responsible For Causing Accident / Injury / Damage					
12	Person (Name & Designation) With Most Control Over Agency (Object / Equipment / Substance) Causing Accident Injury / Damage				
13	Describe Clearly How the Accident Occurred (Use Additional Sheet, If Required)				

**POWER SECTOR****Format for Incident Reporting**

FORMAT NO: HSEP:14-F22

REV NO.: 00

PAGE NO. 02 OF 2

Analysis

14	What Acts and/or Conditions Contributed Most Directly to This Accident	
15	What Are the Basic Reason for The Existence of These Acts and/or Condition?	
16	What Corrective Actions Have Been Taken to Prevent Accident Recurrence?	
	Date:	Signature Of Site HSE Coordinator
17	Comments of Head/Sox	
	Date:	Signature Of Head/SOX



POWER SECTOR

Format for Incident Recording

FORMAT NO: HSEP:14-F23
REV NO.: 00
PAGE NO. 01 OF 1

[illegible]

SECTION-B

Special Requirements

(Applicable to this Contract Only)



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-B)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 1 of 162

1. Establishment of Common Facilities for whole Project – cost to be borne in full by subcontractor.

Table 1.1

S. No.	Item	Details as per Clause No. of this Section	Applicable / Not Applicable with Remarks	Package
1	Construction of Medical Centre	a	Applicable	Civil
2	Construction of Worker Training Centre (A part of safety park)	b	Applicable	Civil
3	Construction of Vertigo Test Structure (A part of safety park)	c	Applicable	Civil
4	Deployment of Specialists	d	Applicable	By concerned agencies
5	HSE Equipment	e	Applicable	By concerned agencies
6	HSE measurement devices	f	Applicable	By concerned agencies
7	Urinals in under-construction structures	g	Applicable	By concerned agencies
8	Safety Park	h	Applicable	Civil

a. MEDICAL CENTRE

- i. A medical center shall be setup at site with basic facilities for handling medical emergencies
- ii. Deployment of Medical Professional:
 1. **A qualified medical professional shall be deployed at site at all times.**
 2. **When total employee & worker strength at site crosses 500, medical professional with MBBS Degree from recognized institute shall necessarily be deployed**
- iii. Ambulance shall be deployed along with a trained driver and accessories as per Schedule V of BOCW Central Rules, 1998. Ambulance shall be utilized exclusively for transporting the accident victim. Ambulance drivers shall be regularly trained in First Aid.
- iv. Non deployment of Ambulance and First Aider as above shall invite a penalty of Rs. 30000 pm and Rs10000 PM respectively
- v. Medical waste shall be disposed as per prevailing legislation (Bio-Medical Waste – Management and Handling Rules, 1998).
- vi. Above are bare minimum requirements. Any legal requirements over and above these specifications shall supersede the above requirements



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-B)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 2 of 162

b. WORKER TRAINING CENTRE

- i. Indoor Worker Training Center to be developed at site with seating capacity of at least 50 trainees
- ii. Projector with following minimum specifications:

Native Resolution	XGA, 1024x768
Brightness (ANSI lumens)	3300
Contrast Ratio	13000:1
Display Color	30 Bits
Aspect Ratio	4:3

- iii. A Laptop or Desktop PC with following minimum specifications:

Processor	Intel Celeron Dual Core
Memory (RAM)	2 GB
Graphics Card	2GB Video Memory
Hard Disk Capacity	60 GB
Monitor Size	14 inches
Keyboard	
Mouse	

- iv. Stereo speakers with minimum 50W RMS sound output
- v. PA system for Addressing Workers
- vi. Seating arrangement

c. Development of Vertigo Test Structure:

Vertigo test Structure to be developed as per **Annexure 04**

d. Specialists:

Following specialists shall be deployed by the subcontractor, who shall cater to whole project as per BHEL requirements / instructions

- I. **Qualified T&P Inspector: subcontractor** shall engage one qualified T&P inspector having undergone a certification course in the discipline.
- II. **Qualified Scaffolding Erector and Inspector:** Subcontractor shall deploy one qualified Scaffolding Supervisor and Inspector having undergone a certification course in the discipline



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-B)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 3 of 162

- e. **Tools & Equipment:** Following equipment conforming to relevant IS Codes for the job shall be ensured by subcontractor:

S. No.	Item
1	Lifelines
2	Retractable Fall Arrestors
3	Safety Nets (10m X 5m)
4	Sky Climbers
5	Fire Blanket
6	Honey Bee Removal Suit & Kit
7	Flashback Arrestors
8	Barricading Tape
9	Binoculars
10	Walkie-Talkies
11	LOTO kit
12	24-Volt light
13	Sand Buckets
14	Hard barricading planks
15	Standby Fire kits

S. No.	Item	Type of Job / Purpose	Remarks
1	Lifelines (Steel Rope) and posts	Height work	
2	Retractable Fall Arrestors	Height Work	
3	Safety Nets (for fall protection; railings also to be covered)	Height Work	
4	Sky Climbers	Height Work	
5	Fire Blanket, Spark/ slag collector	Hot Work	
6	Honey Bee Removal Suit & Kit	General	
7	Flashback Arrestors	Hot work	
8	Barricading –Hard (Scaffolding Pipes & Clamps or fabricated using structural/round	Height Work, Excavation, General Barricading	
9	Binoculars	HSE Inspection	
10	Walkie-Talkies	Lifting	
11	LOTO kit	Working on charged line	
12	24-Volt light	Confined Space/ temp work	
13	Sand and Water Buckets	Hot work/Electrical work	
15	Standby Fire kits Fire extinguisher stands	Hot work/Electrical work	



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-B)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 4 of 162

Above equipment are bare minimum to be essentially maintained at all times. Additional numbers to be deployed as and when required in order to ensure fulfillment of all Safety requirements

f. HSE Measurement Equipment & Tools

S. No	Device
1	ELCB Tester
2	Multi meter (Light cables)
3	Earth Resistance Meter
4	Lux Meter
5	Decibel Meter
6	Anemometer
7	Breath Analyzer (Alcohol)
8	Multi-gas analyzer
9	Gas leakage detector / alarm
10	Gas monitor (confined space)
11	Radiation meter & Badges
12	Blood pressure monitor
13	Fire detectors
14	Dust Particle Detector

g. Urinals in Under-construction structures:

Urinals for in under-construction structures for easy access eg. In case of Boiler elevations etc.

2. **Shared Facilities** – where part of operating cost is borne by subcontractor in proportion to contract value

The subcontractor shall bear running expenses of above facilities on a 'proportional to contract value sharing basis as finalized by BHEL.

S. No.	Facility
1.	Operation of Ambulance, Nurses, Medical Consumables
2.	Construction, Maintenance & Upkeep of Latrines and Urinals in Common spaces
3.	Drinking Water Provision in Common Spaces
4.	Dust Control / Water Sprinkling, Pest Control, Fumigation at Site



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-B)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 5 of 162

LIST OF REFERENCES

S. No	Code Name	Title
1	IS: 818-1888 (Reaffirmed 2003)	Code of Practice for Safety and Health requirements in Electric and Gas Welding and Cutting operations.
2	IS: 1179-1967 (Reaffirmed 2003)	Specification for Equipment for Eye & Face protection during welding.
3	IS: 1989 (Part 2):1986 (Reaffirmed 1997)	Specification for Leather Safety Boots & Shoes
4	IS:2925 – 1984 (Reaffirmed 2010)	Specification for Industrial Safety Helmets
5	IS:3521: 1999 (Reaffirmed 2002)	Industrial Safety Belts & Harnesses-Specification
6	IS:3646(Part II) – 1966(Reaffirmed 2003)	Code of Practice for Interior Illumination
7	IS:3696 (Part I) – 1987 (Reaffirmed 2002)	Safety Code for Scaffolds and Ladders
8	IS: 3696(Part 2) : 1991 (Reaffirmed 2002)	Scaffolds and Ladders-Code of Safety
9	IS: 3764:1992	Excavation Work – Code of Safety
10	IS:3786 – 1983 (Reaffirmed 2002)	Method for Computation of Frequency and Severity Rates for Industrial Injuries and Classification of Industrial Accidents
11	IS.4014.2.1967	Steel tubular Scaffolding
12	IS:4770: 1991 (Reaffirmed 2006)	Rubber Gloves Specification (Electricals Purposes)
13	IS:4912: 1978 (Reaffirmed 2002)	Safety Requirements for Floor and Wall Openings, Railings and Toe Boards
14	IS: 5557 – 1969	Industrial and Safety rubber knee boots.
15	IS: 5983 – 1980 (Reaffirmed 2002)	Specification for Eye-Protectors
16	IS:6519 – 1971 (Reaffirmed 1997)	Code of Practice for Selection, Care and Repair of Safety Footwear
17	IS.6549.1972	Glossary of terms used for Lifting tackles
18	IS:6994(Part I)-1973 (Re affirmed 1996)	Specification for Industrial Safety Gloves Leather and Cotton Gloves
19	IS.7215.1974	Steel Structure Fabrication
20	IS.7969.1975	Handling and storage of building material



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-B)

Doc. No.: HSEP:14-ER

Rev.: 00

Date: 25.04.19

Page 6 of 162

21	IS:8519 – 1977 (Reaffirmed 1983)	Guide for Selection of Industrial Safety Equipment for Body Protection.
22	IS:8520 – 1977 (Reaffirmed 2002)	Guide for Selection of Industrial Safety Equipment for Eye, Face and Ear Protection.
23	IS:9167:1979	Specification for Ear-Protectors
24	IS:9473:2002	Respiratory Protective Devices-Filtering Half Masks to protect against Particles-Specification.
25	IS: 9944:1992 (Reaffirmed 2003)	Natural and Man-made Fiber Rope Slings- Recommendations on Safe working loads.
26	IS 11006 : 2011	Flash Back(Flame) Arrestor Specification
27	IS: 11226 – 1985	Leather Safety footwear having direct molding sole.
28	IS:11057 – 1884 (Reaffirmed 2001)	Specification for Industrial Safety Nets
29	IS: 12254:1993 (Reaffirmed 2002)	Polyvinyl Chloride (PVC) Industrial Boots Specification
30	IS:13367(Part 1):1992 (Reaffirmed 2003)	Safe Use of Cranes-Code of Practice
31	IS: 14166:1994 (Reaffirmed 2002)	Respiratory Protective Devices-Full Face Masks Specification
32	IS:14746: 1999 (Reaffirmed 2003)	Respiratory Protective Devices-Half Masks and Quarter Masks - Specification
33	IS: 15397 :2003 (Reaffirmed 2008)	Portable Extinguisher Mechanical Foam Type(Stored Pressure)-Specification
34	IS: 19011:2002	Guidelines for Quality and/or Environmental Management Systems Auditing

 POWER SECTOR	HEALTH, SAFETY AND ENVIRONMENT PLAN FOR SITE OPERATIONS (SECTION-B)	Doc. No.: HSEP:14 Rev.: 01 Date: Page 1 of 162

As per Contract Labor (Regulation & Abolition Act), Central Rules, 1971,

- (1) The first-aid box shall be distinctively marked with a Red Cross on a white background and shall contain the following items, namely:

(a) For establishments in which the number of contract laborers employed does not exceed fifty, each first aid box shall contain the following equipment:

(i)	6 small sterilized dressings
(ii)	3 medium size sterilized dressings
(iii)	3 large size sterilized dressings
(iv)	6 pieces of sterilized eye pads in separate sealed packets.
(v)	6 roller bandages 10 cm wide.
(vi)	6 roller bandages 5 cm wide.
(vii)	One tourniquet
(viii)	A supply of suitable splints
(ix)	Three packets of safety pins.
(x)	Kidney tray.
(xi)	3 large sterilized burn dressings.
(xii)	1 (30ml) bottle containing a two percent alcoholic solution of iodine
(xiii)	1 (30 ml) bottle containing Sal volatile having the dose and mode of administration indicated on the label
(xiv)	1 snake bite lancet
(xv)	1 (30gms) bottle of potassium permanganate crystals.
(xvi)	1 pair scissors
(xvii)	1 copy of the First-Aid leaflet issued by the Director General, Factory Advice Service and Labor Institutes, Government of India.
(xviii)	A bottle containing 100 tablets (each of 5 grains) of aspirin
(xix)	Ointment for burns
(xx)	A bottle of suitable surgical anti-septic solution

Details and Contents of First Aid Box

(b) For establishment in which the number of contract laborers exceeds fifty each first-aid box shall contain the following equipment:

(i)	12 small sterilized dressings
(ii)	6 medium size sterilized dressings
(iii)	6 large size sterilized dressings.
(iv)	6 large size sterilized burn dressings
(v)	6 (15 grams) packets sterilized cotton wool
(vi)	12 pieces of sterilized eye pads in separate sealed packets.
(vii)	12 roller bandages 10 cm wide.
(viii)	12 roller bandages 5 cm wide.
(ix)	One tourniquet.
(x)	A supply of suitable splints.
(xi)	Three packets of safety pins.
(xii)	Kidney tray.
(xiii)	Sufficient number of eye washes bottles filled with distilled water or suitable liquid clearly indicated by a distinctive sign which shall be visible at all times.
(xiv)	4 per cent Xylocaine eye drops, and boric acid eye drops and soda by carbonate eye drops.
(xv)	1 (60ml) bottle containing a two percent alcoholic solution of iodine
(xvi)	One (two hundred ml) bottle of mercurochrome (2 per cent) solution in water.
(xvii)	1 (120ml) bottle containing Sal volatile having the dose and mode of administration indicated on the label.
(xviii)	1 roll of adhesive plaster (6 cmX1 meter)
(xix)	2 rolls of adhesive plaster (2 cmX1 meter)
(xx)	A snake bite lancet.
(xxi)	1 (30 grams) bottle of potassium permanganate crystals.
(xxii)	1 pair scissors
(xxiii)	1 copy of the First-Aid leaflet issued by the Director-General, Factory Advice service and labor Institutes, Government of India.
(xxiv)	a bottle containing 100 tablets (each of 5 grains) of aspirin
(xxv)	Ointment for burns
(xxvi)	A bottle of a suitable surgical anti septic solution.

(2) Adequate arrangement shall be made for immediate recoupment of the equipment when necessary.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-B)

Doc. No.: HSEP:14

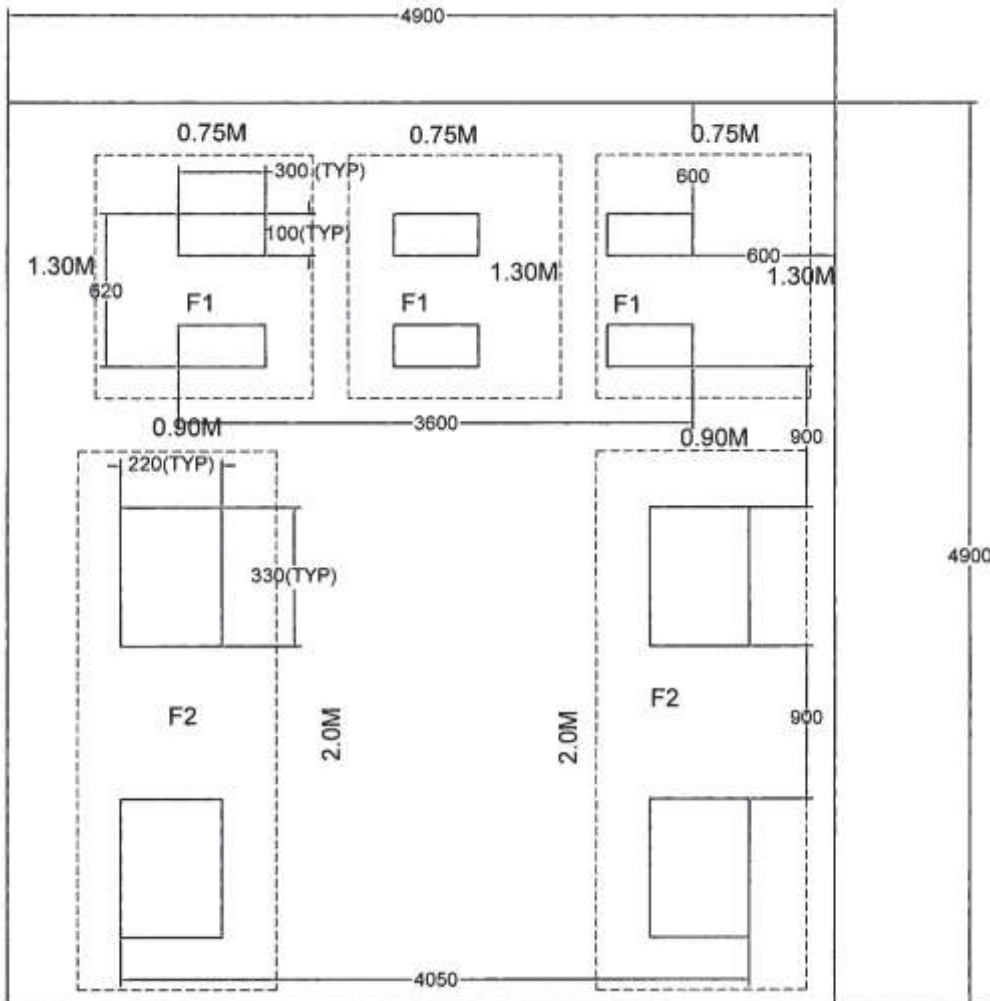
Rev.: 01

Date:

Page 1 of 162

Table 1

S. No.	Topic
1	Vertigo / Height working Test Structure Layout
2, 3	Structure Layout Sketch
3	Actual Photo of a typical structure
4	Bill of Materials
5	Guidelines for Conducting the Test



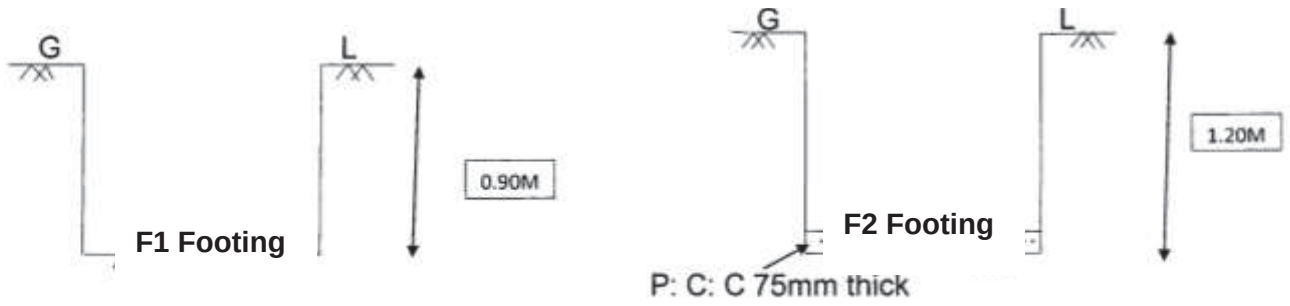
Note:

- All dimensions are in mm
- Drawing is not to scale
- Inside boundary area to be filled with sand to level with road (external)
- Details of F1 and F2 are shown below

Figure 1: Vertigo / Height Work Test Structure Layout



Vertigo Test Structure Specifications



Note:

- Concrete Grade is M15
- Drawing is not to scale
- TOC is at Road Level
- G L refers to Ground Level

Figure 2

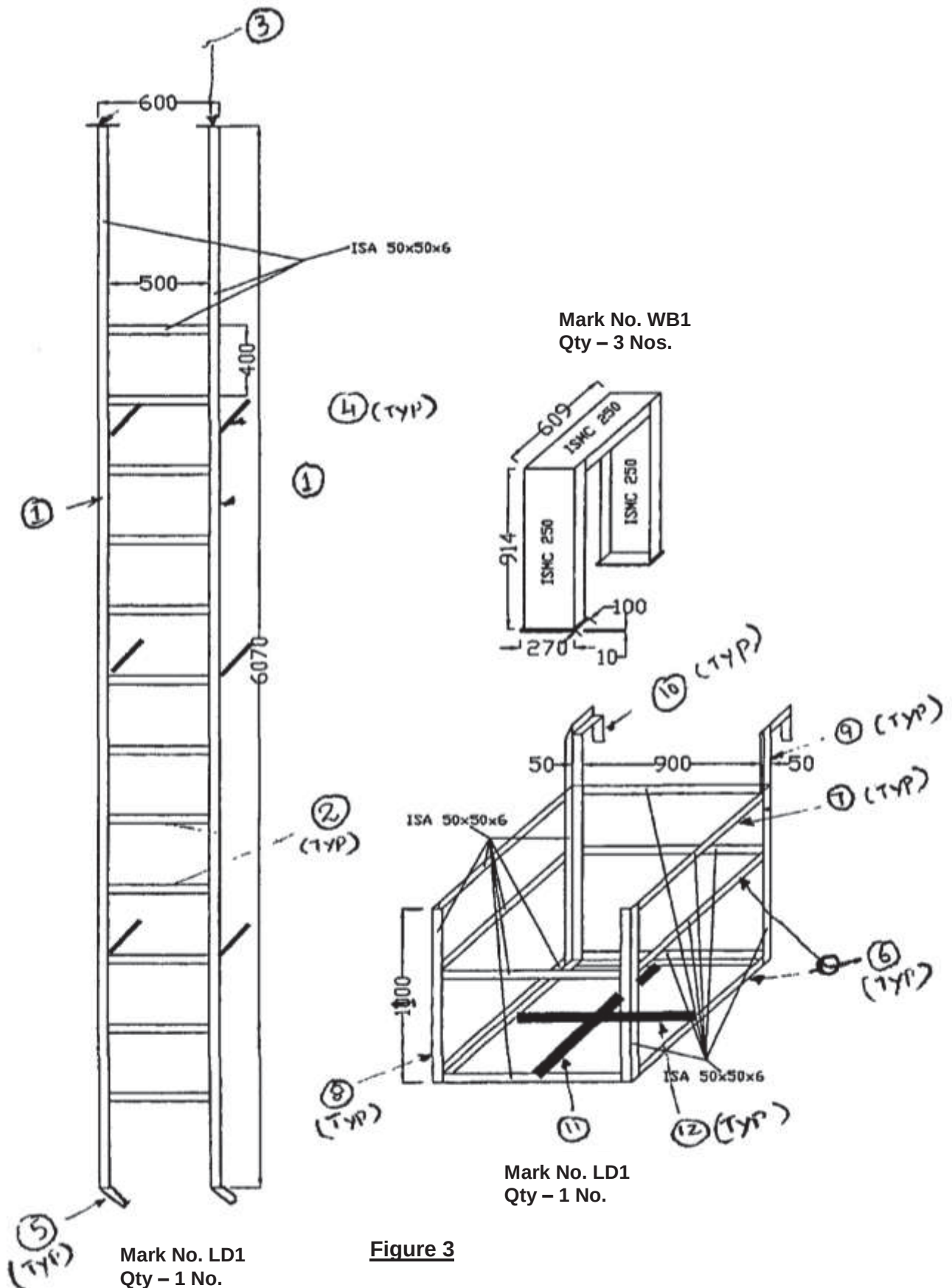
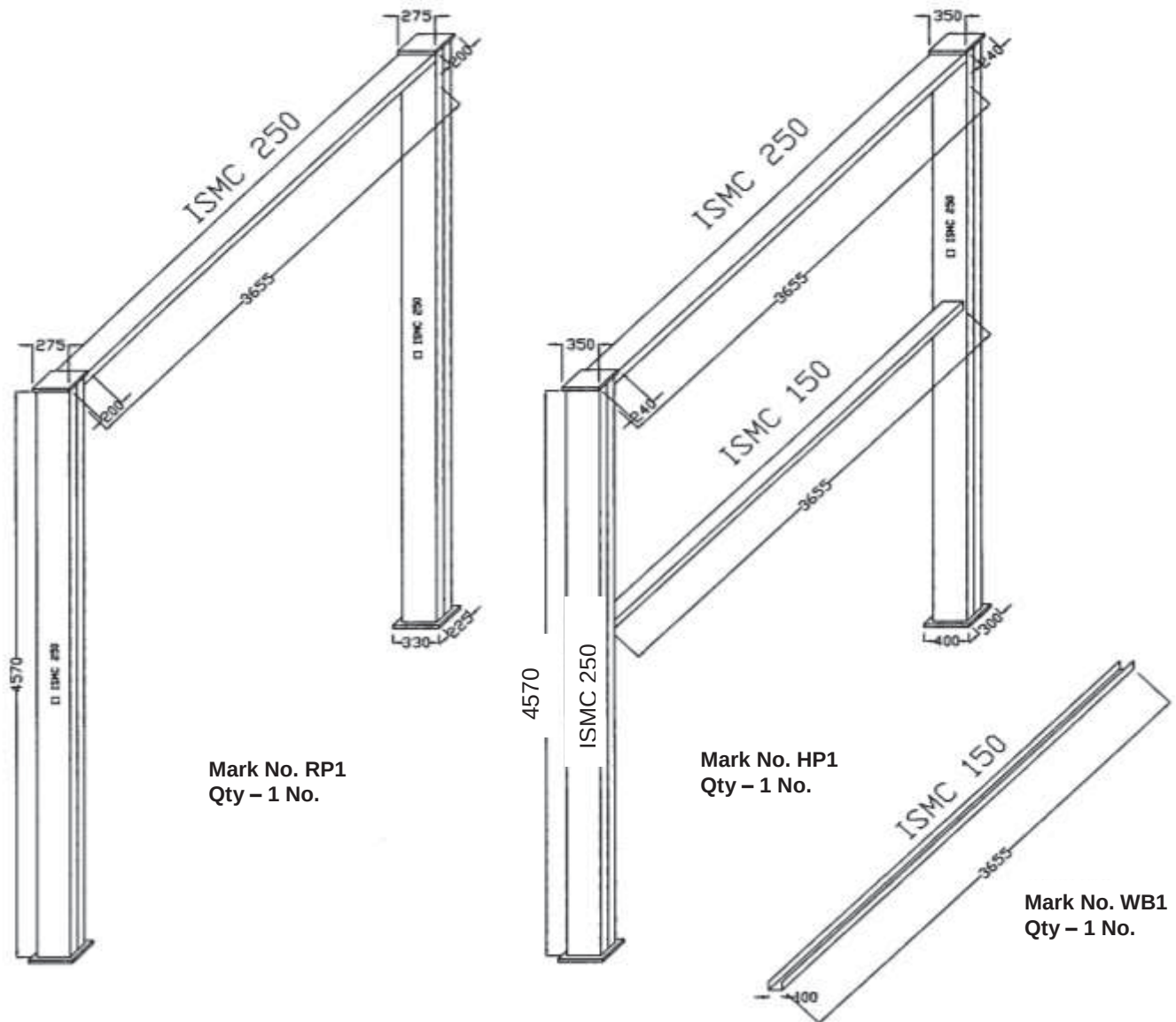


Figure 3

Figure 4



Pic-1: Actual Photo of a Typical Vertigo Test



Table 2: BOM FOR HEIGHT WORK INDUCTION TRAINING MODULE

Sl. No.	Description	Width (mm)	Length (mm)	Qty (No's)	Unit Wt (Kgs)	Total Wt. (Kgs)
MKD NO. WB1						
1	ISMC250		609	3	34.20	62.483
2	ISMC250		914	6	34.20	187.553
3	ISMC100		3655	1	9.56	34.942
4	PL10	100	270	6	78.50	12.717
			Total Weight (Kgs)			297.695
MKD NO. RP1						
1	ISMC250		4570	4	34.20	625.176
2	ISMC250		3655	1	34.20	125.001
3	PL25	225	330	2	196.25	29.143
4	PL25	200	275	2	196.25	21.588
			Total Weight (Kgs)			800.908
MKD NO. HP1						
1	ISMC250		4570	4	34.20	625.176
2	ISMC250		3655	1	34.20	125.001
3	ISMC150		3655	1	16.80	61.404
4	PL25	300	400	2	196.25	47.100
5	PL25	240	350	2	196.25	32.970
			Total Weight (Kgs)			891.651
MKD NO. LD1						
1	ISA50X50X6		6070	2	4.50	54.630
2	ISA50X50X6		500	12	4.50	27.000
3	PL12	75	75	2	94.20	1.060
4	ISA50X50X6		300	6	4.50	8.100
5	ISA50X50X6		255	2	4.50	2.295
6	ISA50X50X6		1000	8	4.50	36.000
7	ISA50X50X6		910	3	4.50	12.285
8	ISA50X50X6		1100	4	4.50	19.800
9	ISA50X50X6		650	2	4.50	5.850
10	ISA50X50X6		350	2	4.50	3.150
11	PL8	75	900	1	62.80	4.239
12	PL8	75	410	2	62.80	3.862
			Weight (Kgs)			178.271
			Total Weight (Kgs)			2168.525



A. Test Procedure / Guidelines

Fear of height may be physiological or psychological. Therefore, to rule out any possibility of physiological factor, detailed medical check-up of workers is carried out before vertigo test. Medical check-up of workers includes the following:

history of past illnesses (like epilepsy, drug allergy, diabetics/ hypertension, unconsciousness etc.), general physical examination (like height, weight, BMI, build and nourishment etc.), measurement of pulse rate, Blood Pressure, respiratory rate.

After this check-up, those who are found suitable for height work by examining doctor, are allowed to undergo vertigo test.

During this health check-up, psychology of workers is also studied. If any worker finds it extremely difficult/ frightening to climb the monkey ladder & walk on the beam, during/after performing vertigo test or even before performing, then he is treated as disqualified.

As per standard, during vertigo test, worker is allowed to climb on a foundation through monkey ladder, walk on a beam, then steps down at the other end of beam, through monkey ladder. Height of the beam should be at least six feet from ground level. All necessary safety precautions are taken during this test. Worker has to wear full body harness with double lanyard. A horizontal lifeline is run parallel to the beam and worker has to put his lanyards into the lifeline. Additionally, a safety net is also put below the beam for rescue of the victim in case of a fall from beam.

Following activities are generally carried during testing:

1. Walking Bench Training:

- a. Person should walk over the channel. He should maintain balance & walk without much problem.
- b. If the person has problem to balances himself on repeated chances, he may be having flat foot or some other problem. So, he may not be fit for height work.

2. Rope Climb Training:

Person should be able to climb the rope up to the top channel for ensuring that in case of fall, a person hanging on the safety harness, will be able to safely climb back to the platform within minimum time period before the safety harness start breaking down under the load.

3. Height Work Training:

Person should walk freely on the middle channel while holding the top channel with the help of safety harness.

4. Ladder for Vertical fall arrestor Training:

Vertical fall arrestor rope is fixed from top to bottom of the ladder. It will ensure:

- Usage of vertical fall arrestor.
- Usage of two lanyards of a safety harness.
- Ensure 3-point contact on the ladder while climb.

5. Chair for work at height Training:

- Climb though vertical ladder with two lanyard ropes.
- Hooking of two lanyard ropes to life line. With this safe arrangement, he can walk to chair.
- Sits in the chair safely, comes out & walks back to the vertical ladder & come down from vertical ladder. After completion of vertigo test, blood pressure of worker is again measured. If it is not within acceptable limits for any worker, concerned worker is denied height pass.

Only those who pass the above training are fit for height work.



POWER
SECTOR

HEALTH, SAFETY AND ENVIRONMENT PLAN
FOR
SITE OPERATIONS
(SECTION-B)

Doc. No.: HSEP:14

Rev.: 01

Date:

Page 7 of 162

Safety Park Requirements

S.No	Training room(capacity 40 persons)	Qty.
1	Class room chair	25
2	Office Table	3
3	Rolling chair	3
4	Almirah	1
5	Visitor chair	10
6	Drawer	2
7	Single bed	1
8	Mattress	1
9	Projector	1
10	Projector screen	1
11	Sound speakers	1
12	Desktop Computer	3
13	Printer	1
14	White Board	1
15	Marker	5
16	Duster	1
17	Door Mat	9
18	Dustbin(Smaal + BIG)	7+1
19	Mannequin	1
20	Helmet	1
21	Face Shield	1
22	Safety Goggle	1
23	Welding sheild	1
24	Ear Muff	1
25	Ear Plug	1
26	Nose Mask	1
27	Breathing Apparatus	1
28	Hand Gloves(Cotton)	1
29	Hand Gloves for Electrician (Rubber)	1
30	Hand gloves Rubber	1
31	Hand Gloves Lather	1
32	Construction Safety Uniform(Boiler Suit)	1
33	Welding Apron	1
34	Safety Shoes	1
35	Leg Guard For Welder	1
36	Poster for Occupational Disease like Pneumoconosis,silicosis etc.	1
37	Gum Boot	1

38	Full Body Harness	1
39	8 MM Wire rope for life line. Length 20 Feet(FT).	1
40	Sfety Net for man & materials.Size 15 FT X 15FT.	1
41	MonkEy ladder 15 FT.	1
45	Fire Extingusher All types(DCP,CO2 & Foam)	1
46	Bed Sheet	1
47	Pillow	1
48	Curtain	12
49	curtain fittings	12
50	AC (1.5 TON)	3
51	AC (2 TON)	2
52	Rope pully.	1
53	PP Rope for pully 20 MTR.	
54	Ladder Clamps	6
55	Allumuniam ladder 6 MTR.	1
56	Carry Bag	
57	Scaffolding all Materilas for 5 Mtr. Height like.Sacffolding tubes,Sole plate,base plate,Right angle clamps,Swielclamps,beam clamps,Joint box/joint pin,toe guard/board,	



Health, Safety & Environment, Power Sector Headquarters

Bharat Heavy Electricals Limited

Regd. Office: BHEL House, Siri Fort, New Delhi – 110049, India

Website: www.bhel.com

FORMS & PROCEDURES

INDEX

SN	Description	Form No	Remarks
1.0	Forms		
1.1	Offer forwarding Letter/Submission of Tender	F-1 (Rev 00)	
1.2	Declaration by Authorised Signatory	F-2 (Rev 00)	
1.3	No Deviation Certificate	F-3 (Rev 00)	
1.4	Declaration confirming knowledge about Site Conditions	F-4 (Rev 00)	
1.5	Declaration for relation in BHEL	F-5 (Rev 00)	
1.6	Non Disclosure Certificate	F-6 (Rev 00)	
1.7	Bank Account Details for E-Payment	F-7 (Rev 00)	
1.8	Form for seeking clarifications	F-8 (Rev 00)	
1.9	Capacity Evaluation of Bidder for current Tender	F-9 (Rev 00)	
1.10	Contract Agreement	F-10 (Rev 00)	
1.11	Bank Guarantee for Security Deposit	F-11 (Rev 00)	
1.12	Bank Guarantee for ~~Interest Bearing Refundable~~ Advance	F-12 (Rev 00)	
1.13	Extension of Validity of Bank Guarantee	F-13 (Rev 00)	
1.14	Monthly Plan & Review with Contractors	F-14 (Rev 00)	
1.15	Monthly Performance Evaluation of Contractor	F-15 (Rev 01)	Revised
1.16	~~Evaluation of Contractor Performance (Quarterly)~~	~~F-16 (Rev 00)~~	Deleted
1.17	Evaluation of Contractor Performance (Annual)	F-17 (Rev 01)	Under revision ##
1.18	Evaluation of Contractor Performance for the Contract (Overall)	F-18 (Rev 01)	Under revision ##

FORMS & PROCEDURES

SN	Description	Form No	Remarks
1.19	Milestone Completion Certificate	F-19 (Rev 00)	
1.20	Completion Certificate	F-20 (Rev 01)	Revised
1.21	Indemnity Bond	F-21 (Rev 00)	
1.22	Consortium Agreement	F-22 (Rev 00)	
1.23	Refund of Security Deposit	F-23 (Rev 00)	
1.24	Refund of Guarantee Money	F-24 (WAM-11)	
1.25	Power of Attorney for Submission of Tender/Signing Contract Agreement	F-25 (Rev 00)	
1.26	Analysis of Unit Rates Quoted	F-26 (Rev 00)	
1.27	RA Bill Format	WAM-6	
1.28	Final Bill Submission format with No Claim Certificate and No Demand Certificate	WAM-7	
1.29	PROFORMA FOR PERFORMANCE BANK GUARANTEE		
1.30	BANK GUARANTEE FOR SD CUM PBG BOND		
2.0	Procedures		
2.1	Procedure and Business Rules for Reverse Auction	As per Company Policy	
2.2	Integrity Pact	As per Company Policy	
3.0	Customer specific procedures		
3.1			

- BANK GUARANTEE FORMATS FOR "RELEASE OF AMOUNTS WITHED/ LIQUIDATED DAMAGES AMOUNT", "SUPPLY FREE ISSUE MATERIAL" & "EARNEST MONEY" IS ALSO GIVEN.

: will be released later

FORMS & PROCEDURES

Form No: F-01 (Rev 00)

OFFER FORWARDING LETTER / TENDER SUBMISSION LETTER (To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

Offer Reference No:.....

Date:.....

To,

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

Dear Sir,

Sub : Submission of Offer against Tender Specification No:

I/We hereby offer to carry out the work detailed in the Tender Specification issued by Bharat Heavy Electricals Limited, Power Sector-....., in accordance with the terms and conditions thereof.

I/We have carefully perused the following listed documents connected with the above work and agree to abide by the same.

1. Amendments/Clarifications/Corrigenda/Errata/etc issued in respect of the Tender documents by BHEL
2. Notice Inviting Tender (NIT)
3. Price Bid
4. Technical Conditions of Contract
5. Special Conditions of Contract
6. General Conditions of Contract
7. Forms and Procedures

Should our Offer be accepted by BHEL for Award, I/we further agree to furnish 'Security Deposit' for the work as provided for in the Tender Conditions within the stipulated time as may be indicated by BHEL.

I/We further agree to execute all the works referred to in the said Tender documents upon the terms and conditions contained or referred to therein and as detailed in the appendices annexed thereto.

I/We have deposited/depositing herewith the requisite Earnest Money Deposit (EMD) as per details furnished in the Check List.

Authorised Representative of Bidder

Signature :

Name :

Address :

Place:

Date:

FORMS & PROCEDURES

Form No: F-02 (Rev 00)

DECLARATION BY AUTHORISED SIGNATORY OF BIDDER

(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 by Authorised Signatory**

Ref : 1) NIT/Tender Specification No:
2) All other pertinent issues till date

I/We, hereby certify that all the information and data furnished by me with regard to the above Tender Specification are true and complete to the best of my knowledge. I have gone through the specifications, conditions, stipulations and all other pertinent issues till date, and agree to comply with the requirements and Intent of the specification.

I further certify that I am authorised to represent on behalf of my Company/Firm for the above mentioned tender and a valid Power of Attorney to this effect is also enclosed.

Yours faithfully,

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

Date:

Enclosed : Power of Attorney

FORMS & PROCEDURES

Form No: F-03 (Rev 00)

NO DEVIATION CERTIFICATE

(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 : **No Deviation Certificate**

Ref : 1) NIT/Tender Specification No:
2) All other pertinent issues till date

We hereby confirm that we have not changed/ modified/materially altered any of the tender documents as downloaded from the website/ issued by BHEL and in case of such observance at any stage, it shall be treated as null and void.

We also hereby confirm that we have neither set any Terms and Conditions and nor have we taken any deviation from the Tender conditions together with other references applicable for the above referred NIT/Tender Specification.

We further confirm our unqualified acceptance to all Terms and Conditions, unqualified compliance to Tender Conditions, Integrity Pact (if applicable) and acceptance to Reverse Auctioning process.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized
representative of the bidder)

FORMS & PROCEDURES

Form No: F-04 (Rev 00)

DECLARATION CONFIRMING KNOWLEDGE ABOUT SITE CONDITIONS

(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 confirming knowledge about Site conditions**

Ref : 1) NIT/Tender Specification No:,
2) All other pertinent issues till date

I/We, _____ hereby declare and confirm that we have visited the Project Site as referred in BHEL Tender Specifications and acquired full knowledge and information about the Site conditions including Wage structure, Industrial Climate, the Law & Order and other conditions prevalent at and around the Site. We further confirm that the above information is true and correct and we shall not raise any claim of any nature due to lack of knowledge of Site conditions.

I/We, hereby offer to carry out work as detailed in above mentioned Tender Specification, in accordance with Terms & Conditions thereof.

Yours faithfully,

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

Date :

Place:

FORMS & PROCEDURES

Form No: F-05 (Rev 00)

DECLARATION FOR RELATION IN BHEL

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder failing which the offer of Bidder is liable to be summarily rejected)

To,

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

Dear Sir,

Sub : **Declaration for relation in BHEL**

Ref : 1) NIT/Tender Specification No:,

I/We hereby submit the following information pertaining to relation/relatives of Proprietor/Partner(s)/Director(s) employed in BHEL

Tick(✓) any one as applicable:

1. The Proprietor, Partner(s), Director(s) of our Company/Firm DO NOT have any relation or relatives employed in BHEL

OR

2. The Proprietor, Partner(s), or Director(s) of our Company/Firm HAVE relation/relatives employed in BHEL and their particulars are as below:

(i)

(ii)

Signature of the Authorised Signatory

Note:

1. Attach separate sheet, if necessary.
2. If BHEL Management comes to know at a later date that the information furnished by the Bidder is false, BHEL reserves the right to take suitable action against the Bidder/Contractor.

FORMS & PROCEDURES

Form No: F-06 (Rev 00)

NON DISCLOSURE CERTIFICATE

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

NON DISCLOSURE CERTIFICATE

I/We understand that BHEL PS __ is committed to Information Security Management System as per their Information Security Policy.

Hence, I/We M/s.....
who are submitting offer for providing services to BHEL PS __ against
Tender Specification No: _____,
hereby undertake to comply with the following in line with Information
Security Policy of BHEL PS __, _____

- To maintain confidentiality of documents & information which shall be used during the execution of the Contract.
- The documents & information shall not be revealed to or shared with third party which shall not be in the business interest of BHEL PS__.

(Signature, date & seal of Authorized
Signatory of the bidder)

Date:

FORMS & PROCEDURES

Form No: F-07 (Rev 00)

BANK ACCOUNT DETAILS FOR E-PAYMENT

(To be given on Letter head of the Company /Firm of Bidder, and **ENDORSED (SIGNED & STAMPED) BY THE BANK** to enable BHEL release payments through Electronic Fund Transfer (EFT/RTGS))

1. Beneficiary Name :
2. Beneficiary Account No. :
3. Bank Name & Branch :
4. City/Place :
5. 9 digit MICR Code of Bank Branch :
6. IFSC Code of Bank Branch :
7. Beneficiary E-mail ID :
(for payment confirmation)

NOTE: In case Bank endorsed certificate regarding above has already been submitted earlier, Kindly submit photocopy of the same

FORMS & PROCEDURES

Form No: F-08 (Rev 00)

FORMAT FOR SEEKING CLARIFICATION

(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 : **Request for Clarification**

Ref : 1) NIT/Tender Specification No:,

2) All other pertinent issues till date

Sl no	Reference clause of Tender Document	Existing provision	Bidder's query	BHEL's clarification
1				
2				
3				

Yours faithfully,

(Signature, date & seal of Authorized
Representative of the Bidder)

FORMS & PROCEDURES

FORMS & PROCEDURES

Form No: F-09 (Rev 00)

CAPACITY EVALUATION OF BIDDERS FOR CURRENT TENDER

SL NO.	DESCRIPTION OF WORK (Similar to Tendered Scope)	WORK ORDER REF & DATE	CONTRACT VALUE (Rs. LACS)	CUSTOMER NAME & ADDRESS	CURRENT STATUS OF THE JOB ALONG WITH LATEST MILE STONE COMPLETED	%AGE OF WORK COMPLETED	VALUE OF BALANCE WORK (Rs. Lacs)
1							
2							
3							
4							
5							

NOTES:

1. BIDDERS ARE REQUIRED TO FURNISH ALL THE JOBS OF SIMILAR NATURE WHICH THEY ARE EXECUTING (IN PROGRESS) AT THE TIME OF SUBMISSION OF TENDER, AS PER ABOVE FORMAT.
2. BIDDERS HEREBY UNDERTAKE THAT THEY HAVE FURNISHED THE DETAILS SOUGHT AS PER POINT NO. 1 IN TOTALITY AND THAT THE DETAILS FURNISHED IS COMPLETE IN ALL RESPECT.
3. BHEL WILL TAKE APPROPRIATE ACTION AS DEEMED FIT , IN CASE, IT IS FOUND AT A LATER DATE THAT THE CONTRACTOR HAD SUPPRESSED THE FACTS AND HAVE NOT FURNISHED THE CORRECT & COMPLETE INFORMATIONS.

Signature

DATE :

PLACE:

Name, Designation & Seal of Bidder

FORMS & PROCEDURES

CONTRACT AGREEMENT

Form No: F-10 (Rev 00)

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
Power Sector – Region

CONTRACT AGREEMENT

AGREEMENT NO. _____

NAME OF WORK	
NAME OF THE CONTRACTOR WITH FULL ADDRESS	
VALUE OF WORK AWARDED	
LETTER OF INTENT NO.	
TIME ALLOTTED FOR COMPLETING THE WORK (DATE OF COMPLETION)	

SIGNATURE OF CONTRACTOR

(SIGNATURE OF BHEL OFFICER)

FORMS & PROCEDURES

CONTRACT AGREEMENT

THIS AGREEMENT MADE THIS _____ DAY OF _____ between BHARAT HEAVY ELECTRICALS LIMITED (A Government of India Enterprise) a Company incorporated under the Companies Act, 1956, having its Registered Office at BHEL House, Siri Fort New Delhi- 110049 (herein after called BHEL) of the ONE PART.

AND

M/S _____
_____ (hereinafter called the 'Contractor') of the SECOND PART.

WHEREAS M/s -----state that they have acquired and possess extensive experience in the field of -----

And Whereas in response to an Invitation to Tender No. ----- issued by BHEL for execution of ----- the contractor submitted their offer No.- -----dated -----And whereas BHEL has accepted the offer of the Contractor on terms and conditions specified in the Letter of Intent No.-----dated -----read with the references cited therein.

THIS AGREEMENT WITNESSES AND it is hereby agreed by and between the parties as follows:

1. That the contractor shall execute the work of -----and more particularly described in Tender Specification No -----including Drawings and Specifications (hereinafter called the said works) in accordance with and subject to terms and conditions contained in these presents, instructions to Tenderers, General Conditions of Contract, Special Conditions, Annexures, Letter of Intent dated -----and such other instructions, Drawings, Specifications given to him from time to time by BHEL.
2. The Contractor is required to furnish to BHEL Security deposit in the form of cash/ approved securities/ Bank Guarantee valid upto ----- for a sum of Rs.----- towards satisfactory performance and completion of the Contract.
3. The Contractor has furnished a Bank Guarantee bearing no.-----dated -----for a sum of Rs.-----executed by ----- in favour of BHEL towards Security Deposit valid upto -----

OR

The Contractor has furnished to BHEL an initial Security Deposit of Rs.-----in the form of cash / approved Securities/ B.G No.----- dated ----- for Rs.-----executed by ----- in favour of BHEL valid upto ----- and has agreed for recovery of the balance security deposit by BHEL @ 10% of the value of work done from each running bill till the entire Security Deposit is recovered.

OR

FORMS & PROCEDURES

The contractor has furnished to BHEL an initial Security Deposit of Rs.----- (Rs.----- vide Bank draft No.----- dated ----- and by adjusting EMD of Rs.----- submitted vide Bank draft No.----- dt.-----) and has agreed for recovery of balance Security Deposit by BHEL @ 10% of the value of work done from each running bill till the entire security deposit is recovered.

4. The Contractor hereby agrees to extend the validity of the Bank Guarantee for such further period or periods as may be required by BHEL and if the Contractor fails to obtain such extension(s) from the Bank, the Contractor, shall pay forthwith or accept recovery of Rs.----- from the bills in one installment and the contractor further agrees that failure to extend the validity of the Bank Guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of contract. In addition to above, BHEL shall be entitled to take such action as deemed fit and proper for recovering the said sum of Rs.-----

OR

In case the contractor furnishes the bank guarantee at a later date the contractor hereby agrees to extend the validity of bank guarantee for such further period or periods as may be required by BHEL and if the contractor fails to obtain such extension(s) from the bank, the contractor shall pay forthwith or accept recovery of the amount of bank guarantee given in lieu of security deposit from the bills in one installment and the contractor further agrees that failure to extend the validity of bank guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of contract. In addition to above, BHEL shall be entitled to take such action as deemed fit and proper for recovering the said sum.

5. That in consideration of the payments to be made to the Contractor by BHEL in accordance with this Agreement the Contractor hereby covenants and undertakes with BHEL that they shall execute, construct, complete the works in conformity, in all respects, with the terms and conditions specified in this Agreement and the documents governing the same.
6. That the Contractor shall be deemed to have carefully examined this Agreement and the documents governing the same and also to have satisfied himself as to the nature and character of the Works to be executed by him.
7. That the Contractor shall carry out and complete the execution of the said works to the entire satisfaction of the Engineer or such other officer authorised by BHEL, within the agreed time schedule, the time of completion being the essence of the Contract.
8. That BHEL shall, after proper scrutiny of the bills submitted by the Contractor, pay to him during the progress of the said works such sum as determined by BHEL in accordance with this Agreement.
9. That this Agreement shall be deemed to have come into force from ----- the date on which the letter of intent has been issued to the Contractor.

FORMS & PROCEDURES

10. That whenever under this contract or otherwise, any sum of money shall be recoverable from or payable by the Contractor, the same may be deducted in the manner as set out in the General Conditions of Contract or other conditions governing this Agreement.
11. That all charges on account of Octroi, Terminal and other taxes including sales tax or other duties on material obtained for execution of the said works shall be borne and paid by the Contractor.
12. That BHEL shall be entitled to deduct from the Contractor's running bills or otherwise Income Tax under Section 194 (C) of the Income Tax Act, 1961.
13. That BHEL shall be further entitled to recover from the running bills of the Contractor or otherwise such sum as may be determined by BHEL from time to time in respect of consumables supplied by BHEL, hire charges for tools and plants issued (Where applicable) and any other dues owed by the Contractor.
14. That it is hereby agreed by and between the parties that non-exercise, forbearance or omission of any of the powers conferred on BHEL and/or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents and the liability of the Contractor with respect to compensation payable to BHEL or Contractor's obligations shall remain unaffected.
15. It is clearly understood by and between the parties that in the event of any conflict between the Letter of Intent and other documents governing this Agreement, the provisions in the Letter of Intent shall prevail.

16. The following documents

1. Invitation to Tender No-----
and the documents specified therein.
2. Contractor's Offer No-----
dated-----.
3. _____
4. _____
5. _____
6. Letter of Intent No_____ dated_____.
7. _____

shall also form part of and govern this Agreement.

IN WITNESS HEREOF, the parties hereto have respectively set their signatures in the presence of

WITNESS

(CONT

RACTOR)

FORMS & PROCEDURES

1. (to be signed by a person holding
a valid Power of Attorney)

2.

WITNESS (For and on behalf of BHEL)

1.

2.

PROFORMA OF BANK GUARANTEE (in lieu of SECURITY DEPOSIT)

In consideration of the Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at BHEL House, Siri Fort, Asiad, New Delhi – 110049 through its Unit at Bharat Heavy Electricals Limited, Power Sector Eastern Region, BHEL Bhawan, Plot No 9/1, DJ Block, Sector-II, Salt lake City, Kolkata – 700091 having agreed to exempt (Name of the Vendor / Contractor / Supplier) having its registered office at _____¹ (hereinafter called the said Contractor which term includes supplier), from demand under the terms and conditions of the Contract reference No. _____² dated _____² valued at Rs. ² (Rupees -----)² for <Nature of the Work>³ (hereinafter called the said Contract) of Security Deposit for the due fulfilment by the said contractor of the terms and conditions contained in the said Contract, on production of a Bank Guarantee for Rs. _____⁴ (Rupees _____ only), we _____ (indicate the name and address of the Bank) having its Head Office at _____ (address of the head Office) (hereinafter referred to as the Bank) at the request of _____ [Name of Contractor(s)] do hereby undertake to pay to the Employer an amount not exceeding Rs. _____ in the event of any breach by the said Contractor(s) of any of the terms and conditions contained in the said Contract.

We, _____ (indicate the name of the Bank), do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Employer. Any such demand made on the bank, shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this guarantee shall be a valid discharge of our liability for payment hereunder and the Contractor(s) shall have no claim against us for making such payment.

We, further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claim satisfied or discharged or till _____⁵ or till the office/Department/Division of Bharat Heavy Electricals Limited certifies that the terms and conditions of the said Contract have been fully and properly carried out by the said contractor(s) and also including the satisfactory performance of the equipment during guarantee period and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the _____⁶, (3 months more than the present date of validity of Bank Guarantee) we shall be discharged from all the liability under this guarantee thereafter.

We, _____ (indicate the name of the Bank) _____ further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by any reason of any such variation or extension being granted to the said contractor(s) or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

We,..... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....⁷
- b) This Guarantee shall be valid up to ⁸
- c) Unless the Bank is served a written claim or demand on or before _____⁹ (3 months more than the present date of validity of Bank Guarantee) all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ (indicate the name of the Bank) _____ lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Any claim or dispute arising under the terms of this document shall only be enforced or settled in the courts of at Kolkata only.

Date _____ Day of _____
for _____ (indicate the name of the Bank) _____

(Signature of Authorised signatory)

¹ NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER .

² DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

³ PROJECT/SUPPLY DETAILS

⁴ BG AMOUNT IN FIGURES AND WORDS

⁵ VALIDITY DATE

⁶ DATE OF EXPIRY OF CLAIM PERIOD

⁷ BG AMOUNT IN FIGURES AND WORDS.

⁸ VALIDITY DATE

⁹ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 2/3 months after validity date.

2. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter-Guarantee by Foreign Bank in favour of the Indian Bank (BHEL's Consortium Bank). It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.

- b.2** In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
- b.3** The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). In case, of Foreign Vendors, the BG Format provided to them should clearly specify the same.
- b.4** The BG should clearly specify that the demand or other document can be presented in electronic form.

BANK GUARANTEE FOR ADVANCE

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at BHEL House, Siri Fort, Asiad, New Delhi – 110049 through its Unit at Bharat Heavy Electricals Limited, Power Sector Eastern Region, BHEL Bhawan, Plot No 9/1, DJ Block, Sector-II, Salt lake City, Kolkata – 700091 having awarded to (Name of the Vendor / Contractor / Supplier) having its registered office at _____ ¹ (hereinafter called "the Contractor" which expression shall include its successors and permitted assigns) a contract Ref No.....dated ²valued at Rs.....(Rupees -----) for <Nature of Work> ³(hereinafter called the 'Contract')

AND WHEREAS the Employer has agreed to advance to the Contractor, a sum of Rs..... (Rupees..... only), equivalent to _____% of the said value of the Contract (hereinafter called "the said Advance"), upon the condition, that the said Advance shall be secured by undertaking guarantee for Rs ----- (Rupees -----)⁴ from a Bank as hereinafter appearing.

We, ..., (hereinafter referred to as the Bank), having registered/Head office at and a branch at being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer without any demur, merely on your first demand any sum or sums upto a maximum amount but not exceeding Rs ----- (Rupees -----).

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor/ Supplier in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment hereunder and the Contractors/Supplier shall have no claim against us for making such payment.

We the Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We Bank further agree that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall remain in force upto and including.....⁵ and shall be extended from time to time on the request of the Employer for such period as may be desired by the Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms hereof. However, unless a demand or claim under this Guarantee is made on us in writing on or before the ⁶ (3 months more than the present date of validity of Bank Guarantee) we shall be discharged from all liabilities under this Guarantee.

We, ... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....⁷
- b) This Guarantee shall be valid up to ⁸
- c) Unless the Bank is served a written claim or demand on or before ⁹ (3 months more than the present date of validity of Bank Guarantee) all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank

We, ... Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

Any claim or dispute arising under the terms of this document shall only be enforced or settled in the courts of at Kolkata only.

For and on behalf of
(Name of the Bank)

Date.....

Place of Issue.....

¹ NAME OF VENDOR /CONTRACTOR / SUPPLIER

² DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

³ PROJECT/SUPPLY DETAILS

⁴ BG AMOUNT IN FIGURES AND WORDS

⁵ VALIDITY DATE

⁶ DATE OF EXPIRY OF CLAIM PERIOD

⁷ BG AMOUNT IN FIGURES AND WORDS

⁸ VALIDITY DATE

⁹ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 2/3 months after validity date.
2. In Case of Bank Guarantees submitted by Foreign Vendors-
 - a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
 - b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank (BHEL's Consortium Bank). It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). In case, of Foreign Vendors, the BG Format provided to them should clearly specify the same.
 - b.4 The BG should clearly specify that the demand or other document can be presented in electronic form.

FORMS & PROCEDURES

Form No: F-13 (Rev 00)

FORM for EXTENSION OF VALIDITY OF BANK GUARANTEE

1. To be typed on non judicial Stamp Papers of value as applicable in the State of India from where the BG has been issued or the State of India where the BG shall be operated
2. The non judicial stamp papers shall be purchased in the name of the Party on whose behalf the BG is being issued or the BG issuing Bank

BANK GUARANTEE No:

Date:.....

To

(Write Designation and Address of Officer of BHEL inviting the Tender)

Dear Sir

Sub : Validity of Bank Guarantee No:..... Dated for
..... Rs in favour of yourself, expiry date, on
account of M/s in respect of Contract
Number....., (herein after called the Original bank Guarantee)

At the request of M/s....., we Bank, having its
branch Office at and having Head office at, do
hereby extend our liability under the above mentioned Bank Guarantee number..... dated
..... for a further period of Months/years from to expire on
.....

Except as provided above, all other terms and conditions of the Original Bank Guarantee No
..... Dated..... shall remain unaltered and binding on us.

Kindly treat this extension as an integral part of the original Bank Guarantee to which it would be attached.

Yours faithfully

Signature.....

Name & Designation.....

Power of Attorney/Signing Power No

Seal of Bank

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#1.01	Cumulative number of days in the month, the nominated Quality Officer or his authorised nominee was not available	QUALITY	1.5		Quality Officer or his authorised nominee should be available for all the days of working at site	Daily Log Book entry/Incident Registers/letter references
#1.02	Number of instances of non- compliance wrt FQP, Standard Drawings, Specifications, E&C Manuals etc.	QUALITY	1.5		No deviation from FQP, Standard Drawings, Specifications, E&C Manuals etc. is allowed without BHEL Engineer's approval.	Daily Log Book entry/Incident Registers/letter references
#1.03	Percentage submission of test certificates for batches of welding electrodes, cement, sand, aggregate, consumable, Paints etc. as applicable for this month OR In case of MM & MH package, monthly checks for Storage/Preservation of material.	QUALITY	1		Submission of 100% Test certificates for materials as per FQP is mandatory. MM & MH package: Storage/Preservation as per manual/procedure.	Daily Log Book entry/Incident Registers/letter references
#1.04	Number of incidences of improper storage & preservation (not in accordance to the guidelines of BHEL MUs or approved FQP) of materials, consumables (viz. gases, welding electrodes & fluxes, fuel etc.) & bought-out items (paints, fasteners etc.) under the custody of the contractor	QUALITY	1		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references
#1.05	Rework/ Rejection instances in a month necessitated due to deviation from Standard Drawings /Specifications /Manuals /E&C procedures /FQPs or due to Poor Workmanship by contractor	QUALITY	2		Reworks/ Rejection should be as minimum as possible. Total number of reworks/ rejections due to reasons attributable to contractor.	Daily Log Book entry/Incident Registers/letter references
#1.06	Delay in preparation & submission of signed protocols / log sheets / site register / NDT test reports as per approved FQP/ Qualified Welder List along with photocopies of Welder ID cards / Welder Performance Evaluation records etc. in the month OR in case of MM / MH package reconciliation statement / verification report.	QUALITY	1		Within 2 days of measurements taken or within first 3 working days of next month, as advised by BHEL Engineer	Daily Log Book entry/Incident Registers/letter references
#1.07	Number of instances for Major equipment/product failure due to negligence/improper work/poor workmanship by contractor	QUALITY	1		No such event should happen	Daily Log Book entry/Incident Registers/letter references
#1.08	Total number of complaints received in the month on the quality of finish / aesthetics	QUALITY	1		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#2.01	Cumulative number of days of delay in submission of Plan FOR THE MONTH supported by deployment plan of Major T&Ps and Manpower (as per Form F-14) and relevant construction/layout drawings - like A4 plan / elevation views of plan status for structures / pressure parts/Civil Works, Piping isometrics for piping, Layout / PID / System reference sketch, Unloading / storage plans etc.as applicable.	PERFORMANCE	5		Number of days delayed from second working day of the month	Daily Log Book entry/Incident Registers/letter references
#2.02	Percentage of timely submission of Daily Reports for Progress of work, Resources, Consumables etc.	PERFORMANCE	1.5		Percentage of timely submission of daily reports/ Scheduled date is successive next day for each day	Daily Log Book entry/Incident Registers/letter references
#2.03	Number of days delayed for submission of FQP log sheets / protocols / Monthly Progress Reports for the work executed during the month under measurement	PERFORMANCE	1.5		Number of days delayed/Scheduled date is first 2 working days of next month	Daily Log Book entry/Incident Registers/letter references
#2.04	Percentage Shortfall attributable to contractor w.r.t. "Plan - Shortfall attributable to BHEL" for the month as per Form-14	PERFORMANCE	35		As per Part-A of Form-14	Progress review formats
#2.05	Number of days delayed in submission of Running bills with complete supporting documents (including updated reconciliation statement of BHEL issued material) for the month	PERFORMANCE	2		Number of days delayed / Scheduled date is 7th day of next month	Daily Log Book entry/Incident Registers/letter references
#2.06	Number of times the Top Management of contractor did not respond to critical issues of site, for the month	PERFORMANCE	1		Total number of instances	Daily Log Book entry/Incident Registers/letter references
#2.07	Cumulative number of days in the month the works were stopped / refused on interpretation of contract clauses/scope due to tendency of taking undue advantage by interpreting contract clauses in their favour	PERFORMANCE	2		Cumulative number of days lost	Daily Log Book entry/Incident Registers/letter references
#2.08	Number of times rework was refused by contractor	PERFORMANCE	1		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#2.09	Cumulative number of days in the month recording / logging was not done in daily log / history register / hindrance register / soft form in a PC maintained at BHEL Site Office	PERFORMANCE	1		Cumulative number of days recording or logging was not done / all days of the month	Daily Log Book entry/Incident Registers/letter references
#3.01	Percentage of Manpower Deployed w.r.t. Plan for the month as per Form-14.	RESOURCES	7		As per Part-B2 of Form-14	Daily Log Book entry/Incident Registers/letter references
#3.02	Percentage of T&P Deployed w.r.t. Plan for the month as per Form-14.	RESOURCES	7		As per Part-B1 of Form-14	Daily Log Book entry/Incident Registers/letter references
#3.03	Cumulative number of major instances in the month hampering / affecting progress of work due to breakdown or non-availability of major T&P and MME for the work, under the scope of Contractor	RESOURCES	3		Cumulative number of instances	Daily Log Book entry/Incident Registers/letter references
#3.04	Cumulative number of major instances in the month hampering / affecting progress of work due to non-availability of Consumables/ use of improper consumables under the scope of contractor	RESOURCES	3		Cumulative number of instances	Daily Log Book entry/Incident Registers/letter references
#4.01	Number of non-compliances during the month for Statutory requirements like validity of Labour Licence, Insurance Policy, Labour Insurance, PF, BOCW Compliance etc. and any other applicable laws/ Regulation, Electrical Licence, T&P fitness certificate, Contractors' All Risk Policy etc. as applicable	SITE INFRASTRUCTURE & SERVICE	1		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references
#4.02	Cumulative number of days in a month poor illumination is reported at storage area, erection area, pre-assembly area and other designated areas by BHEL site.	SITE INFRASTRUCTURE & SERVICE	0.5		Total number of non-compliances/random checks	Daily Log Book entry/Incident Registers/letter references
#4.03	Cumulative number of days of non-availability of well-maintained toilets facilities for workers (separate for men and women) and non-availability of potable drinking water stations for workers in specified areas.	SITE INFRASTRUCTURE & SERVICE	1		Total number of non-compliances/random checks	Daily Log Book entry/Incident Registers/letter references

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#4.04	Total number of instances in the month, Housekeeping NOT attended to in spite of instructions by BHEL -i.e. removal / disposal of surplus earth / debris / scrap / unused / surplus cable drums / other electrical items / surplus steel items / packing materials, thrown out scrap like weld butts, cotton waste etc. from the working area to identified locations	SITE INFRASTRUCTURE & SERVICE	2		Total number of non-compliances/random checks	Daily Log Book entry/Incident Registers/letter references
#4.05	Total number of instances in a month, Site Office with reasonably good facilities including enough nos. of computers and printers etc. for use by office and supporting staff was not made available/maintained.	SITE INFRASTRUCTURE & SERVICE	0.5		No discrepancy during regular or surprise visits	Photograph and report of the Engineer
#5.01	Number of days delayed in making labour payments for the last month	SITE FINANCE	2		Number of days delayed / Scheduled date is 7th day of next month	Daily Log Book entry/Incident Registers/letter references
#5.02	Number of complaints from labour/ sub supplier/ sub-contractor for non-receipt of payments from contractor	SITE FINANCE	1.5		Total number of complaints or reporting	Daily Log Book entry/Incident Registers/letter references
#5.03	Number of times the site operations were hampered for want of funds at the disposal of site-in-charge.	SITE FINANCE	1.5		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references
#6.01	Cumulative number of days in a month the nominated Safety Officer was not available	HSE & SA	1		Safety Officer should be available for all the days	Daily Log Book entry/Incident Registers/letter references
#6.02	Shortfall in number of weekly safety meetings in the month conducted or attended by the Safety Officer	HSE & SA	0.5		Safety meetings to be held every week	Copy of Minutes of meeting
#6.03	Level of compliance w.r.t decisions taken in previous Safety meetings	HSE & SA	0.5		Number of consolidated issues discussed in Safety meetings	Copy of Minutes of meeting, Non-compliance intimation documents from BHEL site
#6.04	Delay in submission of monthly report on safety (including electrical safety for equipment & personnel etc.) in the prescribed form	HSE & SA	1		Number of days delayed/Scheduled date is third working day of next month	Daily Log Book entry/Incident Registers/letter references
#6.05	Number of days taken for lodging FIRs from date of occurrence/notice of incident of theft / accident etc.	HSE & SA	0.5		Number of days delayed/Scheduled date is within 24 Hrs of occurrence/notice of incidence	Copy of FIR lodged by Contractor

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#6.06	Number of times written(email, letters etc.) warning issued for non-availability/ use of improper Fall protection and rescue arrangement as lifeline, fall arrestors, safety net, hand-railings, covered floors, man-basket, rescue basket & kit etc. by the contractor	HSE & SA	2		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references
#6.07	Number of times punitive fines imposed for unsafe practices as per contract like non-availability/use of PPEs as safety shoes, helmets, goggles, gloves, lifeline, safety belts etc.	HSE & SA	1		Total number of non-compliances	Non-compliance intimation documents from BHEL site
#6.08	Percentage compliance to Emergency preparedness and response plan: Portable Fire-extinguishers, Buckets, Fire-wardens, display of emergency numbers, mock-drills, Hazard Identification and Risk Assessment(HIRA) etc.	HSE & SA	1		Compliance should be 100% as per HSE Plan or as finalized in Safety Meetings	Non-compliance intimation documents from BHEL site
#6.09	Number of times the agency has defaulted on display of safety posters / safety slogans / safety barriers/emergency numbers etc. in identified areas	HSE & SA	0.5		Total number of instances	Non-compliance intimation documents from BHEL site
#6.10	Non compliances observed during HSE and Safety Audit	HSE & SA	0.5		Total number of non-compliances	Non-compliance intimation documents from BHEL site, Audit Reports
#6.11	Cumulative number of days in the month, non-availability of First Aid Kit, First Aider & Emergency Vehicles/Ambulance.	HSE & SA	0.5		Cumulative number of days	Non-compliance intimation documents from BHEL site
#6.12	Number of days taken for submission of Root Cause analysis (RCA) for the accident from the cut-off date intimated by BHEL for submission of RCA	HSE & SA	0.5		Number of days delayed/Scheduled date is cut-off date intimated by BHEL	Daily Log Book entry/Incident Registers/letter references
#6.13	Non conductance of training (induction, job specific, height work etc.), tool box meeting and health check-up as per Contract requirements	HSE & SA	0.5		Number of incidences of non-conductance during the month	Daily Log Book entry/Incident Registers/letter references
Total			100			

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
	Less Deduction in Score Due to Major Accidents (Fatal, Permanent Disability or bodily injury by which person injured is prevented to resume to work within 48 hours or more after accident,, Major Damage to Equipment etc.) attributable to the contractor @ 3 points/ accident					
	Less Deduction in Score Due to Minor Accidents attributable to the contractor @ 1 point/ accident					
	Less Deduction in Score Due to not Maintaining of Labour Colony (if applicable) as per BHEL HSE policy @2 points in a month on verification any day					
	Final Score					

Performance Score Summary for the Month	Total Score	Score Obtained
QUALITY	10	
PERFORMANCE	50	
RESOURCES	20	
SITE INFRASTRUCTURE & SERVICE	5	
SITE FINANCE	5	
HSE & SA	10	
OTHERS (deductions if any)	0	
TOTAL	100	

Note:

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

FORMS & PROCEDURES

Form No: F-19 (Rev 00)

MILESTONE COMPLETION CERTIFICATE **(issued by BHEL on the specific request of Contractor)**

Ref :

Date:

To,

(Name & address of Contractor)

Dear Sir,

References

1. Contract No:
2. Job Description:

This is to hereby confirm that the following Milestone Activity has been achieved in respect of the Contract /Job under reference

Sl No	Milestone Activity	Remarks

This certificate is issued as per your request vide letter no
without any prejudice to the rights of BHEL in line with the terms and conditions of the
above referred Contract

Yours faithfully,

For and on behalf of Bharat Heavy Electricals Limited

Construction Manager/Head (Subcontracts)

FORMS & PROCEDURES

Form No: F-20 (Rev 01)

CONTRACT COMPLETION CERTIFICATE (Issued by BHEL/HQ on the specific request of Contractor)

Ref :

Date:

To Whom so ever it may concern

1	DESCRIPTION OF WORK	
2	NAME AND ADDRESS OF THE CONTRACTOR	
3	CONTRACT NO	
4	CONTRACT VALUE	
5	LETTER OF INTENT NO & DATE	
6	CONTRACT PERIOD//CONTRACT DURATION	
7	DATE OF START/COMPLETION	
8	FINAL EXECUTED VALUE	
9	PERFORMANCE	GOOD SATISFACTORY UNSATISFACTORY

This certificate is issued as per your request vide letter no
without any prejudice to the rights of BHEL to use this certificate for evaluation of your offers for future
tenders

Yours faithfully,

For and on behalf of Bharat Heavy Electricals Limited

Head (Subcontracts)

FORMS & PROCEDURES

Form No: F-21 (Rev 00)

INDEMNITY BOND

(To be executed on a Non Judicial Stamp Paper of the requisite value as per Stamp Duty prevalent in the respective State)

This Indemnity Bond executed by <name of company> having their Registered Office at <xxxxxxxxxx> in favour of M/s Bharat Heavy Electricals Limited, a Company incorporated under the Companies Act, 1956, having its Registered Office at BH EL House, Siri Fort, Asiad, New Delhi - 110049 through its Unit at Power Sector _____ Region, _____, _____ State.
(Hereinafter referred to as the Company)

And whereas the Company has entered into a Contract with M/s xxxxxxxxx, the executants of this Deed (hereinafter referred to as the Contractor) as its contractor in respect of the work of "xxxxxxxxxxxxxxxxxxxxxxxxxxxx".

AND WHEREAS under the provisions of G C C further stipulates that the Contractor shall indemnify the Company against all claims of whatever nature arising during the course of execution of Contract including defects liability period of <xx Months > i.e till <xx xx xxxx>

Now this deed witnesses that in case the Company is made liable by any Authority including Court to pay any claim or compensation etc. in respect of all labourers or other matters at any stage under or relating to the Contract with the Contractor, the Contractor hereby covenants and agrees with the Company that they shall indemnify and reimburse the Company to the extent of such payments and for any fee, including litigation charges, lawyers' fees, etc, penalty or damages claimed against the Company by reason of the Contractor falling to comply with Central/States Laws, Rules etc, or his failure to comply with Contract (including all expenses and charges incurred by the Company).

The Contractor further indemnifies the Company for the amount which the Company may be liable to pay by way of penalty for not making deductions from the Bills of the Contractor towards such amount and depositing the same in the Government Treasury.

FORMS & PROCEDURES

The Contractor further agree that the Company shall be entitled to with hold and adjust the Security Deposit and/or with ho ld and adjust payment of Bills of Contractor pertaining to this Contract against any payme nt which the Company has made or is required to mak e for which the Contractor is liable under the Contract and that such amount can be withheld, adjusted by the Company till satisfactory and final settlement of all pending matters and the Contractor hereby gives his consent for the same.

The Contractor further agrees that the terms of indemnity shall s urvive the termination or completion of this contract.

The contractor further agrees that the liability of the contractor shall be extended on actual basis notwithstanding the limitations of liability clause, in respect of :

1. breach of terms of contract by the contractor
2. breach of laws by the contractor
3. breach of Intellectual property rights by the contractor
4. breach of confidentiality by the contractor

Nothing contained in this deed, shall be construed as absolving or limiting the liability of the Contractor under said Contract between the Company and the Contractor . That this Indemnity Bond is irrevocable and the condition of the bond is that the Contractor shall duly and punctually c omply with the terms and the conditions of this deed and contractu al provisions to the satisfaction of the Company.

In witness where of M/s xxxxxxxxxxxxxx these presents on the day, month and year first, above written at xxxxxxxx by the hand of its signatory Mr. xxxxxxxxxxxx.

Signed for and on behalf of
M/s xxxxxxxxxxxxxxxxxxxx

Witness:

1
2

FORMS & PROCEDURES

Form No: F-22 (Rev 00)

CONSORTIUM AGREEMENT

(To be executed on Rs. 50/- Non – Judicial Stamp Paper)

THIS AGREEMENT is made and executed on this _____ day of _____, by and between (1) M/s _____, (The First Party, i.e, the Bidder) a company incorporated under the Company's Act 1956, having its registered office at _____ (herein after called the "Bidder", which expression shall include its' successors, administrators, executors and permitted assigns) and (2) M/s _____, (The Second Party, i.e, the associates), a company incorporated under the Company's Act 1956, having its registered office at _____ (herein after called the " Associates", which expression shall include its' successors, administrators, executors and permitted assigns).

WHEAEAS the Owner, Bharat Heavy Electricals Ltd, a Government of India Undertaking, proposes to issue / issued an NIT (herein after referred to as the said NIT) inviting bids from the individual Bidders for undertaking the work _____ of _____ at _____ (herein after referred to as the said works).

WHEREAS the said NIT enables submission of a bid by a Consortium subject to fulfillment of the stipulations specified in the said NIT.

AND WHEREAS M/s _____ (The First Party, i.e, the Bidder) will submit its proposal in response to the aforesaid invitation to _____ bid by the Owner for _____ as detailed in the Bid doc. no. < TENDER REF----->

FORMS & PROCEDURES

AND WHEREAS M/s _____ (The First Party, i.e the Bidder) itself is meeting all the qualifying requirements except the qualifying requirements of _____ (as detailed in the NIT) and in order to fully meet the qualifying requirements of NIT, this tie-up agreement is _____ being entered into with M/s _____ (The Second Party, the Associates), who fully meet the balance part of the said works (_____).

WHEREAS the First Party and the Second Party are contractors engaged in the business of carrying out various items of works. WHEREAS the two parties have agreed to constitute themselves into a consortium for the purpose of carrying out the said works, and that the consortium will be continued till the completion of the works in all respects.

WHEREAS the parties have agreed to certain terms and conditions in this regard:

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS :

1. First and Second parties hereby constitute themselves into a Consortium for the purpose of bidding and undertaking the said works pursuant to the said NIT as hereinafter stated.
2. The First Party will be the leader (Lead Partner) and will be responsible for the entire works.

FORMS & PROCEDURES

CONSORTIUM AGREEMENT

3. The First Party shall undertake the following part(s) of work detailed in _____ the NIT namely _____

4. The Second Party shall undertake the following part(s) of work detailed _____ in the said NIT namely _____

5. The parties hereby declare and confirm that each of them will fulfill the required minimum qualifying requirements as prescribed in the said NIT for the works agreed to be undertaken by them as stated here-in-above.
6. It is also agreed between the parties hereto that all of them shall be individually and severally responsible for the completion of the said works as per the schedule. Further, if the Employer/Owner sustains any loss or damage on account of any breach of the Contracts, we the, Consortium partners individually and severally undertake to promptly indemnify and pay such losses / damages caused to the Employer/Owner on its written demand without any demur, reservation, contest or protest in any manner whatsoever.
7. The parties hereby agree and undertake that they shall provide adequate finances, suitable Tools, Plants, Tractors, Trailers, other transportation equipment, other Tools & Plants, Measuring & Monitoring Equipments (MMEs), Men and Machinery etc. for the proper and effective execution of the works to be undertaken by them as specified here-in-above.

FORMS & PROCEDURES

8. It is agreed interse between t he parties hereto that all the consequences liabilities etc., arising out of any default in the due execution of the said works shall be borne by the party in default, that is by party in whose area of works default has occurred, provided however, so far as M/s Bharat Hea vy Electricals Limited is concerned, all the parties shall be liable jointly and severally.

IN WITNESS HEREOF the parties above named have signed this agreement on the day month and year first above written at _____(Place) .

WITNESS

For

1. NAME (FIRST PARTY)

2. OFFICIAL ADDRESS

WITNESS

For

1. NAME (SECOND PARTY)

2. OFFICIAL ADDRESS

[The successful bidder shall have to execute the " JOINT DEED OF UNDERTAKING " in the format to be made available by BHEL at the time of awarding].

FORMS & PROCEDURES

Form No: F-23 (Rev 00)

REFUND OF SECURITY DEPOSIT

To,
The Construction Manager
BHEL Site Office

Dear Sir,

Sub : **Refund of Security Deposit**

Ref : Contract No:

Work:.....

I/We have submitted Final Bill in respect of the above Contract/Work vide our letter no:.....
dated In line with Tender conditions (GCC clause no 1.11), kindly arrange to
release/refund the Security Deposit along with Final Bill payments.

The details of Security Deposit are as below:

1. Cash Portion :
2. BG Portion :

Thanking You

Date: _____

Authorised representative of Contractor

To be filled up by BHEL

1. Security Deposit to be refunded:
 - a. Cash Portion:
 - b. BG Portion :
2. Less
 - a. Amount spent by BHEL on behalf of Contractor:
 - b. Payments made by BHEL on behalf of Contractor:
 - c. Other recoveries for Services etc
 - d. Any other recoveries
 - e. Total of 'a' to 'd':
3. Net Amount to be released (1-2) :
4. Certified that
 - a. The payment recommended for release is in order and there are no demands other than those included in the claim outstanding from the Contractor
 - b. Contract Guarantee period of Months commenced wef : _____
 - c. All objections raised so far have been settled
 - d. A note for refund of Security Deposit has been made in the Measurement Book

Signature of BHEL Engineer

Construction Manager

Date:-----

FORMS & PROCEDURES

Form No: F-24 (Rev 00)

REFUND OF GUARANTEE MONEY

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR, _____ REGION

Ref No:

Date:

1. Name and Address of Contractor :
2. Contract Agreement/LOI No :
3. Date of Contract Agreement/LOI :
4. Name of the Work undertaken :
5. Date of commencement of the Work :
6. Date of Completion of the Work :
7. Period of Maintenance :
(Guarantee Period)
8. Date on which the Final Bill was paid :
9. Last date of making good the defect :
during Maintenance Period
10. Expenditure incurred by BHEL during :
Maintenance Period, if any, recoverable
11. Date on which Guarantee Money refund:
falls due as per Contract
12. Amount of Guarantee Money to be refunded:
13. Less Amounts recoverable (with details)
 - a. Amount spent by BHEL on maintenance :
 - b. Payments made by BHEL on behalf of Contractor:
 - c. Court dues/penalties/compensation :
 - d. Other recoveries for Services, etc :
 - e. Total of 'a' to 'd' :
14. Net Amount recommended for release (12-13) :

FORMS & PROCEDURES

Signature of BHEL Engineer

Date: _____

CERTIFICATE TO BE FURNISHED BY THE CONTRACTOR

I/We have no claim or demand outstanding against BHEL _____, for the work done or for labour or material supplied or any other account arising out of or connected with the Contract Agreement/LOI (No _____ dated _____) and the payment of this bill shall be in full and final settlement of all my/our claims and demands including the 'Deposits' of the Contract Agreement/LOI referred to.

Signature of Contractor

Date: _____

CERTIFICATE TO BE FURNISHED BY SENIOR ENGINEER/CONSTRUCTION MANAGER

1. Certified that
 - a. The payment recommended for release is in order and there are no demands other than those included in the claim outstanding from the Contractor
 - b. Maintenance period (Contract Guarantee period) is over and the Contractor has carried out the works required to be carried out by him during the period of maintenance (Guarantee) to our satisfaction, and all expenses incurred by the Company on carrying out such works have been included for adjustment
 - c. All objections raised so far have been settled
 - d. A note for refund of Guarantee Amount has been made in the Measurement Book and Contract Agreement/Work Order

Signature of BHEL Engineer

Construction Manager

Date:-----

FOR USE IN ACCOUNTS DEPARTMENT

Passed for Rs _____ (Rupees _____ only)

Accountant

Accounts Officer

ACKNOWLEDGE BY THE CONTRACTOR

Received Rs _____ in full and final settlement of my/our claim

Signature of Contractor

Date: _____

FORMS & PROCEDURES

Form No: F-25 (Rev 00)

POWER OF ATTORNEY for SUBMISSION OF TENDER/SIGNING CONTRACT AGREEMENT

(To be typed on non judicial Stamp Papers of appropriate value as applicable and Notarised)

KNOW ALL MEN BY THESE PRESENTS, that I/We do hereby make, nominate, constitute and appoint Mr , whose signature given below herewith to be true and lawful Attorney of M/s..... hereinafter called 'Company', for submitting Tender/entering into Contract and inter alia, sign, execute all papers and to do necessary lawful acts on behalf of Company with M/s Bharat Heavy Electricals Ltd, Power Sector _____ Region, _____, in connection with

.....
.....
..... vide Tender Specification No :
_____, dated _____.

And the Company do hereby agree to ratify and confirm all acts, deeds, things or proceedings as may be lawfully done by the said attorney and by or on behalf of the company and in the name of the company, by virtue of the powers conferred herein and the same shall be binding on the company and shall have full force and effect.

IN WITNESS WHEREOF the common seal of the company has been hereunto affixed in the manner hereinafter appearing on the document.

Dated at _____, this _____ day of _____

Director/CMD/Partner/Proprietor

Signature of Mr.....(Attorney)

Attested by: Director/CMD/Partner/Proprietor

Witness

Notary Public

FORMS & PROCEDURES

Form No: F-26 (Rev 00)

ANALYSIS OF UNIT RATES QUOTED

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

Offer Reference No:.....

Date:.....

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

Dear Sir,

Sub : Analysis of Unit Rates Quoted

Ref : Tender Specification No:

Analysis of Unit Rates quoted by us in respect of above Tender is as detailed

SN	DESCRIPTION	% OF QUOTED RATE	REMARKS
01	SITE FACILITIES VIZ., ELECTRICITY, WATER OTHER INFRASTRUCTURE.		
02	SALARY AND WAGES + RETRENCHMENT BENEFITS		
03	CONSUMABLES		
04	T&P DEPRECIATION & MAINTENANCE		
05	ESTABLISHMENT & ADMINISTRATIVE EXPENSES		
06	OVERHEADS		
07	PROFIT		
	TOTAL	100%	

Yours faithfully,

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

FORMS & PROCEDURES

Form WAM 6

BHARAT HEAVY ELECTRICALS LIMITED DIVISION.....

Running Account Bill

(Para 4.31.1 of Works Accounts Manual)

Name of the Contractor:
Name of the Work:
Sanctioned Estimate:
Code No:
Contract Agreement No :

Dated:

Departmental Bill no:
Division:
Date of written order to commence the work :
Date of commencement of the Work:
Due date of completion as per Agreement:

Date:
Sub-Division:

1. ACCOUNT OF WORK EXECUTED

On account payment for work not previously previously measured**			Item No of	Description of Work	Quantity as per agree- ment	Quantity executed up to date	Rate	Unit	Payment on the basis of actual measure- ment up to date	Quantity since last running account bill	Payment on the basis of actual measurement since last running account bill	Remarks	
Total As per Running Account bill Rs.	since last running account bill Rs.	Total up to date Rs.					Rs.	P.	Rs.	P.	Rs.	P.	
1	2	3	4	5	6	7	8	9	10	11	12	13	

- * *1. Whenever payment is made on 'on account' basis without actual measurements the amount in whole rupees should be entered in columns 1 to 3 only and not in columns 7 to 12.
2. whenever there is an entry in column 12 on the basis of actual measurement, the whole of the amount previously paid without detailed measurement should be adjusted by a minus entry in column 2 equivalent to the amount shown in column 1, so that the total up to date in column 4 may become nil.

FORMS & PROCEDURES

Form WAM 6 (contd...)

1	2	3	4	5	6	7	8	9	10	11	12	13

Total value of work done up to date (A) ...

Running Account Bill Deduct value of work shown on the last (B) ...

Net value of work done since last (C) ...

Rupees (in words)

.....only.

FORMS & PROCEDURES

Form WAM 6 (contd...)

II.MEMORANDUM OF PAYMENTS

				I		II	
		Rs.	P.	Rs.	P.	Rs.	P.
1.Total value of work actually measured as per Account No. I. Column 10	(A)	.....				.....	
2.Total up to date 'on account' payment for work covered by approximate Or plan measurements as per Account No. I, Column 3	(B)	.....				.....	
3.Total up to date secured advances on security of materials as per column 8 Of the enclosed Account (Form WAM 10)	(C)	.....				.....	
4.Total up to date payments [(A) + (B) + (C)]	(D)	.....				.....	
5.Total amount of payments already made as per Entry (D) of last Running Account Bill No..... Dated.....forwarded to the Accounts Office on	(E)						
6.Balance [(D)-(E)]		.....					
7.Payments now to be made:							
a) by cash/cheque						.....	
b) by deduction for value of materials supplied							
c) by BHEL vide Annexure A attached						.....	
d) by deduction for hire of tools and plant vide							

FORMS & PROCEDURES

Annexure B attached	.....	
e) by deduction for other charges vide Annexure C		
Attached	.....	
f)by deduction on account of security deposit	.....	
h) by deduction on account of Income Tax	.....	.....

Note: Amounts relating to items 4 to 6 above should be entered in column II and those relating to item 7 in column I. The amount shown against item 6 and the total of item 7 should agree with each other.

III.CERTIFICATE OF THE ENGINEER IN CHARGE

Form WAM 6 (contd...)

1. The measurements on which the entries in column 7 to 12 of Part I of this Bill (Account of work executed) are based were made by.....and are recorded at pages.....of
(Name and Designation)

Measurement Book No

2. Certified that the methods of measurement are correct and the work has been carried out in accordance with the terms and conditions, schedules, specifications and drawings etc, forming part of the contract agreement, subject to deviations included in the deviation statement (Annexure D).
3. Certified that in addition to and quite apart from the quantities of work actually executed as shown in column 10 of Part I, some work has actually been done in connection with several items and the value of the such work is, in no case, less than 'on account' payments as per column 3 of Part I, made or proposed to be made, for the convenience of the contractor in anticipation of, and subject to the results of, detailed measurement which will be made as soon as possible.

Signature of Contractor

Signature of Engineer in charge

Date:

Designation:

Date:

FORMS & PROCEDURES

IV. CERTIFICATE OF THE SENIOR ENGINEER

1. Certified that measurements have been check measured to the prescribed extent by at site and also by the undersigned and the relevant entries have been intialled in the Measurement book. (vide pages.....)
(Name and Designation)
2. Certified that all the measurements recorded in the measurement book have been correctly billed for
3. Certified that all recoberable amounts in respect of materials tools and plant etc, and other charges have been correctly made vide Annexures A to C attached.
Certified for payment * of Rs.....(Rupees.....only)
To be paid in cash/by cheque in the presence of

ALLOCATION

The expenditure is chargeable as under and to be included in the accounts for.....20.....

Ledger Head	Debit (Gross amount)	Credit (Deductions)

Rs. P.

Rs. P.

Total

* Here specify the net amount payable.

Signature of Senior Engineer
Date:

Form WAM 6 (contd...)

V.ENTRIES TO BE MADE IN THE ACCOUNTS OFFICE

Accounts Bill No Dated.....
Entered in Journal Book vide entry No.....Dated.....
Passed for.....Rs.....
Less Deductions.....Rs.....
Net Amount Payable.....Rs.....
(Rupees.....only)
Payable to Shri/M/s.....by cheque/cash
Entered in Contractor's Ledger No.....Page.....

ALLOCATION

Estimate No: Code no:
Name of the Work:

Ledger Head	Debit (Gross amount) Rs. P.	Credit (Deductions) Rs. P.
-----	-----	-----
-----	-----	-----

FORMS & PROCEDURES

Assistant Date:	Accountant Date:	Account Officer Date:	Total	-----	-----

VI. Received Rs.....(Rupees.....only) as per
Memorandum of Payments on account of this work.

Signature of witness Address :	Revenue	Stamp Signature of Contractor Date:

VII. ENTRIES TO BE MADE BY TREASURY SECTION

Cash Book entry No. and date:	Amount paid	Rs.....
	Amount unpaid	Rs.....
	Total	Rs.....
	Signature of Cashier	
	Date:	

Form WAM 6 (contd...)

ANNEXURE A

FORMS & PROCEDURES

Statement showing details of materials issued to the contractor Shri/M/s.....

In respect of Contract Agreement No Dated.....

Sl. No.	Stores issue Voucher No. and date	Issue voucher No. and date allotted by stores to the SIV	Description of material issued to the contractor	Quantity issued	Quantity actually incorporated in the work	Whether recoverable from the contractor or supplied free	If recoverable from the contractor				R E M A R K S
							Rate at which recoverable	Amount recoverable	Amount recovered up to previous bill	Balance now recovered	
							Rs. P.	Rs. P.	Rs. P.	Rs. P.	
1	2	3	4	5	6	7	8	9	10	11	12
Total											

Signature of contractor

Signature of Engineer in Charge

Signature of Senior Engineer

Date:

Date:

Date:

FORMS & PROCEDURES

Form WAM 6 (contd...)

ANNEXURE B

Statement showing tools and plant issued to the contractor Shri/M/s.....

In respect of Contract Agreement No Dated.....

Sl. No	Description of tools and plant issued	Period for which Issued	Rate at which recovery Is to be Made	Amount recover-able	Amount recovered upto previous bill	Balance now recovered	Remarks
			Rs. P.	Rs. P.	Rs. P.	Rs. P.	

1	2	3	4	5	6	7	8

Total

Signature of contractor

Signature of Engineer in Charge

Signature of Senior Engineer

Date:

Date:

Date:

FORMS & PROCEDURES

Form WAM 6 (contd...)

ANNEXURE C

Statement showing details of other recoveries to be made from the contractor Shri/M/s.....

In respect of Contract Agreement No Dated.....

Sl. No	Particulars	Unit	Quantity	Rate	Amount recover- able	Amount recovered upto pre- vious bill	Amount now recovered	Remarks
				Rs. P.	Rs. P.	Rs. P.	Rs. P.	
1	2	3	4	5	6	7	8	9

1. Water Charges
2. Electricity charges
3. Seignorage charges
4. Medical charges
5. Cost of empty gunny bags and

Empty containers not returned

- 6.
- 7.
- 8.
- 9.

FORMS & PROCEDURES

10.

Total

Signature of contractor

Signature of Engineer in Charge

Signature of Senior Engineer

Date:

Date:

Date:

FORMS & PROCEDURES

Form WAM 6 (contd...)

ANNEXURE D

Name of the Contractor:
Name of the Work:

Contract Agreement No:
Date:

Sl. No.	Description of item	Unit	Quantity as per Agreement	Quantity as executed	Quantity further anticipated	Total quantity anticipated on completion	Rate as per agreement Rs. P.
1	2	3	4	5	6	7	8

Rate as the executed with any Rs. P.	Amount as per agreement Rs. P.	Amount as executed Rs. P.	Amount further anticipated Rs. P.	Total amount anticipated on completion Rs. P.	Difference Excess savings Rs. P. Rs. P.	Reason for deviation authority, if
9	10	11	12	13	14 15	16

Signature of Engineer in Charge
Date:

Signature of Senior Engineer
Date:

FORMS & PROCEDURES

[illegible]

[illegible]

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

II MEMORANDUM OF PAYMENT												
										Rs.	P	
1	Total Value of work actually measured as per Account no I coloumn 10 (A)											
2	Deduct amount of paym,ents already made as per last running account bill No Dated..... Forwarded to the Accounts Office on (B)											
3	Payments now to be made { (A) - (B)} (C)											
4	Deduct ammounts recoverable from the contractor on account of :								Rs	P		
	a	Material suplied by BHEL vide annexure A attached										
	b	Hire of Tools & Plants vide Annexure B attached										
	c	Other charges vide Annexure C attached										
	d	Income Tax										
	Total deduction											
5	Balance											
6	Refund of 50% of security deposite on completion of work											
7	Net amount to be paid to the Contractor											
III. CERTIFICATE OF THE ENGINEER IN CHARGE												
1	The measurement on which the entries in coulmn 7 to 12 of Part I of this bill (Account of work executed) are based were made by (Name and designation)											
2	A statement showing the quantities of stores issued to the contractor (whether free or on recovery basis) and their disposal is attached.											
	Date:							Signature of Engineer in charge				
								Designation				

[illegible]

V. ENTRIES TO BE MADE IN THE ACCOUNTS OFFICE																											
Account Bill no..... Dated Entered in Journal book vide entry No.....Dated..... Passed for.....Rs..... Less Deductions.....Rs..... (Rupees.....Only) Payable to Shri/M/s..... by cheque/cash Entered in contractors' Ledger no..... Page						<table style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3" style="text-align: center; padding: 5px;">ALLOCATION</th> </tr> <tr> <td style="width: 60%; padding: 5px;"> Estimate No: Name of the Work </td> <td colspan="2" style="width: 40%; padding: 5px;"> Code No </td> </tr> <tr> <td style="padding: 5px;"> Ledger Head </td> <td style="padding: 5px;"> Debit (Gross Amount) Rs P </td> <td style="padding: 5px;"> Credit (Deduction) Rs </td> </tr> <tr> <td style="padding: 5px;"> </td> <td style="padding: 5px;"> </td> <td style="padding: 5px;"> </td> </tr> <tr> <td style="padding: 5px;"> Total </td> <td style="padding: 5px;"> </td> <td style="padding: 5px;"> </td> </tr> </table>							ALLOCATION			Estimate No: Name of the Work	Code No		Ledger Head	Debit (Gross Amount) Rs P	Credit (Deduction) Rs				Total		
ALLOCATION																											
Estimate No: Name of the Work	Code No																										
Ledger Head	Debit (Gross Amount) Rs P	Credit (Deduction) Rs																									
.....																											
Total																											
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 5px;">Assistant Date:</td> <td style="width: 33%; padding: 5px;">Accountant Date:</td> <td style="width: 33%; padding: 5px;">Accounts officer Date:</td> </tr> </table>						Assistant Date:	Accountant Date:	Accounts officer Date:																			
Assistant Date:	Accountant Date:	Accounts officer Date:																									
VI. Received Rs.....(Rupees.....Only) in full and final settlement of all moneys due under this contract and I / we have no further claims of this contract.																											
Signature of Witness Address																											
Revenue Stamp Signature of Contractor Date:																											
VII . ENTRIES TO BE MADE BY TREASURY SECTION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> Cash book entry no and date : </td> <td style="width: 50%; padding: 5px;"> Amount Paid Rs..... </td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"> Amount unpaid Rs..... </td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"> Total Rs..... </td> </tr> </table> Signature of Cashier Date:													Cash book entry no and date :	Amount Paid Rs.....		Amount unpaid Rs.....		Total Rs.....									
Cash book entry no and date :	Amount Paid Rs.....																										
	Amount unpaid Rs.....																										
	Total Rs.....																										

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

BHARAT HEAVY ELECTRICALS LIMITED DIVISION..... And Final bill (Para 4.3.2 Of Works Accounts Manual)														
Name of Contractor							Departmental Bill no				Date			
Name of the Work							Division				Division			
Sanctioned Estimate							Date of written order to commence the work							
Contract Agreement/work Order No							Date of commencement of work							
							Due date of completion as per agreement							
							Date of actual completion of the work							
I. ACCOUNT OF WORK EXECUTED														
On Account payment for the work not previously measured **										Payment on the basis of actual measurement up to date Rs P	Quantity since last running account bill	Payment on the basis of actual measurement since last running account bill Rs P	Remarks	
Total as per last running account bill Rs.	Since last running account bill Rs	Total up to date Rs												
1	2	3	4	5	6	7	8	9	10	11	12	13		

BHARAT HEAVY ELECTRICALS LIMITED,
POWER SECTOR - EASTERN REGION, KOLKATA
TENDER NO. PSER:SCT:NKP-E2053:20

1	2	3	4	5	6	7	8	9	10	11	12	13

Total Value of Work Done up to date (A)	
Deduct Value of work shown on the last running account bill (B)	
Net value of work done since last running account bill (C)	

Rupees (In Words).....Only

II MEMORANDUM OF PAYMENT

		Rs.	P
1	Total Value of work actually measured as per Account no I coloumn 10	(A)	
	Deduct amount of paym,ents already made as per last running account bill No Dated.....		
2	Forwarded to the Accounts Office on	(B)	
3	Payments now to be made { (A) - (B)}	(C)	
4	Deduct ammounts recoverable from the contractor on account of :	Rs	P
	a Material suplied by BHEL vide annexure A attached		
	b Hire of Tools & Plants vide Annexure B attached		
	c Other charges vide Annexure C attached		
	d Income Tax		
	Total deduction		
5	Balance		
6	Refund of 50% of security deposite on completion of work		
7	Net amount to be paid to the Contractor		

III. CERTIFICATE OF THE ENGINEER IN CHARGE

The measurement on which the entries in coulms 7 to 12 of Part I of this bill (Account of work executed) are based were made by

1	(Name and designation)
2	A statement showing the quantities of stores issued to the contractor (whether free or on recovery basis) and their disposal is attached.

Date:

Signature of Engineer in charge
Designation

IV CERTIFICATE OF THE SENIOR ENGINEER

- 1 Certified that I have personally inspected the work and that the work has been physically completed on the due date in accordance with the terms and
Cretified that the measurements have been check measured to the prescribed extent by
..... (Name & designation). And by the the undersigned at site and relevent entries have been initiated in the measurement book (vide
2 pages.....)
- 3 Certified that the methods of measurement are correct
- 4 Certified that the measurements have been technically checked with reference to contract drawings, deviations etc
- 5 Certified that all the measurements recorded in the measurement book have been correctly billed for at the contract rates or approved rates.
- 6 Certified that all the recoverable amounts in respect of stores, tools and pallant, elwater, electricity charges etc, have been correctly made vide Annexures A
- 7 Certified that the issues of all stores as per statement atytached (whether charged to the contractor or direct to the work) have been technically checked and

Certified for payment of * Rs (Rupees.....) (Only). To be paid in
cash/by cheque in the presence of

ALLOCATION

The expenditure as under and to be included in the accounts for 19

Ledger Head	Debit (Gross Amount)		Credit (Deduction)	
	Rs.	P	Rs.	P
.....				
Total				

* Here specify the net amount payable

Signature of Senior Engineer
Date

V. ENTRIES TO BE MADE IN THE ACCOUNTS OFFICE

Account Bill no..... Dated
Entered in Journal book vide entry No.....Dated.....
Passed for.....Rs.....
Less Deductions.....Rs.....
(Rupees.....Only)
Payable to Shri/M/s..... by cheque/cash
Entered in contractors' Ledger no..... Page

ALLOCATION		Code No
Estimate No:		
Name of the Work		
Ledger Head	Debit (Gross Amount) Rs P	Credit (Deduction) Rs
.....		
Total	.....	.....

Assistant	Accountant	Accounts officer
Date:	Date:	Date:

VI. Received Rs.....(Rupees.....Only) in full and final settlement of all moneys due under this contract and I / we have no further claims of this contract.

Signature of Witness
Address

Revenue Stamp
Signature of Contractor
Date:

VII . ENTRIES TO BE MADE BY TREASURY SECTION

Cash book entry no and date :

Amount Paid Rs.....
Amount unpaid Rs.....
Total Rs.....

Signature of Cashier
Date:

ANNEXURE A

Part I

Statement showing details of material issued to the contractor Shri/M/s..... In respect of Contract Agreement/Work Order No..... Dated

SI No	Stores Issue voucher No and date	Issue voucher No and date alloted by stores to the SIV	description of material issued to the contractor	Quantity issued	Quantity actually incorporated in the work	Whether recoverabl e from the contractor or supplied free	Rate at which recoverable		Amount Recoverabl e		Amount recoverable upto previous bill		Balance Now recovered		Remarks
							Rs	P	Rs	P	Rs	P	Rs	P	
1	2	3	4	5	6	7	8		9		10		11		12

Total

Signature of Contractor
Date

Signature of Engineer in charge
Date

Signature of Senior Engineer
Date

ANNEXURE A

Part II

Statement showing details of material issued to the contractor Shri/M/s..... in respect of Contract Agreement/Work Order No..... Dated and not covered by the agreement

SI No	Stores Issue voucher No and date	Issue voucher No and date alloted by stores to the SIV	description of material issued to the contractor	Quantity issued	Quantity actually incorporated in the work	Issue Rate		Amount Recoverabl e		Amount recoverable upto previous bill		Balance Now recovered		Remarks
						Rs	P	Rs	P	Rs	P	Rs	P	
1	2	3	4	5	6	7		8		9		10		11

Total

Add Departmental Charges

Add Sales Tax (wherever applicable)

Total

Signature of Contractor
Date

Signature of Engineer in charge
Date

Signature of Senior Engineer
Date

ANNEXURE B

Statement showing TOOLS & PLANTS issued to the contractor Shri/M/s..... in respect of Contract Agreement/Work Order No..... Dated and not covered by the agreement

SI No 1	Description of tools & plants issued 2	Period for which issued 3	Rate at which Recivry is to be made 4	Amount recoverabl e Rs P 5		Amount recoverable upto previous bill Rs P 6		Balance Now recovered Rs P 7		Remarks 8

Total

Signature of Contractor
Date

Signature of Engineer in charge
Date

Signature of Senior Engineer
Date

ANNEXURE C

showing detail of other recoveries to be made from the contractor Shri/M/s.....
ment/Work Order No.....Dated.....

Sr.No	Particulars	Unit	Quantity	Rate Rs. P.	Amount recoverable Rs. P	Amount recovered upto previous bill Rs. P.	Amount now recovered Rs. P.	Remarks
1	2	3	4	5	6	7	8	9
	1 Water Charges							
	2 Electricity Charges							
	3 Seignorage Charges							
	4 Medical Charges							
	Cost of empty gunny bags and empty containers not 5 returned							
	6							
	7							
	8							
	9							
	10							
Total								

Signature of Contractor
Date

Signature of Engineer Incharge
Date

Signature of Sr. Engineer
Date

Form WAM 7 (Contd.)

ANNEXURE D -
DEVIATION STATEMENT :

Name of the Contractor :

Contract Agreement/Work Order No. :

Name of the Work :

Date :

Sl. No.	Description of item	Unit	Quantity as per agreement	Quantity as executed	Rate as per agreement Rs. P.	Rate as executed Rs. P.	Amount as per agreement Rs. P.	Amount as executed Rs. P.	Difference		Reason for the deviation with authority, if any
									Excess	Savings	
1	2	3	4	5	6	7	8	9	10	11	12

Signature of Engineer in Charge

Date :

Signature of Senior Engineer

Date :

ANNEXURE E

Statement showing the consumption of materials issued to the contractor Shri/M/s.....
in respect of Contract Agreement/Work Order No..... Dated.....

Name of the Work :

ON RECOVERY BASIS

Sl. No.	Description of material	Unit	Quantity actually issued	Quantity actually incorporated in the work	Balance	Particulars of disposal of balance	Quantity to be issued as per approved data for work actually done	Variation in consumption (Difference between column 5 and 8)		Rate chargeable for excess/short consumption, if any	Amount recoverable for excess/short consumption, including materials not returned	
								More	Less	Rs. P.	Rs. P.	
1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Cement											
2.	Bricks											
3.	Wood.....											
4.	Asbestos Sheet											
5.	Iron Materials											
6.												
7.												
8.												
9.												
10.												

Signature of Contractor

Date :

Signature of Engineer in Charge

Date :

Signature of Senior Engineer

Date :

Note : 1. The quantities shown in columns 4 and 5 above should tally with those shown in columns 5 and 6 respectively of Annexure A (Part I and II).

2. Data statement of theoretical consumption should be attached in support of quantity specified in column 8.

QUESTIONNAIRE TO BE ANSWERED BY ENGINEER IN CHARGE AND SENIOR ENGINEER	
(Correct particulars and answers to be recorded)	
Name of the work :	
Name of the Contractor :	
Date of commencement of the work:	
Contract agreement/work ordered no. and date:	
Reference to supplementary agreement no,if any :	
Whether administrative approval and technical sanction has been accorded by the competent authority ? If so ,cite reference	
Whether sanction of the competent authority and financial concurrence of the Accounts Department for award of the work has been accorded ? If so,cite reference.	
Whether the work has been completed in time ? If not ,whether penalty has been levied or sanction of the competent authority for extension of time granted and communicated to the Accounts Department with reasons for grant of extension? (Due and actual date of completion of the work and reference to letter no. and date granting the extension of time should be given)	
(a) Whether the rates allowed in the bill have been checked with the contract agreement ? (b) Whether the rates for extra/supplemental items have been approved by the competent authority and the sanction communicated to the accounts Department together with rate analysis? If so,cite reference.	
Whether deviations have been approved by the competent authority? If yes, give reference to the approval; if not, give reasons.	
Whether the rates of recovery of stores issued to the contractor which are not provided for in the Contract Agreement have been settled in consultation with Finance?	
Whether discrepancies pointed out by the Accounts Department in the store statement have been reconciled and accepted by the Accounts Department?	

QUESTIONNAIRE TO BE ANSWERED BY ENGINEER IN CHARGE AND SENIOR ENGINEER	
(Correct particulars and answers to be recorded)	
Whether materials issued to the contractor in excess of the theoretical requirements have been returned to the Stores Department and the no. and date of such returned stores vouchers have been shown in stores statement? If not, whether the cost of such excess material has been recovered at the prescribed rate? Whether consumption statements in respect of materials chargeable to the work have been attached to the bill?	
Whether consumption of materials shown has been technically checked by Senior Engineer?	
Whether materials issued and used in the work is not less than that required for consumption in work according to our specification? If consumption is less, whether necessary recovery has been made in the bill?	
Whether measurements have been checked by the Engineer and Sr. Engineer to the extent required and certificates of check recorded in the measurement books?	
Whether contractor has signed the bill and the measurement books without reservations? If not, whether reasons have been intimated to the Accounts Department?	
Whether arithmetical calculations have been checked and certificate recorded in the measurement books by a person other than the one who calculated initially	
Whether any work was done at the risk and cost of the contractor and whether such cost has been recovered from him? Give particulars.	
Whether all advance payments on running Accounts have been recovered?	
Whether all the recoveries due to services given to the contractor like rent of accommodation, water charges, electricity charges etc. have been recovered and whether payments made by the company on behalf of the contractor have been adjusted?	
Whether the files containing abstracts from measurement books/ standard measurement books have been completed/ updated?	
Whether hire charges of tools and plant have been recovered and the statement of hire charges with full details attached?	

QUESTIONNAIRE TO BE ANSWERED BY ENGINEER IN CHARGE AND SENIOR ENGINEER	
(Correct particulars and answers to be recorded)	
Whether the certificate of workmanship and completion of work according to specifications, drawings etc. is recorded by Engineer/ Sr. Engineer and whether recoveries have been made for defective works, if any?	
Whether all corrections in the bill/measurement books etc. have been neatly made and attested and there are no overwriting?	
Whether final measurements have been taken as soon as possible after completion of work and the certificate of completion issued? If not, whether reasons for delay have been recorded and communicated to Accounts?	
In respect of Quantities reduced in the final bill as compared to the running payment, whether adequate reasons have been recorded and communicated to Accounts	
Whether the Expenditure has been classified correctly according to heads of Account recorded in the sanctioned estimate?	
Whether the work has been completed within the estimated cost? If not, what is the percentage of excess over the sanctioned estimate/ administrative approval? In case the excess is beyond the competency of Sr. Engineer, what action has been taken for the obtaining the approval of the authority competent to sanction the excess?	
(a) If the contractor has furnished bank guarantee in lieu of cash security deposit towards proper execution of works and guarantee against defects during the maintenance period, whether the period of currency of the bank guarantee covers the entire maintenance period? (b) If not, whether security deposit has been proposed to be recovered from the final bill?	
Whether all the previous audit objections raised on running Account bills have been settled? If so, cite reference.	
Signature of Engineer in Charge	Signature of Engineer in Charge
Date:	Date:



Page 1 of 6

PART- A: PLAN/ REVIEW OF WORK FOR THE MONTH OF Date of Plan/ Review.....

CONTRACTOR
(Sign with name, designation and date)

 PS-	MONTHLY PLAN & REVIEW WITH CONTRACTOR	Page 2 of 6

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART- A: Contd.....

Note 1: In addition to the work planned as per Col. 'A', Contractor shall also make full efforts to minimize the 'Cumulative shortfall attributable to contractor upto the month' as mentioned in Col. 'B' by enhancing its resources, so as to achieve the completion of activities as per agreed schedule. In case contractor is not able to execute the entire shortfall, then BHEL 'Engineer in-charge', shall decide the priority of work to be executed and it shall be binding on the contractor.

Note 2: Percentage Shortfall attributable to contractor w.r.t. "Plan - Shortfall attributable to BHEL" for the month = $[(\Sigma E - \Sigma B) / (\Sigma A - \Sigma D)] \times 100$
In case, $(\Sigma E - \Sigma B)$ is negative, then it shall be treated as zero percent."

Note 3: Form 14 should include all items being planned in the current month, and all items against which shortfall was attributable to contractor till previous month. However, for practical reason, if it is not possible to mention some of the items in Form-14 being planned to be executed in this month, then also value of such items shall necessarily be included in calculation of Total Value.

Note 4: In case reason for shortfall attributable to contractor is w.r.t. T&P and Manpower, it should be in conformity with Part B1 and B2.

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

 PS-	MONTHLY PLAN & REVIEW WITH CONTRACTOR	Page 3 of 6

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART – B-1: PLAN/REVIEW OF DEPLOYMENT OF MAJOR T&Ps FOR THE MONTH OF

Date of Plan/ Review.....

CONTRACTOR'S SCOPE: -

SN.	PLAN				DEPLOYMENT STATUS			
	Major T&P to be deployed as per work planned for the month	QTY	Deployment Period (in days)	Weightage assigned to planned T&P (in fraction such that $\Sigma C = 1$)	Actual Deployed Quantity	Actual Deployment Period (in days)	Weighted T&P Deployed	REMARKS (Works affected due to non-deployment of T&Ps)
		A	B	C	D	E	$F = (C \times D \times E) / (A \times B)$	

Note: In case, $E > B$, it shall be considered as $E = B$. Similarly, in case $D > A$, it shall be considered as $D = A$.
Percentage of T&P Deployed = $\Sigma F \times 100$

BHEL SCOPE: -

SN.	PLAN				DEPLOYMENT STATUS		
	Major T&P to be deployed as per work planned for the month	QTY	Deployment Period (in days)	Actual Deployed Quantity	Actual Deployment Period (in days)	REMARKS (Works affected due to non-deployment of T&Ps)	

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

 PS-	MONTHLY PLAN & REVIEW WITH CONTRACTOR	Page 4 of 6

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART – B-2: PLAN/ REVIEW OF DEPLOYMENT OF MANPOWER FOR THE MONTH OF

Date of Plan/ Review.....

CONTRACTOR'S SCOPE: -

SN.	Area of Work	Category of Labour	No. of Labour required as per category	Deployment Period (in days)	No. of Labour actually deployed	Actual Deployment Period (in days)	REMARKS (Works affected due to non-availability of labour)
			A	B	C	D	

Percentage of Manpower Deployed= $100 \times \frac{\sum(C \times D)}{\sum(A \times B)}$

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

 PS-	MONTHLY PLAN & REVIEW WITH CONTRACTOR	Page 5 of 6

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART – C: PLAN(PHYSICAL) FOR THE NEXT MONTH i.e.

Date of Plan

SN.	Description of work	Original Planned Quantity	Planned Quantity (excluding shortfalls attributable to contractor till date)	Unit of Measurement	T&Ps Required				Manpower Required		REMARKS (Reasons for difference in Original Planned Quantity w.r.t. Planned quantity to be given)
					Contractor Scope		BHEL Scope		Category of Labour	No. of Labour required as per Category	
					Major T&P to be deployed as per work planned for the month	Quantity	Major T&P to be deployed as per work planned for the month	Quantity			

Note 1: Planned quantity should be based on available/ expected fronts/ inputs in the next month

Note 2: “Original Planned Quantity” shall be as per latest jointly agreed programme between BHEL and Contractor before commencement of work or at the time of latest Time Extension, as the case may be.

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

 PS-	MONTHLY PLAN & REVIEW WITH CONTRACTOR	Page 6 of 6

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART – D: REASONS FOR SHORTFALL ATTRIBUTABLE TO BHEL IN RESPECT OF PLAN FOR THE MONTH.....

SN.	Description of Work (from Part-A)	Quantities Affected		Reasons for Shortfall attributable to BHEL	Agency responsible for reasons for Shortfall	Remarks (Supporting Documents in respect of agency responsible)
		(Physical Quantity)	Unit of Measu- rement			
1	2	3	4	5	6	7

Note1: Reasons for shortfall shall include non-availability of fronts/ drawings/ materials/ T&P (BHEL Scope)/ clearances etc. and other hindrances for which contractor is not responsible.

Note2: Agency responsible may be BHEL Site/ MUs/ Design Centre/ BHEL Customer/ other Contractors etc.

BHEL
(Sign with name, designation and date)

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at BHEL House, Siri Fort, Asiad, New Delhi – 110049 through its Unit at Bharat Heavy Electricals Limited, Power Sector Eastern Region, BHEL Bhawan, Plot No 9/1, DJ Block, Sector-II, Salt lake City, Kolkata – 700091 having awarded to (Name of the Vendor / Contractor / Supplier) having its registered office at _____¹ hereinafter referred to as the 'Contractor/Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated ² valued at Rs.....² (Rupees -----)for <Nature of Work>³ (hereinafter called the 'Contract') and the Contractor having agreed to provide a Contract Performance Guarantee, equivalent to% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, ..., (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount Rs ----- (Rupees -----)⁴ without any demur, immediately on a demand from the Employer, .

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor/ Supplier in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the contractors/supplier shall have no claim against us for making such payment.

We the bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall remain in force upto and including.....⁵ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the ⁶ (3 months more than the present date of validity of Bank Guarantee) we shall be discharged from all liabilities under this guarantee thereafter.

We, ... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....⁷
- b) This Guarantee shall be valid up to ⁸
- c) Unless the Bank is served a written claim or demand on or before ⁹ (3 months more than the present date of validity of Bank Guarantee) all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

Any claim or dispute arising under the terms of this document shall only be enforced or settled in the courts of at Kolkata only.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

¹ NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

² DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

³ PROJECT/SUPPLY DETAILS

⁴ BG AMOUNT IN FIGURES AND WORDS

⁵ VALIDITY DATE

⁶ DATE OF EXPIRY OF CLAIM PERIOD

⁷ BG AMOUNT IN FIGURES AND WORDS.

⁸ VALIDITY DATE

⁹ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 2/3 months after validity date.

2. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.

- b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
- b.1** In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank (BHEL's Consortium Bank). It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
- b.2** **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
- b.3** The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). In case, of Foreign Vendors, the BG Format provided to them should clearly specify the same.
- b.4** The BG should clearly specify that the demand or other document can be presented in electronic form.

**BANK GUARANTEE FOR SECURITY DEPOSIT CUM PERFORMANCE BANK GUARANTEE
BOND**

B.G. NO.

Date

This deed of Guarantee made this ----- day of -----two thousand ---- by <Name and Address of Bank> hereinafter called the "The Guarantor" (which expression shall unless repugnant to the context or meaning thereof be deemed to include its successors and assigns) in favour of M/s Bharat Heavy Electrical Limited (A Govt. of India Undertaking) a company incorporated under the Companies Act, 1956, having its registered office at BHEL House, Siri Fort, Asiad, New Delhi – 110049 through its unit at <Address of Power Sector Region¹> hereinafter called "The Company" (which expression shall unless repugnant to the context or meaning thereof be deemed to include its successors and assigns)

WHEREAS < Contractor's Name and Address> (hereinafter referred to as the Contractor) have entered into a contract arising out of Letter of Intent no. < LOI REF & Date > (hereinafter referred to as "the contract") for < Name of Work > with the company.

AND WHEREAS the contract inter-alia provides that the contractor shall furnish to the company a sum of Rs.----- (Rupees-----) towards security deposit for due and faithful performance of the contract in the form and manner specified therein.

AND WHEREAS the contractor has approached the Guarantor and in consideration of the arrangement arrived at between the contractor and the Guarantor, the Guarantor has agreed to give the Guarantee as hereinafter mentioned in favour of the company.

The Guarantor do hereby guarantee to the company the due and faithful performance, observance or discharge of the Contract by the contractor and further unconditionally and irrevocably undertake to pay to the Company without demur and merely on a demand, to the extent of Rs.----- (Rupees-----) against any claim by the company on them for any loss, damage, costs, charges and expenses caused to or suffered by the company by reasons of the contractor making any default in the performance, observance or discharge of the terms, conditions, stipulations or undertakings or any of them as contained in the contract.

The decision of the company whether any default has occurred or has been committed by the contractor in the performance, observance or discharge of any of the terms, conditions, stipulations or undertakings or any one of them as contained in the contract and / or as to the extent of loss, damage, costs, charges and expenses caused to or suffered by the company by reason of the contractor making any default in the performance, observance or discharge of any of the terms, conditions, stipulations or undertakings or any one of them shall be conclusive and binding on the Guarantor irrespective of the fact whether the contractor admits or denies the default or questions the correctness of any demand made by the company in any Court, Tribunal or Arbitration proceedings or before any other Authority.

The company shall have the fullest liberty without affecting in any way the liability of the Guarantor under this Guarantee, from time to time to vary any of the terms and conditions of the contract or extend time of performance by the contractor or to postpone for any time and from time to time any of the powers exercisable by it against the contractor and either enforce or forebear from enforcing any of the terms and conditions governing the contract or securities available to the company and the Guarantor shall not be released from its liability under these presents by any exercise by the company of the liberty with reference to the matters aforesaid or by reasons of time being given to the contractor or any other forbearance, act or commission on the part of the company or any indulgence by the company to the contractor or any other matter or thing whatsoever which under the law relating to sureties would, but for this provision have the effect of so releasing the Guarantor from its liability under this guarantee.

The Guarantor further agrees that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the contract and its claim satisfied or discharged and till the company certifies that the terms and conditions of the contract have been fully and properly carried out by the contractor and accordingly discharges this Guarantee, subject however, that the company shall have no claim under this Guarantee after ----- i.e. (3 months more than the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time, as the case may be) unless a notice of the claim under this Guarantee has been served on the Guarantor before the expiry of the said period in which case the same shall be enforceable against the Guarantor notwithstanding the fact that the same is enforced after the expiry of the said period.

**BANK GUARANTEE FOR SECURITY DEPOSIT CUM PERFORMANCE BANK GUARANTEE
BOND**

The Guarantor undertakes not to revoke this Guarantee during the period it is in force except with the previous consent of the Company in writing and agrees that any liquidation or winding up or insolvency or dissolution or any change in the constitution of the contractor or the Guarantor shall not discharge the Guarantor's liability hereunder.

It shall not be necessary for the company to proceed against the contractor before proceeding against the Guarantor and the Guarantee herein contained shall be enforceable against them notwithstanding any security which the Company may have obtained or obtain from the Contractor shall at the time when proceedings are taken against the Guarantor hereunder be outstanding or unrealized.

Notwithstanding anything contained herein before, our liability under the Guarantee is restricted to Rs.-----
- (Rupees-----). Our guarantee shall remain in force until -----, i.e. (the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time) unless a claim or demand under this guarantee is made against us on or before ----- (3 Months more than the validity date) we shall be discharged from our liabilities under this Guarantee thereafter.

Any claim or dispute arising under the terms of this documents shall only be enforced or settled in the courts of at < **Name of place²** > only.

The Guarantor hereby declares that it has power to execute this guarantee and the executant has full powers to do so on behalf of the Guarantor.

IN WITNESS whereof the ----- (Bank) has hereunto set and subscribed its hand the day, month and year first, above written.

(Name of the Bank)

Signed for and on behalf of the Bank
(Designation of the Authorized Person Signing the Guarantee)

(Signatory No.-----)

DATED:

SEAL

Notes :

1. **Address of Power Sector Regions (inviting the Tender)** is as below:
 - PSNR : Bharat Heavy Electricals Limited, Power Sector Northern Region, HRDI & PSNR Complex, Plot No 25, Sector 16-A, Noida – 201 301 (Uttar Pradesh)
 - PSER : Bharat Heavy Electricals Limited, Power Sector Eastern Region, BHEL Bhawan, Plot No 9/1, DJ Block, Sector-II, Salt lake City, Kolkata – 700 091
 - PSWR: Bharat Heavy Electricals Limited, Power Sector Western Region, Shree Mohini Complex, 345 Kingsway, Nagpur 440 001
 - PSSR: Bharat Heavy Electricals Limited, Power Sector Southern Region, 690, Anna Salai, Nandanam, Chennai 600 035
2. **Name of place (for jurisdiction of Courts)** is as below:
 - PSNR : Delhi
 - PSER : Kolkata
 - PSWR: Nagpur
 - PSSR : Chennai
3. The BG shall be executed on non-judicial stamp papers of adequate value procured in the name of the Bank in the State where the Bank is located.
4. The BG is required to be sent by the executing Bank directly to BHEL at the address where tender is submitted / accepted under sealed cover.

BANK GUARANTEE FOR RELEASE OF AMOUNTS WITHHELD/LIQUIDATED DAMAGES AMOUNT

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited ¹(hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at BHEL House, Siri Fort, Asiad, New Delhi – 110049 through its Unit at Bharat Heavy Electricals Limited, Power Sector Eastern Region, BHEL Bhawan, Plot No 9/1, DJ Block, Sector-II, Salt lake City, Kolkata – 700091 having awarded to (Name of the Vendor / Contractor / Supplier) incorporated under the having its registered office at _____ ¹(hereinafter referred to as the 'Contractor', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated ²valued at Rs.....(Rupees -----) for <Nature of Work>³(hereinafter called the 'Contract')

The Contractor as per Contract should have completed the work/ supplies under the contract by.....(date). As per terms and conditions of the Contract, the Employer is entitled to levy Liquidated Damages (LD) for delays and the Employer has withheld an amount of Rs by way of LD as per the Contract. Now, on the request of the Contractor, the Employer having agreed to release the amount of Rs.....withheld from the Contractor's invoices as Liquidated damages under the terms and conditions of the Contract on production of a Bank Guarantee for Rs. _____ (Rupees.....only) ⁴

We, ..., (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount of Rs ----- (Rupees -----) without any demur, merely on a demand from the Employer

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor/ Supplier in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the contractors/supplier shall have no claim against us for making such payment.

We the bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's/ Supplier's liabilities.

This Guarantee shall remain in force upto and including.....⁵ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the ⁶ (3 months more than the present date of validity of Bank Guarantee) we shall be discharged from all liabilities under this guarantee thereafter.

We, ... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....⁷
- b) This Guarantee shall be valid up to ⁸
- c) Unless the Bank is served a written claim or demand on or before ⁹ (3 months more than the present date of validity of Bank Guarantee) all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, ... Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

Any claim or dispute arising under the terms of this document shall only be enforced or settled in the courts of at Kolkata only.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

¹ NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

² DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

³ PROJECT/SUPPLY DETAILS

⁴ BG AMOUNT IN FIGURES AND WORDS

⁵ VALIDITY DATE

⁶ *DATE OF EXPIRY OF CLAIM PERIOD*

⁷ *BG AMOUNT IN FIGURES AND WORDS.*

⁸ *VALIDITY DATE*

⁹ *DATE OF EXPIRY OF CLAIM PERIOD*

Note:

- 1. Units are advised that expiry of claim period may be kept 2/3 months after validity date.**
- 2. In Case of Bank Guarantees submitted by Foreign Vendors-**
 - a. From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
 - b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1** In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank (BHEL's Consortium Bank). It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2** In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3** The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). In case, of Foreign Vendors, the BG Format provided to them should clearly specify the same.
 - b.4** The BG should clearly specify that the demand or other document can be presented in electronic form.

BANK GUARANTEE FOR SUPPLY FREE ISSUE MATERIAL.

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at BHEL House, Siri Fort, Asiad, New Delhi – 110049 through its Unit at Bharat Heavy Electricals Limited, Power Sector Eastern Region, BHEL Bhawan, Plot No 9/1, DJ Block, Sector-II, Salt lake City, Kolkata – 700091 having awarded to (Name of the Vendor / Contractor / Supplier).having its registered office at _____¹ (hereinafter referred to as the 'Contractor/Supplier/Fabricator' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref. No.....dated ² valued at Rs.....(Rupees -----) for <Nature of Work>³ (hereinafter called the 'Contract')

and, the Employer having agreed as per the terms and conditions of the Contract to supply free issue material costing Rs._____ for the manufacture/fabrication of the equipment at the Contractor's site on on furnishing a Bank Guarantee for Rs._____ (Rupees.....)⁴ in the manner hereinafter specified for the due safeguard of the free issue material,

we, ..., (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount of Rs ----- (Rupees -----) without any demur, merely on a demand from the Employer, .

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor/ Supplier in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment hereunder and the Contractors/Supplier shall have no claim against us for making such payment.

We the Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We Bank further agree that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor/Supplier/ Fabricator and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's/Supplier's/ Fabricator's liabilities.

This Guarantee shall remain in force upto and including.....⁵ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/ Supplier/ Fabricator but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the ⁶ (3 months more than the present date of validity of Bank Guarantee) we shall be discharged from all liabilities under this guarantee thereafter.

We, ... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....⁷
- b) This Guarantee shall be valid up to ⁸
- c) Unless the Bank is served a written claim or demand on or before ⁹ (3 months more than the present date of validity of Bank Guarantee) all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

Any claim or dispute arising under the terms of this document shall only be enforced or settled in the courts of at Kolkata only.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

¹ NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER .

² DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

³ PROJECT/SUPPLY DETAILS

⁴ BG AMOUNT IN FIGURES AND WORDS

⁵ VALIDITY DATE

⁶ DATE OF EXPIRY OF CLAIM PERIOD

⁷ BG AMOUNT IN FIGURES AND WORDS.

⁸ VALIDITY DATE

⁹ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 2/3 months after validity date.
2. In Case of Bank Guarantees submitted by Foreign Vendors-
 - a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
 - b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank (BHEL's Consortium Bank). It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). In case, of Foreign Vendors, the BG Format provided to them should clearly specify the same.
 - b.4 The BG should clearly specify that the demand or other document can be presented in electronic form.

PROFORMA OF BANK GUARANTEE FOR EARNEST MONEY
(On non-Judicial paper of appropriate value)

Bank Guarantee No.....

Date.....

To

(Employer's Name and Address)

.....

Dear Sirs,

In accordance with the terms and conditions of your Invitation for Bids/Notice Inviting Tender No.....¹(Tender Conditions) M/s. having its registered office at ² (hereinafter referred to as the '**Tenderer**'), is submitting its bid for the work of..... for.....³. at Bharat Heavy Electricals Limited, Power Sector Eastern Region, BHEL Bhawan, Plot No 9/1, DJ Block, Sector-II, Salt lake City, Kolkata – 700091.⁴(name of the Employer)

The Tender Conditions provide that the **Tenderer** shall pay a sum of Rs as Earnest Money Deposit in the form therein mentioned. The form of payment of Earnest Money Deposit includes Bank Guarantee executed by a Scheduled Bank.

In lieu of the stipulations contained in the aforesaid Tender Conditions that an irrevocable and unconditional Bank Guarantee against Earnest Money Deposit for an amount of ⁵ is required to be submitted by the Tenderer as a condition precedent for participation in the said Tender and the Tenderer having approached us for giving the said Guarantee,,

we, the[Name & address of the Bank] having our Head Office at(hereinafter referred to as the Bank) being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer without any demur, merely on your first demand any sum or sums of Rs. ⁵(*).....without any reservation, protest, and recourse and without the beneficiary needing to prove or demonstrate reasons for its such demand. Any such demand made by the 'Employer' shall be

conclusive and binding on us irrespective of any dispute or difference raised by the Tenderer.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment hereunder and the Tenderer shall have no claim against us for making such payment.

We Bank further agree that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Tender or to extend the time of submission of bids from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Tenderer and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Tendered or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Tenderer or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Tenderer and notwithstanding any security or other guarantee that the Employer may have in relation to the Tenderer's liabilities.

This Guarantee shall be irrevocable and shall remain in force upto and including.....⁶ and shall be extended from time to time for such period as may be desired by the Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Tenderer but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms hereof. However, unless a demand or claim under this Guarantee is made on us in writing on or before the ⁷ we shall be discharged from all liabilities under this Guarantee.

We, ... Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....5.....
- b) This Guarantee shall be valid up to 6
- c) Unless the Bank is served a written claim or demand on or before _____⁷ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of

(Name of the Bank)

Date.....

Place of Issue.....

¹ *Details of the Invitation to Bid/Notice Inviting Tender*

² *Name and Address of the Tenderer*

³ *Details of the Work*

⁴ *Name and Address of BHEL Unit/Division/Region (Already filled up)*

⁵ *BG Amount in words and Figures*

⁶ *Validity Date*

⁷ *Date of Expiry of Claim Period*

Note:

1. Units are advised that expiry of claim period may be kept 2/3 months after validity date. As per Works Policy, the Bank Guarantee shall be valid for at least six months.

2. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1** In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank (BHEL's Consortium Bank). It is advisable that all charges for issuance of Bank Guarantee/ counter-Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2** **In case, Foreign Vendors intend to provide BG from Overseas Branch** of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3** The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). In case, of Foreign Vendors, the BG Format provided to them should clearly specify the same.
 - b.4** The BG should clearly specify that the demand or other document can be presented in electronic form.

Form for getting payment through RTGS (Real Time Gross Settlement)

01. Name of Vendor **BHARAT HEAVY ELECTRICALS LTD.**
02. Address **~~BHEL~~ BHEL HOUSE, SIRI FORT, N. DELHI**
03. Vendors Bank A/c Name **BHARAT HEAVY ELECTRICALS LTD.**
04. Vendors Bank A/c No. **11107800029**
05. Name of Bank **STATE BANK OF INDIA**
06. Name of Branch **COMMERCIAL BR., SALT LAKE, SECTOR-V**
07. Branch Phone No. **KOLKATA**
08. City **033-23575666**
09. IFSC Code of the Branch **KOLKATA**
SBIN 0004289

The charges if any for payment through RTGS may be recovered from the Bill submitted by us.

Signature of Authorized Representative of Vendor
के. के. कोआरी / K. K. Coari
उप महाप्रबंधक (वित्त) / Dy. General Manager (Fin)
बी. एच. ई. एल. : पी.एस.ई.आर : कोलकाता - 700 091
BHEL: PSER / Kolkata-700 091

Confirmation by Banker
with office seal

Note : Incorrect information will create Accounting complications and payment will be delayed

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 1 OF 31

This volume shall be construed as part of tender document and shall be read along-with others volumes of tender. Unless otherwise specified, in case of any confusion of any clause/ provision of this volume or any conflict/ inconsistency of any clause/ provision of this volume with that of other volume, the same shall be brought out by the bidder in writing to BHEL for clarification or during pre-bid discussions, if applicable, failing which most stringent interpretation in favour of BHEL shall be adopted and the same shall be binding to the bidder. All the tender clauses are individually applicable for respective package unless specifically mentioned separately/differently, as applicable.

CLAUSE NO	DESCRIPTION
1.0	PROJECT SYNOPSIS AND GENERAL INFORMATION
1.1	GENERAL INFORMATION Name of the Owner : NTPC Capacity : 3 X 660 MW Nearest Railway Station : Khalaria Railway Station on Ranchi Garhwa section of Eastern Railways (40 km from Project site) Nearest City/Town : Tandwa in Chatra District. Nearest Commercial Airport : Ranchi (150 km from Project site) The site is located near Tandwa town having latitude and longitude of about 230 50' N to 230 52' N and 84059' E to 850 2' E respectively. It is essential that the bidder visit site and acquaint with the conditions prevailing at site before submission of the bid. The information given herein is for general guidance and shall not be contractually binding on BHEL.
2.0	EVALUATION OF BID
2.1	Bidders should quote prices strictly as per prescribed format of Price Schedule, Volume-III of the tender.
3.0	NAME OF WORK
	ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND.The scope broadly covers material issuance, material shifting to working areas, providing labour, supervision, T&Ps, consumables, etc for erection, cable laying, testing, commissioning, PG test, handing over, watch & ward, etc for Electrical package of U#3 as per technical specification and terms & conditions of tender . 'Electrical Pacakge includes but not limited to the following- HT/LT motors, HT/ LT switch gears, cable, cable tray & accessories, earthing and lightening protection, generator transformers, station transformers, unit auxiliary transformers, Unit Transformers, Station Aux. Transformers, other misc HT/LT transformers, HT/ LT bus duct, miscellaneous electrical job of ACC system including handling and transportation of power transformers for Unit#3 at 3X660 MW North Karanpura Project
4.0	BROAD SCOPE OF WORK
4.1	The intent of this tender is to provide services for execution of the work according to most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for the proper and efficient services towards installation of the equipment shall not relieve the contractor of the responsibility of providing such services/ facilities to complete the work or portion of work awarded to him. The quoted/ accepted rates/ price shall deem to be inclusive of all such contingencies.
4.2	It is not the intent of this specification to specify herein all the details of erection and commissioning. However, the system shall conform in all respects to high standards of quality and workmanship for performing the required duties in a manner acceptable to purchaser who

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 2 OF 31

	will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgments is not in full accordance herewith.
4.3	Omission of specific reference to any fabrication/ erection method, equipment or material necessary for proper & efficient working of the plant shall not relieve the contractor of the responsibility of providing such facilities to complete the work at quoted rates. Any mismatch/ defect found due to mistake in fabrication/ erection shall have to be rectified by the contractor free of cost. Inspection by BHEL/ customer does not relieve contractor of responsibility of executing quality erection.
4.4	Following shall be the responsibility of contractor and have to be provided within finally accepted rates/ prices.
4.4.1	Provision as required of all types of labour, supervisors, engineers, watch and ward, tools & tackles, calibrated MMD as specified and otherwise required for the work, consumables for erection, testing and commissioning including handling.
4.4.2	Proper out-turn as per BHEL plan and commitment.
4.4.3	Completion of work as per BHEL schedule.
4.4.4	Good quality and accurate workmanship for proper performance of the equipment.
4.4.5	Repair and rectification.
4.4.6	Preservation/ re-conservation of all components during storage/ erection/ commissioning till handing over.
4.5	Dismantling, levelling of earth as per requirement, removal of scraps/debris etc of fabricated structures, brick wall, cables, cable tray, conduits, welding electrode etc as per instruction of BHEL on completion of work. If contractor fail to do so, BHEL will get the job done through other agency and the cost along with applicable overhead will be recovered from the contractor. Decision of BHEL engineer in this regard shall be final & binding on contractor. However, the scope of dismantling and leveling the area is limited only to the contractor's site office, yard and other spaces occupied by the contractor.
4.6	BHEL - Power Sector (ER) is ISO 9001-2008 certified company. Quality of work, to customer's satisfaction and as per system requirements are the essence of ISO:9001-2008 certification. The bidder in all respects will organise his work, systems, environment, process control documentation, T&Ps, measuring and monitoring devices (MMDs) etc as per instructions of BHEL engineer.
4.7	The bidder will comply with HSE (Health, Safety & Environment) requirements of BHEL and follow all applicable Operational Control Procedures (OCPs) within quoted rate/ price.
4.8	All other points shall be as per the terms & conditions and specification along with aforesaid references together with amendments incorporated thereto.
4.9	As per site requirement and instruction of BHEL site engineers, the contractor may have to construct closed/ semi closed/ open storage shed for proper storage of items received by them without extra cost to BHEL.
4.10	The contractor should use fire proof tarpaulin only to cover any material either in open or at a covered area.
4.11	The contractor should deploy and periodically re-fill fire extinguishers of required number for his office and work areas.
4.12	Earthing of equipments including instruments is also included under his scope.
4.13	The contractor shall take the full responsibility of testing, pre-commissioning and commissioning of the equipment being installed by him or installed by others but being commissioned by him under the overall supervision of BHEL. It shall be the responsibility of the contractor to arrange all the testing/ measuring instruments and complete all the testing, pre-commissioning and commissioning activities for the particular equipment as per relevant standards, code of practice, manufacturer's instructions, applicable quality plans for installation, testing & commissioning and BHEL norms. All these will be witnessed by BHEL engineer/ representative of BHEL's customer or both and reports signed jointly. The contractor may have to submit a check list to BHEL prior to taking up testing and commissioning activities which shall be approved by BHEL and the activities shall be carried out in accordance with the check list.
4.14	Contractor has to arrange all safety appliances required during acid filling/ charging of battery and other items like sp gravity meter, thermometer, jerry cans, funnels, etc. Resistance box

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 3 OF 31

	with all interconnecting cables, PVC drums for water salt loads, etc of suitable rating/ capacity for carrying out capacity/ discharge test of batteries shall be arranged from time to time as per instruction of BHEL site engineers. Also, periodic checking & maintenance of battery parameters, till handing over to owner shall be carried out.
4.15	Rotation of motor terminal boxes and minor modification to suit cable termination, if required shall be carried out at no extra cost.
4.16	For soot blowers, valves and dampers, Actuators ,FTP, miscellaneous local panels operated through associated MCCs, entire commissioning including setting of limit/ torque switch and position feedback unit etc, is included in the scope of contractor.
4.17	Before starting erection job, contractor shall ensure that the area is sufficiently cleaned against ingress of dust & water, and all debris have been cleared off from the floor to a designated area as per instruction of engineer. The contractor shall arrange to get the working area and surroundings cleaned daily to ensure a dust free atmosphere for working.
4.18	The accuracy of all equipments, instruments and their functioning shall be established before they are permitted for use on the job. Necessary calibration certificates to be submitted to BHEL time to time. If the engineer doubts the accuracy of the precision tools any time during erection, the contractor shall arrange the checking of tools/ equipment/ instruments at his cost.
4.19	Foundations for all equipment shall be provided by BHEL. Dimensions & locations of foundations, pockets, anchor bolt shall be checked by the contractor for their correctness as per drawings/ documents. Further, top elevation of foundations shall be checked with respect to bench marks, etc. All minor adjustments of foundation level, dressing and chipping of foundation surfaces up to 50 mm, enlarging the pockets in foundations, etc as may be required for erection of equipment/ plants shall be carried out by the contractor within the quoted/ accepted rates/ price.
4.20	While on the job, care is essential to avoid too much chipping and resultant lowering of level. In case of excess chipping contractor has to arrange additional packing plates as per requirements provided it is allowed by BHEL engineer. When required by manufacturers, the embedded sub-sole plates shall be scraped and checked with Prussian blue to get the required contact with frames.
4.21	The contractor shall ensure perfect matching of packer plates including scraping and blue matching with foundation by dressing the foundation, as well as perfect matching between packer plates and base plate of equipment to the satisfaction of BHEL engineer.
4.22	All civil works, viz grouting/ excavation/ casting of foundation anchor points for derricks, winches, guy ropes, fastening, etc and foundations required for any other temporary supports/ works, as required for safe & efficient operation of tools & tackles, shall be the contractor's responsibility. For these civil works all materials including normal cement and required facilities will have to be arranged by contractor at their own cost.
4.23	All minor civil works for main equipments including drilling, chipping, enlarging cutouts, foundation pockets, cable cut outs, etc will have to be carried out by the contractor at no extra cost. Grouting of equipments erected by the contractor as per procedure is included in the scope. Materials like special cement, sand aggregates, etc including shuttering, curing, etc shall be arranged without any extra cost.
5.0	SITE VISIT
	Contractor should visit site and acquire full knowledge & information about site conditions. The bidder must visit site, to acquaint themselves with the conditions prevailing at site and in & around the plant premises, together with all statutory, obligatory, mandatory requirements of various authorities before submission of bid.
6.0	DEVIATIONS/ CLARIFICATIONS
	Normally no deviation with respect to tender is acceptable to BHEL. However, in case of unavoidable circumstances, the bidder may submit their query for seeking clarifications of BHEL as per modality stipulated in NIT or may submit the same along with his offer as per prescribed schedule/ format without any ambiguity. Any assumptions, presumptions, deviations etc indicated or implied anywhere by the bidder except those indicated in the deviation schedule/ format will not be recognized and will not form a part of consideration/ offer. In the absence of such filled-up schedule/ format it will be understood and agreed that the bidder's

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 4 OF 31

	offer is based on strict conformance to the specification and no negotiation would be allowed in this regard. BHEL reserve the right not to recognize any/ all deviations submitted after opening of the bid.
7.0	DEWATERING Contractor shall ensure at all times that their work area & approach/ access roads are free from accumulation of water, so that the materials are safe and the erection/ progress schedule are not affected. No separate claim in this regard shall be admitted by BHEL. No separate payments for dewatering of subsoil, surface water or catchments water, if required, at any time during execution of the work including monsoon period shall be considered by BHEL. In case of any deviation from this, BHEL may take appropriate action for setting right and cost including BHEL's overhead will be recovered from contractor's bill.
8.0	GENERAL TECHNICAL REQUIREMENTS (CODES AND STANDARDS)
8.1	Except where otherwise specified, the plant/ equipment shall comply with appropriate Indian Standard or an agreed internationally accepted Standard Specification as mentioned elsewhere in tender, each incorporating the latest revisions at the time of tendering. Where no internationally accepted standard is applicable, the bidder shall give all particulars and details as necessary; to enable BHEL to identify all of the plant/ equipment in the same detail as would be possible had there been a standard specification.
8.2	Where the bidder proposes alternative codes or standards they shall include in their offer one copy (in English) of each standard specification to which materials offered shall comply. In such case, the adopted alternative standard shall be equivalent or superior to the standards mentioned in the specification.
8.3	In the event of any conflict between the codes & standards referred above, and requirements of this tender, the requirements which are more stringent shall govern.
8.4	Tools used during erection and commissioning/ completion shall not be accepted except with the specific approval of the engineer.
8.5	Wherever specified or required the plant/ equipment shall conform to various statutory regulations such as Indian Boiler Regulation, Indian Electricity Rules, Indian Explosive Act, Factories Act etc, wherever required, obtaining approval for plant/ equipment supplied under the specification from statutory authorities shall be the responsibility of the contractor.
9.0	DRAWING AND DOCUMENT
9.1	The detailed drawings, specifications available with BHEL engineers will form part of this tender. These documents will be made available to the contractor during execution of work at site. The contractor will also ensure availability of all drawings/ documents at work place.
9.2	One set of drawings to carry out the erection work will be provided to the contractor by BHEL on loan which shall be returned to BHEL engineer at site after completion of work. Bidder's personnel shall take care of these documents given to them.
9.3	The bidder shall maintain a record of all drawings and documents available with them in a register as per mutually agreed format.
9.4	The data furnished in various annexures enclosed with this tender are only approximate and for guidance. Due to change in design or other reason, variation in quantity and/ or alteration of items may occur for such large scale of work.
9.5	Should any error or ambiguity be discovered in the specification or information, the bidder shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final & binding on bidder.
9.6	Deviation from design dimensions should not exceed permissible limit. The bidder shall not correct or alter any dimension details, without specific approval of BHEL.
9.7	The bidder within their scope have to arrange multiplication of protocols, log sheets and spiral binding of various documents for at least six sets. The number of sets will vary as per the requirement and shall be binding on the bidder.
10.0	GENERAL SERVICES TO BE RENDERED BY THE BIDDER
10.1	Services for construction, fabrication, equipment erection, testing, trial run, commissioning/ completion of various equipment & accessories/ items under the contract.
10.2	Collecting materials from store/ open yard from time to time for fabrication/ erection as per the construction program as per flow of consignment. The contractor shall be the custodian of all the materials issued till the plant/ equipment is officially taken over by BHEL/ owner after

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 5 OF 31

	complete erection and commissioning/ completion. The contractor shall maintain adequate security personnel and security measures for proper precaution and safety of material.
10.3	Deployment of all skilled and unskilled manpower required for erection, supervision, watch & ward, commissioning, completion and other services to be rendered by contractor under this tender.
10.4	Deployment of all erection tools & tackles, construction machinery, transportation vehicles and all other implements in adequate number and size, appropriate for the erection work to be provided under scope of this tender except otherwise specified.
10.5	Supply of all consumables, eg welding electrodes, diesel, touch up paint, primer etc as well as materials required for temporary supports, scaffolding etc as necessary for such construction work, unless specified otherwise.
10.6	Providing support services for the contractor's erection staff, eg construction of site offices, temporary stores, residential accommodation and transport to work site for erection personnel, watch & ward for security & safety of the materials under the contractor's custody etc, as required.
10.7	Maintaining proper documentation of all site activities undertaken by the contractor as per the proforma, mutually agreed with BHEL, submitting monthly progress reports as also any such document as and when desired by BHEL/ owner, taking approval of all statutory authorities eg, Factory Inspector, Provident Fund authority etc for respective portions of work under the jurisdiction of such statutes of laws.
10.8	As part of overall project management activity, the contractor shall be responsible for proper co-ordination of erection activities during various phases of execution of the contract. The contractor shall identify a person designated as Construction Manager, with whom BHEL shall interact on matters related to execution of the contract. The construction manager shall be the single point contact person on behalf of the contractor. BHEL shall interact with the Construction Manager only on all matters on co-ordination between BHEL and the contractor. For timely completion of work, the contractor may have to work in one or more shifts. He will not be eligible for any extra charge on this account.
10.9	The contractor shall confine all their field of operations to those works which can be reformed without subjecting the equipment and materials to adverse effects, during inclement weather conditions, like monsoon, storms, etc and during other unfavourable construction conditions. No field activities shall be performed by the contractor under conditions which might adversely affect the quality and efficiency thereof, unless special precautions or measures are taken by the contractor in proper and satisfactory manner in the performance of such works and with the concurrence of the engineer. Such un-favourable construction conditions in no way relieve the contractor of their responsibility to perform the works as per schedule.
10.10	The contractor shall engage all the skilled workmen like fitters, welders, gas cutters, electricians, riggers, sarangs, impulse pipe fitters, ladders, tin-smiths, instrument mechanics, calibration technicians etc, in addition to other skilled, semi-skilled and unskilled workmen required for all works of handling and transportation from site store to erection site, erection, testing and commissioning/ completion contemplated under this tender. Only fully trained and competent men with previous experience on the job shall be employed. They shall hold valid certificates wherever necessary. BHEL reserve the right to decide on the suitability of the workers and the other personnel who will be employed by the contractor. BHEL reserve the right to insist on removal of any employee of the contractor at any time, if they find him unsuitable and the contractor shall forthwith remove him.
10.11	The supervisory staff employed by the contractor shall be technically qualified and experienced in the area of work. They shall ensure proper out turn of work and discipline on the part of labour put on the job by the contractor and in general see that the works are carried out in a safe and proper manner and in coordination with other labour and staff employed directly by BHEL or other contractors of BHEL and BHEL's client.
10.12	The contractor shall also furnish daily labour report showing by classification the number of employees engaged in various categories of work a progress report of work as required by BHEL engineer.
10.13	The work shall be executed under the usual conditions in conjunction with numerous other operations at site. The contractor and his personnel shall co-operate with other personnel, and

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 6 OF 31

	other contractors, coordinate his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.
10.14	The contractor's supervisory staff shall plan and execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship conform to the dimensions and tolerance given in the drawing / instruction given by BHEL engineer from time to time.
10.15	It is the responsibility of the contractor to engage their workman in shifts or on overtime basis for achieving target set by BHEL during erection, commissioning/ completion and testing period. Bidder's quoted rate shall include all these contingencies.
10.16	Any other service, although not specifically mentioned above but required for a contract of the size and nature indicated in the tender.
11.0	PROTECTION
11.1	Equipment having anti-friction or sleeve bearing shall be protected by weather tight enclosures. Coated surfaces shall be protected against impact, abrasion, discoloration and other damages. Surfaces which are damaged shall be repainted.
11.2	Electrical equipments, controls and insulations shall be protected against moisture and water ingress damages. All external gasket surfaces and flange faces, couplings, rotating equipment shafts, bearings and like items shall be thoroughly cleaned and coated with rust preventive compound and protected with suitable wood, metal or other substantial type covering to ensure their full protection. All exposed threaded parts shall be greased & protected with metallic or other substantial type protector.
11.3	All piping, tubing and conduit connections on equipment and equipment openings shall be closed with rough usage covers or plugs. Female threaded openings shall be closed with rough usage covers or plugs or forged steel plugs. The closures shall be taped to seal the interior of the equipment. Open ends of piping, tubing and conduit shall be sealed and taped.
11.4	All erected equipment/ components to be preserved as per the preservation recommendation of BHEL. For this type of preservation, contractor shall engage an exclusive team of persons for meeting the continuous requirement .However, any special type of preservatives (if supplied by BHEL MUs) will be supplied to the contractor free of cost based on availability. All other consumables including wire brush, emery papers, painting brush etc to be supplied by the contractor within the quoted rate.
12.0	GENERAL GUIDELINES FOR FIELD ACTIVITIES
12.1	The contractor shall execute the works in a professional manner so as to achieve the target schedule without any sacrifice on quality and maintaining highest standards of safety and cleanliness.
12.2	The contractor shall co-operate with BHEL/ owner and other contractors working in site and arrange to perform his work in a manner so as to minimise interference with other contractor's works. BHEL's engineer shall be notified promptly about any defect in other contractors' works that could affect their work. If rescheduling of contractor's work is requested by the owner's/ BHEL's engineer in the interest of overall site activities, the same shall be complied with by the contractor. In all cases of controversy, the decision of BHEL shall be final and binding on the contractor without any commercial implication.
12.3	BHEL may organize weekly meeting of all the contractors working at site at a time and a place designated by them. The contractor shall attend such meetings and take notes of discussions during the meeting and the decisions of the engineer and shall strictly adhere to those decisions in performing this work. In addition to the above weekly meeting, engineer may call for other meetings either with individual contractors or with selected number of contractors and in such a case the contractor, if called will also attend such meetings.
12.4	Time is the essence of the contract and the contractor shall be responsible for performance of his work in accordance with the specified construction schedule. If at any time the contractor is falling behind the schedule, he shall take necessary action to make good of such delays by increasing his work to comply with the schedule and shall communicate such action in writing to BHEL, satisfying that his action will compensate for the delay. The contractor shall not be allowed any extra compensation for such action.
12.5	BHEL shall however not be responsible for provision of additional labour and or materials or

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 7 OF 31

	supply of any other services to the contractor except for the co-ordination work between various contractors as set out earlier.
12.6	The works under execution shall be open to inspection & supervision by BHEL's/ owner's engineer at all times. The contractor shall give reasonable notice to BHEL before covering up or otherwise placing beyond the reach of inspection any work, in order that same may be verified, if so desired by BHEL/ owner.
12.7	Every effort shall be made to maintain the highest quality of workmanship by stringent supervision and inspection at every stage of execution. Manufacturer's instruction manual and guidelines on sequence of erection and precautions shall be strictly followed. Should any error or ambiguity be discovered in such documents the same shall be brought to the notice of BHEL engineer. Manufacturer's interpretation in such cases shall be binding on the contractor.
12.8	The contractor shall comply with all the rules and regulations of the local authorities, all statutory laws including Minimum Wages, Workmen Compensation etc. All registration and statutory inspection fees, if any, in respect of the work executed by the contractor shall be to his account.
12.9	All the works such as cleaning, checking, levelling, blue matching, aligning, assembling, temporary erection for alignment, opening, dismantling of certain equipment for checking and cleaning, surface preparation, edge preparation, fabrication of tubes and pipes as per general engineering practice at site, cutting, grinding, straightening, chamfering, filling, chipping, drilling, reaming, scrapping, shaping, fitting-up, bolting/ welding, etc as may be applicable in such erection and necessary to complete the work satisfactorily, are to be treated as incidental and the same shall be carried out by the contractor as part of the work.
12.10	It is the responsibility of the contractor to do the alignment etc if necessary, repeatedly to satisfy engineer, with all the necessary tools & tackles, manpower etc. The alignment will be complete only when jointly certified so, by the contractor's engineer and BHEL. Also the contractor should ensure that the alignment is not disturbed afterwards.
12.11	Equipment and material, in case wrongly installed, shall be removed and reinstalled to comply with the design requirement at the contractors expense, to the satisfaction of BHEL/ owner.
12.12	After identification of erection materials by BHEL at BHEL's store/ storage yard, it shall be the responsibility of the contractor to take delivery of materials from BHEL's store/ storage yard by contractor's own manpower and re-stack the leftover materials as per erection sequence at BHEL store at their own cost. The entire activities are to be carried out as per instruction of BHEL.
12.13	Contractor may have to erect temporary approach, scaffolding and provide suitable platform at places (as desired by BHEL) for the purpose of inspection/ testing by BHEL personnel.
13.0	ERECTION SERVICES
13.1	As part of the overall project management activity, the contractor shall be responsible for proper co-ordination of erection activities during various phases of execution of the contract. The contractor shall identify a person designated as Site Incharge and will issue power of attorney in favour of him . The Site In charge shall be the single point contact person on behalf of the contractor. BHEL shall interact with the Site In Charge only for all matters on co-ordination between BHEL and the contractor.
13.2	The contractor shall confine all his field operations to those works which can be reformed without subjecting the equipment materials to adverse effects, during inclement weather conditions like monsoon, storms etc. and during other unfavorable construction conditions. No field activities shall be performed by the contractor under conditions which might adversely affect the quality and efficiency thereof, unless special precautions or measures are taken by the contractor in proper and satisfactory manner in the performance of such works and with the concurrence of the Engineer. Such unfavorable construction conditions in no way relieve the contractor of his responsibility to perform the works as per the schedule.
13.3	The contractor shall finish daily labour report showing by classification the number of employees engaged in various categories of work a progress report of work as required by BHEL engineer. A daily erection progress report should be sent to BHEL as required by BHEL engineer.
13.4	The work shall be executed under the usual conditions affecting major power plant

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 8 OF 31

	construction and in conjunction with numerous other operations at site. The contractor and their personnel shall co-operate with other personnel, and other contractors, co-ordinating their work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.
13.5	The contractor shall be responsible to ensure that assembly and workmanship conform to the dimensions and tolerance given in the drawing/ instruction given by BHEL engineer from time to time.
13.6	The contractor may have to engage his workman in shifts or on overtime basis for achieving the target by BHEL during erection, commissioning and testing period. The contractor may have to deploy shift wise service round the clock if required for the progress of the work and to achieve the milestones in schedule without any extra cost. Similar type of round the clock service is mandatory during trial run operation, PG test and also during the shutdown period of the system, where the pending works are permitted to carry out only during shutdown of the system. Bidder's quoted rate shall include all these contingencies.
13.7	Bidder shall arrange for supply and installation of temporary scaffolding/ platform as required to facilitate faster & proper erection of equipments without any financial burden to BHEL.
13.8	Independent testing & commissioning of equipments by competent commissioning engineers to the entire satisfaction of the engineer is included in the scope of work. Testing & commissioning of protection relays, CTs, PTs, etc will require specialized expertise and for this contractor have to mobilize proficient technical manpower along with specialized testing kits required for the same. Contractor to take note of this requirement and quote rate accordingly against specified items of price schedule.
14.0	QUALITY CONTROL & QUALITY ASSURANCE
	Contractor's engineers & supervisors shall be adequately qualified and also inclined to do a quality job. The quality assurance engineer shall co-ordinate all aspects of quality control, inspection, implementation of quality assurance procedures laid down in Quality Plan and technical specification by BHEL. He shall fill up quality assurance log sheets/ formats and submit to BHEL for joint inspection and acceptance. The contractor shall fill up, maintain & preserve the quality records in computerized media. BHEL's authorized representative shall be given free access at all time to such quality related records etc for inspection, review, etc.
15.0	HEALTH, SAFETY & ENVIRONMENT
15.1	Vendor has to follow HSE norms at project site during execution of entire contract period . The applicable HSE norms are noted in Tender Document for HSE norms having Document Title: Health, Safety and Environment Plan for Site Operation by Subcontractors
15.2	Deployment of HSE personnel(s) as per guideline of the Document (Document Title: Health, Safety and Environment Plan for Site Operation by Subcontractor) is mandatory requirement at site. Any dilution in deployment of HSE personnel(s) will attract penal deductions from the vendor's RA bills and in this regard decision of BHEL Site- Construction Manager shall be final and binding on the contractor
16.0	SPECIFIC REQUIREMENTS FOR ISO 9002
16.1	Contractor shall ensure that all their staff/ employees are exposed to periodical training programmes conducted by qualified agencies/ personnel on ISO 9002 Standards.
16.2	Contractor shall ensure that the quality is maintained in all the works connected with this contract at all stages of the requirement of BHEL.
16.3	Contractor shall ensure that all MMDs that are used, whether owned by the contractors or used on loan, are calibrated by the authorized agencies and the valid calibration certificate will be available with them for verification by BHEL. A list of such instruments possessed by the contractor at site with its calibration status is to be submitted to BHEL Engineer for control.
16.4	Contractor shall ensure that fitness certificate of the tools & plants, that are in use, whether owned by contractor or issued on loan, are tested by authorised agency and the valid fitness certificate is available for verification by BHEL.
16.5	Contractor shall arrange for the inspection of the works at various stages as required by BHEL. The contractors shall take immediate corrective action for the non-conformances if any, observed and pointed out by BHEL.
17.0	CIVIL WORKS, FOUNDATIONS AND GROUTING

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 9 OF 31

17.1	Foundations for all equipment shall be provided by BHEL. The dimensions and locations of the foundations, pockets, and anchor bolt shall be checked by the contractor for their correctness as per drawings. Further, top elevation of foundations shall be checked with respect to bench marks, etc. All minor adjustments of foundation level, dressing and chipping of foundation surfaces up to 50 mm, enlarging the pockets in foundations, etc as may be required for erection of equipment/ plants shall be carried out by the contractor within the quoted/ accepted rates/ price.
17.2	While on the job, care is essential to avoid too much chipping and resultant lowering of level. In case of excess chipping contractor has to arrange additional packing plates as per requirements provided it is allowed by BHEL engineer. When required by manufacturers, the embedded sub-sole plates shall be scraped and checked with Prussian blue to get the required contact with frames.
17.3	The Contractor shall ensure perfect matching of packer plates including scraping and blue matching with foundation by dressing the foundation, as well as perfect matching between the packer plates and the base plate of equipment to the satisfaction of BHEL engineer.
17.4	All civil works, viz grouting/ excavation/ casting of foundation anchor points for derricks, winches, guy ropes, fastening, etc and foundations required for any other temporary supports/ works, as required for safe & efficient operation of tools & tackles, shall be the contractor's responsibility. For these civil works all materials excluding cement and required facilities will have to be arranged by contractor at their own cost.
17.5	All minor civil works for main equipments including drilling, chipping, enlarging cutouts, column foundation pockets, cable cut outs, etc will have to be carried out by the contractor at no extra cost. Grouting of equipments erected by the contractor himself as per procedure, is included in scope. Providing & grouting of pocket holes, under base-plates of structural steel work/ machinery including roughening of surface, cleaning, ramming, curing, etc, all complete with CONBEXTRA GP-1 or equivalent like Sika is included in scope. Materials like grouting compound, cement, sand, aggregates, etc shall be arranged by the contractor at no extra cost to BHEL.
18.0	LAND
18.1	The contractor has to plan and use the existing land inside the Project Premise considering the use of land by other Civil /mechanical/ electrical contractors and the storage of plant machineries and materials. The existing land shall be shared by all erections agencies. Land will be allocated with certain time frame and to the extent available/ considered necessary, and will be reviewed by BHEL depending upon the area availability.
18.2	Land for labour colony near Project Premise may be available free of cost from owner, the contractor shall construct labour colony/ hutment as per his requirements after obtaining approval of formalities from statutory body.
18.3	The contractor will be responsible for handing back all lands, as handed over to him for his temporary use , after proper dismantling of establishment, levelling etc. as per instruction of BHEL /Customer engineer.
18.4	Land within plant premises for fabrication, batching plant, office, storage area etc. for construction purpose shall be provided as per availability free of cost.
18.5	Land for disposal of Excess earth beyond plant premises has to arranged by the Vendor within his quoted rate.
19.0	WATER
19.1	BHEL will provide construction as well as drinking water at one point each, within 500 m from given work premises, free of cost to the contractor..
19.2	Further necessary network for construction & drinking water system shall be done by the bidder at his own cost.
19.3	Contractor should arrange on their own, drinking water in their labour colony .
19.4	BHEL shall not be responsible for any inconvenience or delay caused due to any interruption of water supply and the contractor shall claim no compensation for delay in work for such interruption. Contractor may make standby arrangement for water for which no separate payment shall be made by BHEL.
19.5	Contractor will have to arrange for storage of water to meet the day-to-day requirement. Bidder will ensure adequate supply of construction water to meet the requirement.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 10 OF 31

19.6	The availability of water (construction as well as drinking) in North Karanpura project may be limited. Contractor shall ensure that no water is wasted. In this regard the contractor shall take all necessary measure towards preservation of water.
20.0	ELECTRICITY
20.1	CONSTRUCTION POWER & GENERAL ILLUMINATION NETWORK BHEL Shall Provide Construction Power free of charge at 415V level at a single point (within 500 Mtr from his workplace), bidders has to make his own distribution arrangement to draw electricity. However, power shall be chargeable for contractor's site office and stores, Contractor shall have to install Energy meter for the same. General illumination system shall be provided by BHEL. However, prvision of suitable temporary lights at different working areas for execution of the work & safety of workmen shall be provided by the vendor for his specific working area, within the quoted rate. The illumination should be such that minimum illumination requirement as specified by Indian standards for general illumination is maintained. 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. 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.
20.2	The bidder shall have to provide earth leakage circuit breaker at each point wherever human operated electrical drives/ T&Ps are deployed.
20.3	The power supply will be from the available grid. BHEL shall not be responsible for any inconvenience or delay caused due to any interruption of power supply/ variation in voltage level and no compensation for delay in work can be claimed by the contractor due to such non-supply on the grounds of idle labour, machinery or any other grounds.
20.4	Bidder will have to arrange sufficient illumination at their own work areas.
20.5	The contractor should ensure that the work in critical areas is not held up in the event of power breakdown. In the event of breakdown in the electric supply, if the progress of work is hampered, it will be the responsibility of the contractor to step up the progress of work after restoration of electric supply so that overall progress of work is not affected.
20.6	The contractor shall have to make arrangement at their own cost for illumination that will be required in the working area for execution of the work & safety of workmen.
20.7	The contractor shall have to make arrangement at their own cost for illumination etc in labor colony. However there may be provision of Chargeable Power for labor colony for which contractor has to install meters and necessary accessories.
20.8	CONSTRUCTION OF TEMPORARY OFFICE, STORES ETC The contractor shall arrange at his own cost cleaning and grading of area allotted, construction of their temporary office, stores, godown, fabrication yards etc and also the watch & ward, etc.
21.0	PROJECT MANAGEMENT/ CONSTRUCTION MANAGEMENT
	To meet the need of construction management at site, contractor shall provide the following services within quoted/ accepted rates.
21.1	PLANNING & MONITORING
21.1.1	The bidder shall prepare detailed construction schedule (L-3) in consultation with Construction

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 11 OF 31

	Manager, BHEL as per completion/ milestone schedule of the project. This schedule must include all milestone and key activities for each sub-system/ components in the areas of engineering (wherever applicable), procurement, manufacture (wherever applicable), excavation/ construction/ erection. This network must conform to the overall project schedule. The bidder should also ensure monitoring of these activities at least weekly basis to start with and on daily basis whenever required by BHEL. The project schedule might undergo revision/ modification periodically, for which the contractor may have to prepare/ modify construction schedule periodically in consultation with BHEL. The schedule must be prepared & revised, as applicable, and signed by both agencies prior to processing of any RA bill.
21.1.2	The bidder shall also prepare progress report indicating progress on key activities, management summary for critical activities, list of actions requiring attention of BHEL. This schedule is to be preferably made in MS PROJECTS/ similar software.
21.1.3	The contractor's site office must have facilities of communications like Fax, E-mail, and telephone with STD facility etc.
21.1.4	During commissioning, the contractor has to provide walkie talkie /'unlimited talk – time free' system like VPN/CUG service (sufficient no. as per instruction of BHEL) to their key Erection & commissioning personnel for effective communication between Control room and the field engineer/technician and smooth progress of commissioning activity at site, within his quoted rate. No extra payment shall be made by BHEL for the same.
21.2	PROGRESS REPORTING
21.2.1	The bidder shall submit daily, weekly and monthly progress reports for work force, materials reports, consumables (gases/electrodes) report and other reports as per pro-forma considered necessary by the BHEL. In case of any failure on contractor's part to comply with this, BHEL may at its discretion, consider to withhold part payment against their RA bills.
21.2.2	The progress report shall indicate the progress achieved against planned with reasons indicating delays, if any, and shall give the remedial actions which the contractor intends to take to make good the slippage or lost time, so that further works again proceed as per the original program and the slippages do not accumulate and effect the overall program.
21.2.3	The daily work force reports shall clearly indicate the work force deployed, category-wise specifying also the activities in which they are engaged.
21.2.4	Weekly progress review meetings will be held at site during which actual progress during the week vis-à-vis scheduled program shall be discussed or actions to be taken for achieving targets. For discussions, the contractor shall present program of subsequent week. The contractor shall constantly update/revise his work program to meet the overall requirement.
21.2.5	Periodic progress reviews on the entire activities of execution in respect of supply and works in scope of bidder will be held once in a month at Calcutta/ site. These meetings will be attended by reasonably higher officials of the contractor and will be used as a forum for discussing all areas where progress needs to be speeded up. The contractor shall be further responsible for ensuring that suitable steps are taken to meet various targets decided upon such meetings.
21.2.6	During construction, contractor shall have to take soft copy of colour digital photograph/ slides (indicating date) of the works during progress as instructed by site engineer.
21.2.7	Contractor have to provide electronic/ computerized storing & re-production/ printing/ plotting of various data, log sheets, protocols, measurements, etc. These may be stored in CD and handed over to BHEL as per requirement & direction.
21.3	SITE ORGANIZATION
21.3.1	The contractor shall maintain a site organization of adequate strength in respect of manpower, construction machinery and other implements at all time for smooth execution of the contract headed by a competent Site In charge for site operations with sufficient level of authority to take site decisions. The contractor will submit organization chart (showing the name of Site In charge) with individual bio-data indicating various levels of experts to be posted for supervision in the fields of supervision and execution, quality, material management, planning, safety, etc. The organization shall be reinforced from time to time, as required to make up slippage (if any) from schedule without any commercial implication to BHEL. The organization chart is to be submitted within 30 days from the date of LOI/ Intimation from BHEL site, whichever is later.
21.3.2	Following minimum number of engineering manpower with power plant erection &

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 12 OF 31

	commissioning background to be deployed at site by the contractors for their day to day supervision etc from the date of start of work or otherwise as directed by Construction Manager, BHEL, in writing.	
21.3.2.1	Planning engineer.	1 no
21.3.2.2	Safety officer.	As per HSE document
21.3.2.3	Quality engineer.	1 no.
21.3.2.4	Site engineer and supervisors for supervision.	Engineer – 2 No Supervisors – 2 nos.
21.3.3	Engineer/ supervisor for other functions like store/ purchase, material management, planning, FIN, administration, etc are to be provided as per site requirement.	
21.3.4	Further induction of manpower regarding site supervisor & site engineer will be decided at site as per requirement. In the event of failure of the contractor to provide necessary manpower indicated above as per requirement, Construction Manager/BHEL reserves the right to deduct suitable amount as deemed fit if the progress of works get suffered due to this. .	
21.3.5	For rendering commissioning assistance till handing over of the Unit, a dedicated gang of 2 skilled workers & 2 semi-skilled/ unskilled workers along with an exclusive commissioning supervisor (in addition to number of supervisors mentioned in clause no- 21.3.2.4) need to be deployed by the contractor to attend to the incidental works of commissioning as per the instruction of BHEL commissioning engineer. The total gang will report to BHEL and will follow instruction of BHEL's commissioning engineer. This gang with supervisor shall be separate and will be their besides other personnel to provided by the contractor for his day-to-day work. The gang (as per above) need to be provided during all shifts also whenever required by BHEL commissioning engineer. They shall be equipped with all necessary hand-tools to attend all the incidental works during commissioning.	
21.3.6	In the event of failure of the contractor to provide necessary manpower indicated above as per requirement for a continuous period of 10 days or more (until and unless jointly agreed with BHEL site), BHEL reserves the right to recover the amounts at the following rates In the event of non deputation of supervisor/ engineer by the bidder, BHEL shall reserve the right to deduct the following amount from RA bills. Rs 25,000 per man-month for each engineer, Rs 20,000 per man month for each supervisor. Above amount will be deducted on pro rata basis, starting from 1 st day of absence at site.	
21.3.7	BHEL reserve 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.	
21.3.8	In addition to above, a well experienced qualified engineer to be designated, as 'Project Co-ordinator', shall be deployed by the contractor. Such engineer shall have adequate exposure on the job and shall remain fully involved in planning activities, guidance etc to contractor's own team during complete execution period of contract.	
21.3.9	The contractor should also submit to BHEL for approval a list of T&Ps along with their fitness certificates. The tools & tackles shall not be removed from site without written permission of BHEL.	
21.3.10	The contractor should also submit network programs for the erection of various items. These networks shall show owner/ BHEL hold points (CHP), which have to be cleared by owner/ BHEL, or their authorized representatives before further erection can take place. These programs for the erection would clearly identify responsibilities of the contractor and owner/ BHEL. It is the responsibility of the contractor to get the Networks approved by BHEL within four weeks of the date of finalization of award of work/ placement of LOI.	
21.4	CONSTRUCTION MANAGEMENT	
21.4.1	Based on the approved program, the contractor shall submit a program of construction/ erection/ commissioning for the implementation. These programs would be amplified showing start of erection and subsequent activities and shall form the basis for site execution and detail monitoring. The three month rolling program with the first month's program being tentative based on the site condition would be prepared based on these programs. The contractor shall also be involved along with owner/ BHEL to tie up detailed resources mobilization plan over the period of the contract matching with the performance targets.	
21.4.2	The program would be jointly finalized by the site in-charge of the contractor with BHEL Site	

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 13 OF 31

	Construction Manager, Owner's project coordinator (if required) as well as the site-planning representative. The erection program will also identify sequential events matching financial turnover.
21.4.3	The contractor is liable to furnish all documentary evidences towards payment of Works Contract Tax as and when required by BHEL.
22.0	COMPUTER INFRASTRUCTURE
	The successful bidder will have to establish computerized project management system and the install adequate nos. of latest computer facility for his own usage at site.
22.1	Additionally, The bidder will have to install 1 no. PC (multimedia PC work station Intel- core-2 Duo, 1 GHZ or above, 500 GB HDD, 4 GB RAM, 100/1000 MBPS LAN card) of HCL/ COMPAQ/ ZENITH or equivalent make with window 7 or XP (professional) O/S and required software like MS Office 2007 Professional, AutoCAD 2009 or higher, PageMaker (7.0 etc), ADOBE PDF CREATOR etc) with one no laser jet colour printer compatible for A4 size printing (ink/ cartridge for the printer to be supplied by the bidder at free of cost ,as and when required) with power backup at place, as per instruction of BHEL, for exclusive use of BHEL. These computer/ printer shall remain contractor's property and they will be allowed to take out the same after completion of original contract period. The contractor shall provide data / information etc in prescribed formats for periodical updating of the progress reports, material management reports, updating of network pertaining to the contractor's scope of work etc. The contractor shall also provide one (1) no. computer operator and one (1) number service staff for miscellaneous service for BHEL's use at site/ Kolkata for reconciliation, progress review & day-to-day planning purpose, documentation etc. These facilities are to be provided within 30 days from LOI date/ Intimation from site, whichever is later, till completion of scheduled contract period. If contractor fails to provide computer/ printer or personnel as per requirement, for a continuous period of fifteen (15) days or more, BHEL shall have the right to deduct the amount as per following rates on prorata basis, from contractor's RA bill or any other
22.2	@ Rs 15,000/- (Fifteen thousand)/ month for computer operator. Or at actuals (rate +30%) if BHEL arranges this facility, whichever is lower.
22.3	@ Rs 15,000/- (Fifteen thousand) / month for service staff. Or at actuals (rate +30%) if BHEL arranges this facility, whichever is lower.
22.4	@ Rs 12,000/- (Twelve thousand)/ month for each set of computer & printer. Or at actuals (rate +30%) if BHEL arranges this facility, whichever is lower.
22.5	In the event of the contract period getting extended beyond the stipulated time for reasons not attributable to you, you will be reimbursed at the above mentioned rate or (actual +15%), whichever is lower, if the services of operator / service staff are used by BHEL during the extended period.
23.0	HANDLING OF POWER TRANSFORMERS INSIDE PLANT PREMISES
23.1	It may also so happen that all the oil filled power transformers had been received at site at earlier and BHEL had unloaded and kept at some convenient storage location inside the plant premises at that time.
23.2	The executing agency of Electrical job shall require to load, transport and shift the consignment to the work location. Vendor shall quote their rate for this activity as it has been separately indicated against each of the power transformers in the price schedule.
23.3	Bidders are requiring to deploy suitable jacks, low bed multi axle trailers and adequate qty. of wooden/concrete sleepers for loading, transportation and unloading/proper stacking of the transformers.
23.4	Location of Transformer yard is at 0.0 Mtr. elevation of the Air Cooled Condenser system and the transformers are required to be shifted from a periferial distance of max. 500.0 Mtrs.
23.5	Bidders shall submit to BHEL the details of Jacks, Low bed multi axle trailer and sleepers for necessary acceptance about the suitability of same in handling the Transformers. BHEL decision in this regard will be final and the vendors shall comply the actual requirement as suggested by BHEL.
23.6	Statutory valid fitness certificates for the T&Ps shall be submitted to BHEL prior to handling the transformers.
24.0	CONSUMABLES
24.1	The contractor shall provide within finally accepted price, all consumables like welding

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 14 OF 31

	electrodes, cleaning agents, primer, touch up paint, rust remover, CRC, diesel, kerosene oil , cotton rags , adhesive etc as necessary for such work.
24.2	It shall be the responsibility of the contractor to plan the activities and store sufficient amount of consumables. Non availability of any consumable materials or equivalent suggested by BHEL can not be considered as reason for not attaining the required progress or for additional claim.
24.3	BHEL reserves the right to reject the use of any consumable like electrodes, gases, lubricants/ special consumables etc. if it is not found to be of the required standard/make purity.
24.4	It shall be the responsibility of the contractor to obtain prior approval of BHEL regarding suppliers, type of electrodes etc. before procurement of welding electrodes TIG wires. On receipt of electrodes at site these shall be subjected to inspection and approval by BHEL. The contractor shall inform BHEL in details regarding type of electrodes, batch no., date of expiry etc. and produce test certificate for each lot/batch with correlation of batch/lot no. with respective test certificate. No electrode will be allowed to be used without valid test certificate.
24.5	Shortage of any of the above electrodes/filler wire or the equivalent suggested by BHEL shall not be quoted as reason for deficiency in progress or for additional rate.
24.6	All electrodes shall be dried in the electrode drying oven to the temperature and period specified by the BHEL Engineer or as mentioned in WPs before they are used in erection work. Electrode drying oven and portable drying ovens shall be provided by the contractor at his cost.
24.7	The electrode drying oven will have thermometer for temperature indication. The thermostat and thermometer of oven shall be calibrated before use and also periodically as advised by BHEL engineer and calibration test certificates (from authorised/ Govt approved/ accredited test house traceable to National/ International standards) will be submitted by the contractor at their cost.
24.8	BHEL reserves the right to reject the use of any electrode filler wire or any other consumables at any stage, if found defective because of bad quality, improper storage, date of expiry unapproved type of electrodes/consumables, It shall be the responsibility of the contractor to replace the same at their cost without loss of time.
24.9	In case of improper arrangement for procurement of any consumables, BHEL reserves the right to procure the same from any source and recover the cost from the contractor's first subsequent bill at market value plus the departmental charges of BHEL from time to time (30% at present). Postponement of such recovery is normally not permitted. The decision of engineer in this regard
25.0	MMD
25.1	The contractor shall ensure deployment of reliable & calibrated measuring and monitoring devices (MMD). The MMDs shall have test calibration certificate from authorized/ Govt approved agencies. The contractor shall also keep provision of alternate engagement for such MMDs so that the work does not suffer when a particular IMTE is sent for calibration. Re-testing/ re-calibration shall also be arranged by the contractor at their own cost at regular interval during the period of use as advised by BHEL.
25.2	In the event of failure of contractor to bring necessary and sufficient MMDs, BHEL may arrange for the same at the risk and cost of the contractor. The entire cost towards this along-with overhead shall be paid by the contractor or deducted from the contractor's bills.
26.0	TOOLS & PLANTS TO BE PROVIDED BY BHEL ON SHARING BASIS
26.1	BHEL will make available the crane (as per relevant appendix of this tender) with fuel and operators free of charges as applicable, to the contractor on sharing basis for Crane working beyond normal working hours or on Sundays /Holidays, prior permission of the BHEL Site In-charge/ Construction Manager is to be obtained. However, BHEL Site In-charge/ Construction Manager's decision in this regard will be final after judging the proficiency of the contractor's crane requirement.
26.2	These cranes have to be shared with other agencies/ contractors of BHEL. The allocation of cranes shall be the discretion of BHEL Site In-charge/ Construction Manager, which shall be binding on the contractor.
26.3	All arrangements, including providing & laying of sleeper beds, back-filling of approaches wherever necessary for safe movement of the cranes as directed by BHEL shall be the

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 15 OF 31

	responsibility of the contractor. The contractor shall provide sleepers for this purpose at his cost.
26.4	Any boom reduction, extension for their use and restoration to previous state or as directed by BHEL after the use shall be the contractor's responsibility and to be done with contractor's own T&P , cranes, consumables and manpower.
26.5	The cranes provided by BHEL will be withdrawn for regular and capital maintenance as per the respective schedule of maintenance. As far as possible such schedules will be intimated to the contractor in advance and may be adjusted depending on the work requirements at site.. However no claim whatsoever will be entertained on account of non-availability of cranes. Regular/preventive maintenance with necessary spares etc is in the scope of BHEL. Lubricants like engine oil, cardium compound, hydraulic oil, gear oil, grease for BHEL's T&Ps including cranes will be provided by BHEL free of charge. Similarly filters for cranes will be provided free of charge by BHEL. Break Down Maintenance , if not attributable to contractor, is in the scope of BHEL including supply of spares and consumables.Any Major breakdown of the crane will be attended by BHEL. However contractor may have to extend support in terms of manpower , tools etc. as per BHEL site requirement.
26.6	Where the services of the cranes provided by BHEL are to be shared by other agencies/ contractors of BHEL, the contractor's responsibilities defined above will also be apportioned accordingly to the beneficiary agency. BHEL engineer will do working arrangements in this regard at site and in any case his decision shall be final and binding.
26.7	The machineries as prescribed in relevant annexure will be provided to contractor on free of cost basis on availability. The cranes will be provided to contractor with fuel and operator on sharing basis and free of any hire charges basis.
26.8	Special tools which are supplied by BHEL as part of maintenance tools to be handed over to customer under regular DU/DESS numbers in various product groups may be issued to the contractor free of charges for specific activities, at the discretion of BHEL free of charges. Contractor shall return them after the completion of the specific activity for which the tools were spared, in good working order.
26.9	The contractor must not use these equipments for any purpose other than what they are intended for.
26.10	If the above items issued to contractor are found not utilised/ not maintained to the satisfaction of BHEL engineer or misused, these will be withdrawn and no replacement will be done for such items.
26.11	EOT CRANE
26.13.1	EOT crane shall be made available to the contractor in TG hall free of charges for erection purpose as per availability and discretion of BHEL, on sharing basis. As the operator will be from other agency/ contractor, contractor will do necessary co-ordination.
26.13.2	The availability of EOT crane is likely to be hampered from time to time due to routine preventive maintenance or break down maintenance. Contractor has to make alternative arrangement or plan/amend/ alter their actions to suit the above condition and the contractor will not be entitled to any compensation due to this non-availability of the crane to maintain the schedule.
26.13.3	Services of EOT crane have to be provided to other agencies working also in the power house building or adjacent area as required. Hence, the decision of BHEL engineer for allocation of EOT crane will be final. Contractor has to make adjustments accordingly.
26.18	ISSUE OF T&Ps
26.18.1	In the event of BHEL issued T&Ps, measuring instruments etc, contractor and BHEL shall maintain joint protocol about the condition of all T&P, instruments etc taken from BHEL's custody and return to BHEL after use. The contractor shall not use these equipment for purposes other than the scope of work given in this tender document.
26.18.2	It is the responsibility of contractor to keep these equipments always in working condition and ensure their safe return in working condition to BHEL's store subject to normal wear & tear.
26.18.3	After use of T&P items issued by BHEL the same shall be returned to BHEL in good working condition subject to normal wear & tear failing which recoveries at the book value of the item or the market rate prevailing at the time of returning the items, whichever is higher shall be made from the payments due to the contractor from BHEL from this contract or from any

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 16 OF 31

	other contract.
26.18.4	It is not obligatory on the part of BHEL to provide any tools and tackles or other materials other than those specifically agreed to do so by BHEL. However, depending upon the availability, BHEL / BHEL's Customer handling equipment and other plants may be made available to the contractor on payment of higher charges as fixed, subject to the conditions laid down by BHEL/Customer from time to time. Unless paid in advance, such hire charges, if applicable shall be recovered from contractor's bill /security deposit or any other payment in one instalment.
27.0	TEST CERTIFICATE FOR T&Ps
27.1	All T&P including measuring (calibrated) instruments, lifting tackles and pulling devices, wire rope, slings to be deployed by the contractor must bear valid/ latest test certificates for their suitability, and the documents shall be submitted to BHEL at site. Lifting tackles, wire rope, slings , pulleys etc may have to be re tested at site by authorised third party inspection agency in presence of BHEL and customer as per requirement, without imposing any extra claim on BHEL.
27.2	In case of expiry of validity of any such test certificate during construction, the contractor shall arrange for revalidation of the same well in advance, so that the construction activities do not suffer on account of non-availability of such Test certificates.
27.3	The contractor should also submit to BHEL for approval a list of T&Ps along with their fitness certificates. The tools & tackles shall not be removed from site without written permission of BHEL.
28.0	TOOLS & PLANTS, MMD TO BE PROVIDED BY CONTRACTOR
28.1	Tentative list of T&P to be deployed by contractor for successful completion of work is given in the relevant annexure of this tender.
28.2	It may be noted that the list is not exhaustive and is only for guidance. The contractor is required to provide all necessary T&P (other than those specified to be provided by BHEL, if any) measuring (calibrated) instruments & handing equipments to maintain work progress for timely completion of total work as per contract. In case of project requirement, some activities may have to pre-pone. In such cases the contractor may have to deploy additional T&Ps. Quoted price shall be inclusive of such emerging requirements.
28.3	In the event of any failure on the part of the contractor to deploy T & P to sustain desired work progress, BHEL may at his discretion also terminate the contract on this ground and take out any or whole amount of the contract from the scope of the contractor. In the event of failure of contractor to deploy necessary and sufficient T&P/ IMTEs to maintain work progress, BHEL will arrange the same including mobilization, demobilization, hiring charge, fuel charge etc of same from any of BHEL site/ other agency at the risk & cost of contractor . Incurred charges plus applicable overhead shall be deducted from contractor's RA bill. Decision of BHEL in this regard will be final & binding on contractor.
28.4	T&Ps mentioned in the list (Annexure-I) are tentative based on planned progress requirement. Actual Mobilisation schedule, based on front availability, drawings and material availability at site, the list may be reviewed and mutually agreed with BHEL site periodically from time to time . A joint MOM may be prepared for mobilisation of major T&Ps, and the same have to be adhered to and no further change will be permitted without written approval of BHEL site. Further requirement will be reviewed time to time at site and contractor will provide additional T&P/ equipments to ensure completion of entire work within schedule time without any additional financial implication to BHEL. Vendor will give advance intimation & certification regarding capacity etc prior to dispatch of heavy equipments.
28.5	All T&P and all IMTEs, which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by the contractor at his own cost in working condition.
28.6	In the event of non mobilisation of any T&P by the contractor and as a result progress of work suffered, BHEL reserves the right to deduct suitable amount from the dues of the bidder, without assigning reasons thereof.
28.7	After completion of major quantum of work, vendor may be permitted to take out any of his T&P progressively, if deemed fit by BHEL Site as per balance work program. The same will be jointly agreed and recorded. BHEL decision in this regard will be final and binding on the

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 17 OF 31

	vendor.
28.8	It is not obligatory on the part of BHEL to provide any tools and tackles or other materials other than those specifically agreed to do so by BHEL. However, depending upon the availability, BHEL / BHEL's Customer handling equipment and other plants may be made available to the contractor on payment of hire charges as fixed, subject to the conditions laid down by BHEL/Customer from time to time. Unless paid in advance, such hire charges, if applicable shall be recovered from contractor's bill /security deposit or any other payment in one installment.
29.0	RECONCILIATION OF BHEL ISSUED MATERIALS
29.1	The contractor shall submit a reconciliation statement of materials issued to them along with each RA Bill. Consolidated reconciliation statement will be submitted by contractor at the time submitting final bill or intermittently as per instruction of BHEL Site Construction Manager.
29.2	Contractor shall properly account for the material issued to them as specified herein to the satisfaction of BHEL certifying that the balance material are available with their custody at site.
30.0	INSURANCE
30.1	BHEL shall arrange comprehensive MCE (marine cum erection) Insurance Policy for total project supply & services including balance of plant package covering transit risks & loss, destruction or damage during handling at Site, Storage, civil works ,erection, testing and commissioning up to trial operation completion of unit including theft, sabotage, fire, lightning and other natural calamities.
30.2	Contractor shall report to BHEL in writing any damages to equipments/components on receipt, storing, and during withdrawal of the materials from stores, in transit to site and unloading at place of work and during erection and commissioning till trial operation completion including handing over. The above report shall be as prescribed by BHEL site management. Any consequential loss arising out of non-compliance of this stipulation will be borne by contractor.
30.3	The contractor will take necessary precautions/ due care to protect the material at Project site, while in his custody from any damage/ loss till the same is handed over to BHEL/ customer at Project site. For lodging/ processing of insurance claim the contractor will submit necessary documents. BHEL will reserve the right to recover the loss from the contractor as detailed below in case the damage/loss is due to negligence/ carelessness on the part of the contractor. In case of theft of material under contractor's custody, the same shall be reported to police by the contractor immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL/ customer for taking up with insurance. However, this will not relieve the contractor of his contractual obligation for the materials in his custody.
30.4	In case the damage/loss/theft of materials are attributable to negligence/failure in discharging the duties and obligations of the contractor, the expenses incurred for repair/replacement of such components in excess of the amount realized from the underwriters, limited to Normal Excess (Deductible Franchise) shall be recovered from the contractor.
30.5	Other conditions of Insurance shall be as per relevant clause of GCC/SCC.
31.0	COMPLETION PERIOD
31.1	The entire work under this scope, shall be successfully completed in all respect within 16 (Sixteen) months from the date of Start of work as certified by Construction Manager, BHEL. Mobilisation period is 15 days from the date of intimation from BHEL North Karanpura Site Construction Manager ,whichever is later.
31.2	Actual date of start of work shall be reckoned based on the certification of Construction Manager, BHEL.
32.0	CONSTRUCTION SCHEDULE
32.1	Entire work shall be carried out in accordance with the broad project milestone schedule given below, within the stipulated completion period. Within 30 days of LOI, the contractor shall discuss with BHEL site Construction Manager & furnish detail construction schedule (L-3/ L-4) indicating all milestones on the basis of major activities and get it approved from BHEL engineer. This schedule will undergo review and based on progress vis-à-vis project requirement, contractor shall have to submit revised schedule for approval of BHEL.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 18 OF 31

32.1.1	Milestone schedule of Unit # 3	
	Milestone	Completion Schedule (Time period w.e.f. Intimation of BHEL Site)
32.1.1.1	U#3 Boiler Light up	5 months (M1)
32.1.1.2	U#3 TG Barring Gear	8 months
32.1.1.3	U#3 Steam Blowing	11 months
32.1.1.4	U#3 Synchronisation	12 months
32.1.1.5	U#3 Trial Run	14 months (M2)
32.1.1.6	U#3 Hand Over	16 months
32.2	The program would be jointly finalised by the site in-charge of the contractor with BHEL Site Construction Manager as well as the site planning representative. The erection program will also identify the sequential erectable tonnages.	
33.0	CERTIFICATE TOWARDS COMPLETION	
	The work under the scope of the contractor shall be deemed to have been completed in all respects only when so certified by CM, BHEL / NTPC. The decision of BHEL in this regard shall be final and binding on the contractor.	
34.0	EXTENSION OF TIME FOR COMPLETION	
34.1	If the completion of work as detailed in the scope of work gets delayed beyond the contract period, the contractor shall request BHEL for an extension of the contract and BHEL at its discretion may extend the contract depending on the balance work left out.	
34.2	Based on the jointly signed monthly reviews, the work balance at the end of original contract period less the backlog attributable to the contractor shall be quantified, and the number of months of 'Time extension' required for completion of the same shall be jointly worked out. Within this period of 'Time extension', the contractor is bound to complete the portion of backlog attributable to the contractor. Review of the program and record of shortfall as described earlier shall be done during the extended period.	
34.3	The part of extension attributable to the contractor, if any, in total contract extension shall be exhausted first i.e., immediately after end of contract period. This shall be followed by the extension on account of force majeure conditions, if any, and lastly on account of BHEL.	
34.4	Any other service, although not specifically called for but required for a contract of the size and nature indicated in the specification.	
35.0	INTEREST BEARING RECOVERABLE ADVANCE/ MOBILISATION ADVANCE	
	Not applicable for this tender.	
36.0	OVER RUN CHARGES	
	Shall be applicable as per GCC.	
37.0	REVISION ON ACCEPTED CONTRACT RATE	
	Not applicable in this tender.	
38.0	PRICE VARIATION COMPENSATION (PVC)	
38.1	Shall be applicable as per GCC with the following payment conditions:	
38.2	Total amount of PVC shall not exceed 15% of the cumulatively executed contract value. Executed contract value for this purpose is exclusive of PVC, ORC, supplementary / Additional items and Extra works except extra items due to quantity variation	
39.0	EXTRA/ ADDITIONAL ITEMS OF WORK	
39.1	It shall be as per applicable clause of GCC.	
40.0	SECURITY DEPOSIT, PERFORMANCE BOND	
40.1	Security deposit shall be applicable as per relevant clause of GCC (Volume-IB).	
40.2	Performance bond is not applicable for this tender.	
41.0	TAXES, DUTIES ETC	
41.1	All taxes excluding GST & BOCW Cess (as specified elsewhere in the tender) but including, Charges, Royalties, any State or Central Levy and other taxes for materials if any obtained for the work and for execution of the contract shall be borne by successful bidder and shall not be payable extra by BHEL. Any increase of above at any stage during execution of contract, including extension of the contract, shall have to be borne by successful bidder contractor. Bidder's quoted/ accepted rates/ price shall be inclusive of all such requirements.	

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 19 OF 31

41.2	GST along with Cess (as applicable) legally leviable & payable by successful bidder as per GST Law, shall be paid by BHEL, extra. Hence, bidder shall not include GST along with Cess (as applicable) in their quoted rates/ price.
41.3	Successful bidder shall furnish proof of GST registration with GSTN Portal covering the services under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by successful bidder on BHEL for this project/ work.
41.4	Since GST on output will be paid by BHEL separately as enumerated above, bidder's your quoted rates/ price should be after considering the Input Credit under GST law at bidder's end.
41.5	TDS under Income Tax shall be deducted at prevailing rates on gross invoice value from the running bills (RA bills) unless exemption certificate from the appropriate authority/ authorities is furnished.
41.6	TDS under GST , shall be deducted at applicable rates on gross invoice value from the running bills (RA bills).
41.7	Bidder shall note that GST Tax Invoice complying with GST Invoice Rules (Section 31 of GST Act & Rules referred thereunder) wherein the 'Bill To' details shall encompass following. BHEL GSTN: Shall be intimated later. Name: Bharat Heavy Electricals Ltd. Address: Shall be intimated later. Any change to above shall be notified by BHEL at appropriate juncture..
41.8	Successful bidder to intimate immediately on the day of removal of goods (in case of any supply of goods) to BHEL along with all relevant details and send a scanned copy of Tax Invoice to BHEL through following communication mode for enabling BHEL to meet its GST related compliances. Portal address. Shall be intimated later. and Email address – Shall be intimated later. Specific details of above shall be notified by BHEL at appropriate juncture.
41.9	In case of delay in submission of above mentioned documents on the date of despatch, BHEL may incur penalty/ interest for not adhering to Invoicing Rules under GST Law. The same will be liable to be recovered from successful bidder, in case such delay is not attributable to BHEL.
41.10	In case of raising any Supplementary Tax Invoice (Debit/ Credit Note), successful bidder shall issue the same containing all the details as referred to in Section 34 read with Section 31 of GST Act & Rules referred there under.
41.11	Successful bidder shall comply with the Time Limit prescribed under the GST Law and rules thereof for raising of the Tax Invoice. If any supply of goods is applicable, successful bidder shall also ensure prompt delivery of goods after despatch.
41.12	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 successful bidder along with interest levied/ leviable on BHEL, as the case may be.
41.13	Successful 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 successful bidder along with interest levied/ leviable on BHEL.
41.14	Way Bill: Successful bidder to arrange for way bill/ e-waybill for any transfer of goods for the execution of the contract. Successful 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

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 20 OF 31

	arranged by successful bidder and BHEL will not supply any Road Permit/ Way Bill for this purpose.
41.15	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.
41.16	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.
42.0	TERMS OF PAYMENT
42.1	Successful bidder shall submit their running bill (RA bill) once in a month, at the end of the month, as per billing break-up, based on price schedule.
42.2	Progressive payment shall be made by BHEL against successful bidder's RA bill, complete & correct in all respects, accompanied by BHEL engineer's certified/ measurement sheet, jointly signed; requisite statutory certificates, after 60 days of submission of the bill.
42.3	For all items of works, as per the Price schedule, Vol-III, billing shall be on item rate basis. However, Interim Payment shall be limited to 95% of gross bill amount.
42.4	All admissible recovered/ adjustments etc. shall be made from the interim payable amount.
42.5	Balance 5 % retained from each RA bill will be released on completion of guarantee period. However, this 5 % payment can be released against submission of bank guarantee valid for the guarantee period as stated above in Proforma / Format of performance bank guarantee, subject to receipt of certificate that all works are completed in all respects. Submission of bank guarantee towards retention is separate and other bank guarantee(s) cannot be utilized for this purpose. This retention bank guarantee will be refunded after guarantee period.
42.6	1.5 % of gross bill amount shall be paid in the following manner on certification by BHEL engineer after compliance of each of following activity in each month. In case of non-fulfilment of respective activity by vendor in each month, no payment shall be made by BHEL against corresponding activity and no claim of bidder at a later date, whatsoever, in this regard shall be entertained by BHEL.
42.6.1	0.7 % shall be paid on compliance of housekeeping of vendor's working area and store/ office areas.
42.6.2	0.3 % shall be paid on compliance of general illumination of vendor's working area and stores, office area.
42.6.3	0.2 % shall be paid on compliance of applicable OHSAS requirement as per guidelines of BHEL/ PSER and as specified in the tender.
42.6.4	0.3 % shall be paid on compliance of applicable safety requirement as per guidelines of BHEL/ PSER and as specified in the tender.
42.7	Successful bidder shall fulfill all formalities for final billing/ contract closing and certification of completion of all service activities.
42.8	GST can be claimed at any point of contract and payment shall be released upon compliance with following.
42.8.1	Declaration of successful bidder that such billing/ invoicing in their GSTR-1.
42.8.2	Receipt of goods/ services and tax invoice by BHEL
42.8.3	Confirmation of payment of GST thereon by vendor on GSTN Portal
42.8.4	Above is subject to receipt of goods/ service and tax invoice thereof along with successful bidder declaring invoice in their return and paying GST within timeline prescribed for availing ITC by BHEL.
42.9	Unless otherwise directed by PMX-BHEL, Kolkata or Construction Manager-BHEL site, successful bidder shall submit jointly signed Monthly palnning and Delay Analysis in BHEL format (Form14 format will be given by BHEL site) with each RA bill.
42.10	No extra payment shall be made in the event of deferment in payment.
42.11	All admissible recovery/ adjustment, etc shall be made from progressive payment.
42.12	BHEL site at their discretion, may further split up percentages of above stages & billing break-up and effect payment to suit site condition, cash flow requirement and according to the progress of work.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 21 OF 31

42.13	Subject to the deduction which BHEL may be authorised to make under the contract, you shall, on certification of the engineer at site, be entitled for payment as explained here under.
42.14	For erection, testing & commissioning of Electrical system as detailed in the tender document, progressive payment shall be made on the basis of rate derived by apportioning the price schedule Vol-III.
42.15	In regard to mode of payment and measurement of the work completed, relevant clauses of GCC shall be referred to.
42.16	The break-up for progressive payment for completion of stagewise activities of various type of items as per Tender BOQ is noted vide Annexure – IV of Tender TCC, Vol-IF
42.17	For all supply items (As per Price Schedule, SCH-4), supply should be made within 21 days of receiving MDCC from Site. Relevant Test Certificates, Inspection Documents, MDCC, MRC etc. are to be submitted to BHEL site for release of payment. No waybill will be issued by BHEL for the same.
43.0	DELETED
44.0	LIQUIDATED DAMAGE/ PENALTY
44.1	INTERMEDIATE MILESTONE
44.1.1	In case delay in achieving the Milestone (M1) as mentioned in Clause 32.1.1.1 above, 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.
44.1.2	In case delay in achieving the Milestone (M2) as mentioned in Clause 32.1.1.5 above, 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.
44.1.3	Amount already withheld, if any ,against slippage of M1 Milestone (as mentioned in clause 32.1.1.1) shall be released only if there is no delay attributable to contractor in achievement of M2 Milestone (as mentioned in Clause 32.1.1.5)
44.1.4	Amount 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.
44.1.5	Final deduction towards LD (if applicable), 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.
44.1.6	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.
44.1.7	In case of LD recovery, the applicable GST shall also be recovered from the contractor.
44.1.8	All other terms shall be as per the provision of GCC in this regard.
44.2	OVERALL COMPLETION
44.2.1	If the completion of work is delayed beyond the completion period (as mentioned in clause no – 31.0) due to reasons attributable to the contractor, they shall pay to BHEL as penalty a sum @ 0.5 % of contract price per week of delay or part thereof subject to a maximum of 10 % of the total contract value.
44.2.2	All other terms shall be as per the provision of GCC in this regard.
44.2.3	In case of LD recovery, the applicable GST shall also be recovered from the contractor.
Notes:	*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. Maximum LD restricted to 10% contract value.
45.0	ELECTRICAL INSPECTOR'S APPROVAL/ POLLUTION CONTROL BOARD CLEARANCE/EXPLOSIVE CLEARANCE
	The contractor shall arrange to obtain clearance from the Electrical Inspectorate (CEA), Pollution Control Board, Explosive clearance etc. as per site requirement and arrange for the Authorities' visit to site, as and when required. Contractor will also arrange visit of electrical Inspector and obtain his approval for the installation work to be carried out under this scope of the work and get the work done by the license holder electricians and supervisors as per local statutory requirement.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 22 OF 31

	The statutory fee will be reimbursed by BHEL. All other expenses in this regard shall be borne by the contractor. Required procedures and formalities for inspection and approval of energisation by the Electrical Inspector will be done by the contractor, as per instruction and guidance of BHEL.
46.0	GUARANTEE
46.1	Even though the work will be carried under supervision of BHEL engineers, bidder will be responsible for the quality of the workmanship and shall guarantee the work done for a period of 12 months from the date of start of guarantee period of that unit, as certified by the engineer for good workmanship and shall rectify free of cost all defects due to faulty erection. In case bidder fails to repair the defective works within the time specified by engineer, BHEL may proceed to undertake the repairs of such defective works at contractor's risk and cost without prejudice to any other rights and recover the same from SD/ other dues.
46.2	The guarantee period will commence from the date of handing over of respective unit to customer or six months after Final Readiness of respective unit, whichever is earlier, provided, all erection, testing and commissioning works are completed in all respect for respective unit.
47.0	CONTRACT PRICE
47.1	Bidder shall quote their total price strictly in accordance with prescribed price schedule, Volume-III
47.2	The quantities of the various items mentioned in the rate schedule are approximate, based on very preliminary information and may vary to any extent or to be deleted altogether. The accepted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of the work executed under any part of the this contract including extra items, if any, but excluding any price variation remains within +/- 15% (plus/ minus fifteen percent) of the awarded price .
47.3	Subject to any deduction which BHEL may be authorised to make under the contract, the contractor shall on the certification of the BHEL engineer at site, be entitled to payment explained hereunder.
47.4	For erection, testing, commissioning of complete C&I system including all max system & panels, MMI system for TG, SG and station C&I controls, C&I for balance system/item as described in tender document, progressive payment shall be made as per billing schedule given in Annexure-IV on the basis of Contract price as per price schedule. These percentages mentioned in Annexure-IV are only for the purpose of progressive payments and BHEL site may further split it with the approval of Construction Manager. The work under the scope of the contract will be deemed to be completed in all respects only when so certified by Construction Manager, BHEL and shall be final and binding on the contractor.
47.5	The quoted rate shall be inclusive of supply of items as detailed in technical specification as well as in other sections of this tender document, required for proper completion of the job
47.6	The dimension furnished in the Dimension Schedule (Annexure-V) are tentative and no additional payment / recovery on unit rate on account of variation in dimensions shall be considered by BHEL except only for Panels.
47.7.1	Quoted/ agreed unit rate for each panel shall remain firm regardless of any change in width, height, type, weight or other parameter (except length), as furnished in tender.
47.7.2	For variation in length within +/- 15% of panel, quoted/ agreed unit rate shall remain firm.
47.7.3	For variation in length of panels beyond +/- 15% of the specified length, wherever specified in the tender, rate of unit length of variation shall be arrived by dividing the item rate by length as indicated in tender and rate/ price adjustment for payment during execution for length excess/ shortage over & above the +/- 15 % variation of indicated length shall be done accordingly.
47.7.4	Based on above, change in rate due to variation in length shall be derived in the following manner. In case, actual length exceeds variation limit, unit quoted/ agreed unit rate will undergo change for the portion beyond 1.15/ 0.85 times of indicated length, additional payment/ recovery will be effected by BHEL in the following manner. - Length of panel as indicated in tender = A. - Quoted/ agreed rate for panel = Rs B.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 23 OF 31

	- Rate per unit length (L) to be considered for the purpose of additional payment/ recovery for variation in length = Rs B/A = Rs C. - Actual length of the panel = D. - Additional payment/ recovery in unit rate for variation of length beyond length $(1.15A/0.85A) = (D-1.15A)/(0.85A-D) \times C$.
47.8	The contractor shall ensure that each instrument technician is equipped with necessary T&Ps, like at least one allen key set, one screw driver set (with star head), one slide wrench, one 3.5 digit portable digital multimeter etc. The quoted rates shall be inclusive of such items. In case contractor fails to provide the requisite T&Ps to each technician as per above, BHEL reserves the right to procure balance T&Ps out of those mentioned above and provide the same to each technician. The cost incurred by BHEL in this regard along with BHEL's standard overhead shall be recovered from the next RA bill or any other dues from contractor.
47.9	Contractor's quoted rates shall be inclusive of deployment of minimum manpower for commissioning activities as per following details. However, this does not absolve the contractor of deploying additional manpower required for proper completion of the job as per the direction of BHEL.
47.10	Billing schedule will be as per annexure -IV.
48.0	AS BUILT DRAWING
	The contractor shall submit as-built drawing for handing over to BHEL/ customer after completion of work. The contractor will be given one copy of working drawing. However, the contractor has to make those 'as-built drawing' from the modified drawing which is already followed in between the project work. The contractor has to submit as-built drawing with RA bill, in which the work (carried out as per modified drawing) is claimed.
49.0	SOCIAL OBLIGATION
	It is imperative on the part of the contractor to join and effectively contribute in joint measures such as tree plantation, environment protection, contributing towards social upliftment, conversion of packing woods to school furniture, keeping good relation with local populace etc.
50.0	OTHER TERMS
50.1	While bidder's scope include deployment of all resources, like: T&P, materials, consumables, manpower including supervision, etc for proper completion of the subject job and no sub-contracting for execution of the job is allowed by BHEL. Depending on project's requirement and on prior acceptance of BHEL, bidder may associate agencies for deployment of skilled/ unskilled manpower only for site execution. Bidder should arrange all resources, like T&P, materials, consumables, supervision etc directly for the subject job.
50.2	Drawings issued, if any, are for tender purpose only. No additional financial implication will be entertained by BHEL at a later date on account any alteration to this, except otherwise specifically addressed in the tender.
50.3	Cable lugs for cables above 4.0 sqmm and glands will be supplied by BHEL free of cost. Contractor shall ensure proper reconciliation of free issue materials. Cable lugs of 4.0 sqmm & below, sleeves, ferrules, etc, as required, will be supplied by contractor, unless specified otherwise elsewhere in the tender. Bidder's quoted rates for cable laying, etc (SCH-2) shall be inclusive of this.
50.4	In addition to prevalent statutory laws, act, etc, bidder shall also take into account of statutory guidelines regarding The Building and Other Construction Workers (Regulation of Employment & Condition of Service) Act, 1996 along with associated Central/ State Govt Rules.
50.5	All other term & conditions of this specification, not mentioned above shall be governed by the pertinent provisions of GCC, Volume-IB.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 24 OF 31

ANNEXURE-I

TENTATIVE LIST OF MAJOR T&P AND MMD TO BE DEPLOYED BY THE CONTRACTOR

(With test certificates wherever required.)

SL NO	ITEM	
A. LIFTING MATERIALS		
A.1	12 TON / 14 TON CAPACITY NEW GENERATION HYDRA - 01 NO,	
A.2	TYRE MOUNTED MOBILE CRANE OF 40 TON CAPACITY – 01 No (To be deployed/arranged by the agency on as and when required basis for execution of their contractual scope of work, as per instruction of BHEL Site engineer)	
A.3	STEEL WIRE ROPES- As required	
A.4	SHACKLE-As required	
A.5	JACK-As required	
A.6	HAND PULLEY BLOCK / HOIST- As required	
A.7	SLING-As required	
A.8	TRANSIT PULLEY-As required	
A.9	TRAILOR – 01 NO (To be deployed/arranged by the agency on as and when required basis for execution of their contractual scope of work, as per instruction of BHEL Site engineer)	
B. MAJOR TOOLS AND ELECTRICAL TESTING INSTRUMENTS / EQUIPMENTS		
SL NO	ITEM DESCRIPTION	QUANTITY
1	ARC WELDING SET.	As required
2	MIG WELDING SET.	- Do -
3	GAS WELDING SET.	- Do -
4	GAS CUTTING SET.	- Do -
5	WELDING MASK, APRON, GLOVE, GLASSES.	- Do -
6	WELDING MACHINES (GENERATOR / TRANSFORMER).	- Do -
7	STEEL MEASURING TAPE.	- Do -
8	DRILL GAUGE.	- Do -
9	STRAIGHT SHANK DRILLS (1.00 mm TO 13 mm).	- Do -
10	MORES TAPER DRILLS UP TO 40 mm.	- Do -
11	HAND REAMERS UP TO 50 mm.	- Do -
12	HAND TAPS M1 TO M30.	- Do -
13	TAPS FOR TAPER PIPE THREAD PT 1/8-3/4, PT 1-2.	- Do -
14	CARBIDE ROTARY CUTTERS "A" TYPE – "G" TYPE.	- Do -
15	HACK SAW BLADES (HIGH SPEED TOOL STEEL) UPTO 300 mm.	- Do -
16	MACHINIST FILES 250 mm – 300 mm.	- Do -
17	SET OF NEEDLE FILES.	- Do -
18	FILE HANDLES.	- Do -
19	EMERY CLOTHS/ PAPERS.	- Do -
20	WORKING LAMPS (WITH HOLDER & SUFFICIENT EXTN CHORD).	- Do -
21	STEEL TOOL BOXES (CONTAINING SOCKET WRENCH SET).	- Do -
22	TORQUE WRENCHES.	- Do -
23	ADJUSTABLE ANGLE WRENCHES (UPTO 12").	- Do -
24	DE SPANNER SETS.	- Do -
25	RING SPANNER SETS.	- Do -
26	COMBINATION PLIERS.	- Do -
27	INSULATED CUTTING PLIERS.	- Do -
28	WIRE STRIPPERS.	- Do -
29	CABLE JOINT PLIERS.	- Do -
30	CRIMPING TOOLS (DIFFERENT SIZES).	- Do -

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 25 OF 31

31	SCREW DRIVER SETS.	- Do -
32	BIG SCREW DRIVERS.	- Do -
33	JIG SAW TOOTH MACHINE & BLADES.	- Do -
34	CIRCULAR SAW TOOTH MACHINE & BLADES.	- Do -
35	HAND DRILL M/C AND BITS OF DIA 5, 8, 10, 12, 18 AND 22 mm.	- Do -
36	HAND GRINDER (EMMERY GRINDER) AG5 & AG7 WITH GRINDING WHEEL.	- Do -
37	CUTTING WHEEL (NO 36).	- Do -
38	WIRE SPOOL.	- Do -
39	PROTABLE COLLAPSIBLE LADDER.	- Do -
40	SCAFFOLDING MATERIAL.	- Do -
41	TORQUE WRENCH M12.480. M20 2000 KG-CM.	- Do -
42	PRECISION LEVEL.	- Do -
43	PLUMB BOB.	- Do -
44	VACCUM CLEANER.	- Do -
45	ELECTRIC BLOWER.	- Do -
46	ELECTRIC HOT BLOWER.	- Do -
47	GRINDER.	- Do -
48	HAND LAMP WITH TRANSFORMER (240 / 24 V).	- Do -
49	DRILL MACHINE.	- Do -
50	TOOL SETS, SPANNER, ETC.	- Do -
51	CABLE CRIMPING TOOLS (HYDRAULIC AND ORDINARY) OF ALL SIZES.	- Do -
52	DEWATERING PUMP (5 HP), ELECTRICALLY OPERATED	-
53	SCAFFOLDING PIPES AND ACCESSORIES	-
52	OIL TREATMENT/FILTRATION PLANT	- Do -
52.1	TRANSFORMER OIL FILTRATION MACHINE OF SUITABLE CAPACITIES.	- Do -
52.2	OIL HOSE.	- Do -
52.3	PRE-TREATMENT TANK WITH ALL ACCESSORIES & FITTINGS (SHOULD ACCOMMODATE TRANSFORMER OIL).	- Do -
52.4	VACCUM PUMP.	- Do -
52.5	CALIBRATED VACUUM GAUGE OF 1 TOR – 1 NO.	- Do -
52.6	OIL GAUGE GLASS AND THREE NUMBER STEEL CONTAINERS – 2 NO.	- Do -
52.7	COMPOUND GAUGE (PRESSURE SIDE 1 & VACCUM SIDE 760 MM OF HG).	- Do-
52.8	TARPAULIN (BOTH ORDINARY & FIRE RESISTANT).	- Do-
52.9	TRIDENT HOSE ADAPTER.	- Do-
52.10	VACCUM CLEANER.	- Do-
52.11	VACCUM HOSE.	- Do-
	ELECTRICAL TESTING EQUIPMENTS	
53	PRIMARY & SECONDARY CURRENT INJECTION TEST KIT.	- Do-
54	PRIMARY/ SECONDARY VOLTAGE INJECTION TEST KIT.	- Do-
55	MOTORIZED MEGGER (5 KV).	- Do-
56	HAND OPERATED MEGGER.	- Do-
57	OMICRON TEST KIT.	- Do-
58	AVOMETER	- Do-
59	PHASE SEQUENCE INDICATOR.	- Do-
60	PRECISION VOLTAGE, FREQUENCY AND TEMPERATURE CALIBRATION.	- Do-
61	DIGITAL MULTIMETER.	- Do-
62	TONG TESTER WITH SELECTOR SWITCH.	- Do-

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 26 OF 31

63	MICRO OHM METER (DIGITAL).	- Do-
64	RELAY TEST KIT (EEMAKE 'ZFB' OF EQUIVALENT).	- Do-
65	SCHERING BRIDGE FOR TAN DELTA MEASUREMENT.	- Do-
66	CONTINUITY TESTER, RELAY JACK PLUG.	- Do-
67	THREE PHASE (15A) AND SINGLE PHASE (6A) VARIAC.	- Do-
68	WHEATSTONE BRIDGE.	- Do-
69	BDV TESTING KIT FOR TRANSFORMER OIL.	- Do-
70	HV TEST KIT, 100mA (BOTH AC & DC SUITABLE FOR TESTING THE EQUIPMENT).	- Do-
71	TRANSFORMER TURN RATIO KIT.	- Do-
72	WINDING RESISTANCE MEASUREMENT KIT.	- Do-
73	TESTING KIT FOR MOISTURE CONTENT/ RESISTIVITY/ ACIDITY, ETC OR SUITABLE ARRANGEMENT MADE FOR TESTING AT REPUTED/ APPROVED LABORATORIES.	- Do-
74	T&P FOR HANDLING AND TRANSPORTATION OF POWER TRANSFORMERS.	
74.1	SUITABLE NO OF JACKS WITH COMPLETE ACCESORIES	- Do-
74.2	MULTI AXLE LOW BED TRAILER	- Do-
74.3	ADEQUATE QTY. OF WOODEN/CONCRETE SLEEPERS	- Do-
NOTE		
1.0	Any other T&P/ MMD required for smooth completion of the job shall be arranged by the contractor at their own cost.	
2.0	All Master Gauge should be of 0.25% accuracy and 0.5% resolution.	
3.0	The contractor may please note the periodical testing and calibration of the testing equipment are to be done at CMERI/ Durgapur, ERIL/ Kolkata, regional research laboratories at Guwahati/ Jorhat/ Bhubaneswar and copy of test certificates to be submitted to BHEL as per 'ISO' norms.	
4.0	The quantities of items were not mentioned with an intent that contractor shall bring adequate quantity of the above mentioned tools/ MMD so that parallel gangs can work and no work is held-up due to non availability of tools/ MMD at any point of time. The bidders are also required to make provision for availability of tools/ MMD for work during emergency or odd hours, with test certificates wherever required	

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 27 OF 31

ANNEXURE-II
LIST OF CONSUMABLE TO BE SUPPLIED BY CONTRACTOR FREE OF COST

SL NO	ITEM
1.0	MS bolts, nuts, plain washers and spring washer.
2.0	Copper washers.
3.0	Welding electrode, gas, filler wire, cleaning agents, etc.
4.0	Cable tag, ferrules, aluminium strips/ fasteners etc.
5.0	Sand, chips, etc for minor civil works.
6.0	Emery sheets, grease, etc.
7.0	Oxygen & DA cylinders.
8.0	Primer & paints (Only touch up painting of the welded joint in angle,channel as wherever executed)
9.0	½" MS plugs as required.
10.0	Jute Waste & Markin Cloth
11.0	Any other item as specified elsewhere in the tender.

NOTE	
1.0	Contractor shall note that this list is not exhaustive and they may be required to provide additional consumables not covered in the list, at their own cost, for proper execution of the job.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 28 OF 31

ANNEXURE-III

LIST OF T&Ps TO BE PROVIDED BY BHEL FREE OF CHARGE ON SHARING BASIS

SL NO	ITEM
1.0	EOT CRANE IN TG HALL – On sharing basis, as per requirement and availability , at the discretion of BHEL
2.0	CRANE 75 MT or Higher Capacity – On sharing basis, as per requirement and availability, at the discretion of BHEL

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 29 OF 31

ANNEXURE-IV
BILLING SCHEDULE

Activities covering erection, testing & commissioning etc.

Billing schedule		
NOTE: A) 'Terms of payment' for 'Erection and Commissioning' is as given below-		
A.1	Ninety Five (95%) percent payment on pro-rata basis for the work completed as per billing schedule (detailed below) shall be released as progressive payment by the site authorities, on submission of protocols duly signed by BHEL site official (s) / Owner. BHEL at their descretion may further split up the above percentage and effect monthly payment in consideration of site conditions, cash flow requirement etc. during site execution.	
A.2	Balance five per cent (5%) of the contract price shall be released on i) successful completion of the PG test / Demonstration test(s) of the system/package, as applicable, ii) submission of As built drawing, iii) material re-conciliation, liquidation of pending points, handing over of the unit etc and iv) submission of BG of equivalent amount valid till completion of Guarantee / warranty period . However, vendor shall comply with all formalities required for final billing / contract closing before drawing the last payment.	
Billing schedule for 90% above (Cl. A.1), is as given below -		
SL. NO.	DESCRIPTION OF WORK	% BREAK-UP
-		
A	<u>CABLE TRAY WITH ACCESSORIES/ TRAY FIXING MATL. & SUPPORTING STRUCTURES ,TRAY COVERS, IRREGULAR BENDS ETC</u>	
(i)	Fabrication and erection complete as applicable in all respect.	70%
(ii)	Final painting and marking of tray nos.	20%
(iii)	Successful completion of Trial Run of Unit #3	5%
B	<u>CABLE LAYING</u>	
(i)	Laying of cables	60%
(ii)	Termination of cable (Note: While making payment on this activity necessary adjustment of payment as already made against laying of cable vide cl. No. A(i) shall be made as regard cable length already considered and final measurement taken after cable termination between cable lugs at two ends with due consideration of justified extra length beyond point of physical lugging.)	15%
(iii)	Dressing & clamping	15%
(iv)	Successful completion of Trial Run of Unit #3	5%
C	<u>CABLE TERMINATION / STRAIGHT THROUGH JOINTING</u>	
(i)	Termination	70%
(ii)	Testing of connected equipments / system	20%
(iii)	Successful completion of Trial Run of Unit #3	5%
D	<u>EARTHING / LIGHTNING PROTECTION</u>	
(i)	Installation,welding,painting	70%
(ii)	Connection to equipment & grid	20%
(iii)	Successful completion of Trial Run of Unit #3	5%
E	<u>CONDUITS / PIPES/CONDUIT CLAMPS</u>	
(i)	LAYING OF CONDUIT/PIPE COMPLETE IN ALL RESPECT	90%
(ii)	Successful completion of Trial Run of Unit #3	5%
F	<u>HT MOTORS/LT MOTORS/ACTUATORS /MISC EQUIPMENT(COMMISSIONING ONLY)</u>	
(i)	TESTING, PRE COMMISSIONING OF INDIVIDUAL ITEMS	50%
(ii)	COMMISSIOINING OF INDIVIDUAL ITEM	40%
(iii)	Successful completion of Trial Run of Unit #3	5%

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 30 OF 31

G	INSERT PLATES, ANCHOR FASTENERS ,CHEQUERED PLATES, CANOPY, BASE FRAMES ETC	
(i)	FABRICATION AND ERECTION	70%
(ii)	PAINTING AS APPLICABLE	20%
(iii)	Successful completion of Trial Run of Unit #3	5%
H	HT/LT SWITCH GEAR, MCC, PCC, CONTROL PANELS/ DESK, OTHER PANELS, PUSH BUTTON STATIONS, BATTERY, BATTERY CHARGER, DISTRIBUTION BOARD, COMPUTER, PRINTER, JUNCTION BOX, MARSHALLING BOX , STARTER UNIT, MISC EQUIPMENTS ETC.	
(i)	PLACEMENT, ALIGNMENT & COUPLING AS APPLICABLE	50%
(ii)	PRE-COMMISSIONING CHECKS, TESTING	20%
(iii)	CHARGING	20%
(iv)	Successful completion of Trial Run of Unit #3	5%
I	SUPPLY OF RUBBER MAT / DISPLAY BOARD/moisture sealing compound/cable Lug/Cable gland	
(i)	On completion of Supply	80%
(ii)	On laying/installation of material/item	10%
(iii)	Successful completion of Trial Run of Unit #3	5%
J	INSTALLATION OF RUBBER MAT / DISPLAY BOARD/moisture sealing compound	
(i)	On completion of installation	90%
(ii)	Successful completion of Trial Run of Unit #3	5%
K	CIVIL WORKS	
(i)	Prorata on completion of actual work	90%
(ii)	Successful completion of Trial Run of Unit #3	5%
L	OIL FILLED TRANSFORMERS	
(i)	Placement on foundation and alignment.	35%
(ii)	Fixing, fitting, of piping,hydraulic test of radiator banks, erection of allied items / associated auxiliaries including filling of pre-treated, tested oil as applicable	20%
(iii)	Completion of dry out of transformer including Oil filtration complete.	10%
(iv)	Pre-commissioning checks & tests	15%
(v)	Charging	10%
(vi)	Successful completion of Trial Run of Unit #3	5%
M	DRY TYPE TRANSFORMER, NGR, MISC EQUIPMENTS ETC.	
(i)	Placement, alignment & coupling as applicable	70%
(ii)	Pre-commissioning checks, testing	10%
(iii)	Charging	10%
(iv)	Successful completion of Trial Run of Unit #3	5%
N	BUS DUCTS (ISOLATED PHASE B/D AND SEGREGATED PHASE B/D)	
(i)	Pre-assembly of Bus ducts and accessories, pre-alignment, erection with proper leveling and alignment, including welding etc.	65%
(ii)	Pre-commissioning checks & tests & charging	15%
(iii)	Charging	10%
(iv)	Successful completion of Trial Run of Unit #3	5%
O	LT BUS DUCTS	
(i)	Pre-assembly of Bus Ducts and accessories, pre-alignment, erection with proper levelling and alignment, including welding etc.	70%
(ii)	Pre - commissioning checks/testing & charging .	10%
(iii)	Charging	10%
(iv)	Successful completion of Trial Run of Unit #3	5%
P	DG SET	
(i)	Placement and alignment of DG set on Foundation	45%
(ii)	Erection of associated accessories viz. package piping, cabling, insulation etc. as applicable.	25%

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-CML-R-0	TENDER CONDITIONS OF CONTRACT	PAGE 31 OF 31

(iii)	Pre-commissioning checks/testing	10%
(iv)	Charging and putting DG set on trial operation	10%
(v)	Successful completion of Trial Run of Unit #3	5%
Q	SUPPORT STRUCTURE (FOR BUS DUCT, DG SET ETC)	
(i)	Assembly of structure, as applicable	25%
(ii)	Placement, alignment & welding of structures as applicable.	65%
(iii)	Successful completion of Trial Run of Unit #3	5%
R	GENERATOR CIRCUIT BREAKER (GCB)	
(i)	Placement and alignment of GCB on Foundation alongwith installation/fittings of associated items including loose items, internal wiring etc.	60%
(ii)	Pre-commissioning checks/testing	20%
(iii)	Charging	10%
(iv)	Successful completion of Trial Run of Unit #3	5%

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 1 OF 21

CONTENTS

CLAUSE NO	DESCRIPTION
1.0	NAME OF WORK
2.0	BROAD SCOPE OF WORK
3.0	DELETED
4.0	GENERAL SCOPE OF TRANSFORMER, BUS DUCT, DG SET
5.0	TRANSFORMER
6.0	ISOLATED PHASE BUS – DUCT
7.0	24 KV INTEGRATED PHASE BUS–DUCT
8.0	11/ 3.3.6 KV SEGREGATED PHASE BUS–DUCT
9.0	ADDITIONAL WORK ON IP/ SP BUSDUCT DUE TO SITE MISMATCH RESULTING IN SITE EXTRA WORK
10.0	DRY TYPE LT TRANSFORMER
11.0	LT BUSDUCT
12.0	SCHEDULE OF SITE TESTS
13.0	DG SET
14.0	GENERATOR CIRCUIT BREAKER
15.0	MEASUREMENT OF QUANTITIES, RETURN OF SURPLUS AND WASTAGE
16.0	AS BUILT DRAWING
17.0	FINAL PAINTING
18.0	ELECTRICAL INSPECTOR'S APPROVAL , POLLUTION CONTROL BOARD CLEARANCE/EXPLOSIVE CLEARANCE

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 2 OF 21

This volume shall be construed as part of tender and shall be read along-with other volumes of tender. Unless otherwise specified, in case of any confusion of any clause/ provision of this volume or any conflict/ inconsistency of any clause/ provision of this volume with that of other volume, the same shall be brought out by the bidder in writing to BHEL for clarification or during pre-bid discussions, if applicable, failing which most stringent interpretation in favour of BHEL shall be adopted and the same shall be binding to the bidder. Unless otherwise specified, all terms & conditions shall be applicable for entire scope and for each part/ package of the tender.

CLAUSE NO	DESCRIPTION
1.0	NAME OF WORK ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND.
2.0	BROAD SCOPE OF WORK
2.1	The scope under this tender shall cover receipt of materials from site stores/ open yards/ unloading bay of power house, dragging to position (place of erection)/ loading in the truck/ trailer with the help of crane, handling at site/ dragging to place of erection (wherever applicable), watch & ward for safe custody of materials, inspection of materials, submission of inspection reports for any shortage/ damage or anything else called for, preservation/ conservation, fixing of supports (base channels), pre-assembly, supply of necessary consumables/ hardware, as specified in the tender, all erection of equipment & support structures, levelling, alignment, grouting, earthing of necessary equipment with nearest earthing point, testing, commissioning, calibration, trial operation, assistance to PG test, handing over to the entire satisfaction of BHEL/ customer, reconciliation of materials, returning of unused materials, scrap materials, packing cases/ wooden boxes/ cable drums, etc to BHEL's/ customer's stores/ yards, etc of various equipments/ items/ materials covered under this tender.
2.2	It is not the intent to specify completely here in all details of handling, erection, testing, commissioning of the equipment. Omission of specific reference to any method, or test & equipment or material necessary for the proper and efficient services towards installation of the plant shall not relieve the contractor of the responsibility of providing such facilities/ services to complete the project or portion of the project awarded to them. The quoted rates shall deem to be inclusive of all such contingencies. Only exclusions specifically mentioned in this tender shall be entertained in all matters.
2.3	If any damage or discrepancy is found, the contractor should inform BHEL immediately and make a joint inspection of materials, submission of inspection reports for any shortage/ damage or anything else called for preservation/ conservation / insurance claim. If any theft occurs when the materials are in the contractor' custody, the contractor have to lodge FIR to the nearest police station.
2.4	The work shall conform to dimensions and tolerances given in various drawing & documents that will be provided during erection. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at their cost, failing which, job will be carried out by BHEL by engaging other agencies/ departmentally and recoveries will be affected from contractor's bills towards expenditure incurred including BHEL's usual overhead charges.
2.5	The contractor should deploy fire extinguishers of required number in their office and work areas. During oil filling as well as during filtration of transformers, the round the clock watch out service with requisite fire extinguisher are mandatory.
2.6	The contractor shall take the full responsibility of testing, pre-commissioning and commissioning of the equipment being installed by them under the overall supervision of BHEL. It shall be the responsibility of the contractor to arrange all the testing/ measuring instruments with the calibration certificates and complete all the testing, pre-commissioning, commissioning activities for the particular

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 3 OF 21

	equipment as per relevant standards, code of practice, manufacturer's instructions, applicable quality plans for installation, testing & commissioning and BHEL norms. All these will be witnessed by BHEL/ customer or both and reports signed jointly. The contractor shall submit a check list to BHEL prior to taking up testing, commissioning activities which shall be approved by BHEL and the activities shall be carried out in accordance with the check list.
2.7	The contractor shall provide necessary supervision, skilled/ semi-skilled workmen, competent experienced erection and commissioning engineers to carry out the tests independently, electrical license holder supervisors & electricians, erection tools & tackles, consumable, testing, measuring & commissioning instruments/ equipment of required range, administrative personnel, transport vehicles, security guards for timely execution of the contract.
2.8	If situation so demands that in order to achieve project schedule/ milestone, various activities are to be carried out at a time and the contractor should be able to provide necessary manpower, tools, tackles, equipment testing & measuring instruments for simultaneous working round the clock, at no extra cost to BHEL.
2.9	While testing/ commissioning, if the system involving equipment erected & commissioned by contractor is observed to be not functioning properly and the contractor considers it to be arising due to defects in the purchaser's equipment/ system, it shall be the responsibility of the contractor to check, establish and demonstrate that either the defect exists in the purchaser's equipment/ system terminals or there is no defect in the equipment/ system installed by the contractor inclusive of interconnecting cabling up to the terminals of purchaser's equipment. If the defect is established to be in purchaser's equipment or in interconnecting cables not erected by the contractor, the same shall be rectified by the purchaser.
2.10	Manufacturer's drawings must be studied before handling, erection, testing and commissioning of equipments. Dragging of the equipment should be avoided and use of a crane and trailer/ truck should be made for the handling purpose while transporting to various site of erection from the site stores. While lifting panels in packed condition, utmost care should be taken to avoid any damage to protective and metering equipments. The panels should preferably be kept inside the packing box till the foundations are made ready. However, once the material is issued to the contractor for handling/ erection from BHEL custody, the preservation/ conservation will be completely in the scope of the contractor.
2.11	During any stage of execution, if any discrepancies/damage is found in any equipment/item, the contractor has to report the same immediately to BHEL Engineer. BHEL will arrange for repair of the same at the manufacturers' workshop or other authorized repairing agency, but the contractor has to give all sorts of support, e.g. loading of the materials, exit of the same through plant's materials gate with duly entry by security, transportation arrangement from erection site/ stores to the transporters' loading point/ go-down located at project site/ nearby area and hand over of the same safely.
2.12	It will be the responsibility of contractor to re-serve/ preserve the materials equipment, provide watch & ward after issued from BHEL stores. Contractor will do the routine maintenance of the equipment or will attend minor repair/ trouble shooting jobs during handling, erection, commissioning till taken over by customer for commercial operation of the plant. Contractor has to follow the Field Quality Plan, from erection of the equipment to its commissioning. In each RA bill, the contractor have to submit the reconciliation statement, measurement sheet, protocols, etc as supporting documents of the bill. Contractor will have to submit test reports protocols, log-sheets as per Field Quality Plan at different stages of commissioning and trial operation in formats prescribed by BHEL.
2.13	All the requirements of the IE rules are to be strictly fulfilled and to be completed with providing required consumables without any extra cost. All the test records & joint protocols are to be furnished to BHEL in three sets. With each RA bill, the related protocols, FQP dully filled in is to be submitted by contractor along with

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 4 OF 21

	reconciliation statement upto that period of billing.
2.14	In each protocol, the joint signature of BHEL as well as customer is to be considered for further valuation of the work. The signature of BHEL only will not be sufficient for billing purpose.
2.15	Handling and transportation of generator transformer, station transformer, unit transformer, unit aux transformer, service transformer along with their accessories are in the scope of other contractor. Generator transformer, Station transformer, Unit transformer, Unit aux transformer, service transformer has already been received at site and contractor's scope includes loading, transportation and unloading for erection of all these transformers. All necessary arrangements e.g. sleeper, jack, low bed multi axle trailer etc as required for shifting from unloading point is to be made by contractor. Bidders shall quote separate rates for this transformer handling and shifting activities for other items, contractor shall receive materials for BHEL's store/ storage yard and the quoted/ accepted rates shall be in accordance with this.
3.0	DELETED
4.0	GENERAL SCOPE OF TRANSFORMER, BUS DUCT, DG SET
4.1	Civil works including drilling, chipping, enlarging cut-outs, foundation pockets, cable cut-outs, grouting, etc, wherever required will be carried out by contractor at no extra cost. Contractor will have to erect temporary scaffolding (scaffolding materials being arranged by contractor) for bus-duct erection and provide suitable platform at places (as desired by BHEL) for the purpose of inspection / testing by BHEL personnel.
4.2	During welding of supports with existing embedded insert plates are required, the contractor has to chip on the wall for the insert plate. Also before grouting of equipment, the contractor has to chip the concrete to get the iron materials for welding of the equipment support. However, in any case, the insert plates are not found in position, the contractor may fix the insert plate by using anchor fastener (the plate being supplied by BHEL and the anchor fastener being in the scope of the contractor). The size of the fastener bolts may be communicated by BHEL at the time of requirement.
4.3	The panels may be supplied in detachable units housed in wooden case which will be opened properly at the place of erection and will be placed on supports (base channels) levelled, aligned and subsequently fixed by welding/ bolting as per drawing. Complete assembly, erection and connection of inter-panel wiring, bus-bars between adjacent panels, mounting of loose supplied component as per drawing will be contractor's responsibility. If any additional wiring or modification of wiring is required, contractor has to carry out without incurring any extra cost.
4.4	If necessary, dismantling, mounting, testing etc. of field instruments/ devices is under the scope of work.
4.5	The contractor shall provide skilled Aluminum welders with MIG Aluminum welding sets and welding materials inclusive of consumable. The filler Aluminum alloy wire should be as per IS: 739/1977 and as specified in the BHEL standard, need to be supplied. Chemical and other test certificates of each wire roll should be furnished for acceptance of BHEL before use.
4.6	All the bus-bar bolted joints are to be tightened by torque wrench as per specified value (Tentatively tightness being 20 N-Metre for 10 mm bolt and 30 N-Metre for 12 mm bolt for LT board and for SP/ IP busduct the tightness being 36 N-Metre). The contact surfaces of bus-bars, bus-bar bolts and nuts shall be thoroughly cleaned with petrol, petroleum jelly shall then be applied. These chemicals to be supplied by contractor free of cost. Special care shall be taken during erection to avoid damage to Zinc plated members of the structures. Any damage of the Zinc plated surface shall be made good by touch-up painting with cold galvanizing paint (to be supplied by the contractor as per specification of BHEL). The contact resistance is to be measured by micro-ohm meter which should be 10 Watt loss or less. However, if any changes in the specified value regarding tightness of bus bar joints and contact resistance may be intimated at the time of execution.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 5 OF 21

4.7	The measurement of contact resistance at the bus-bar joint is to be carried out by micro-ohm meter (the provision being in the scope of contractor, the specification of which is given below. Ductor; Low resistance ohm meter; Make: Meggar; Model: D007; Range (adjustable): (i) Range: 0 - 100 micro ohm, 10 A, (ii) Range: 0 - 1 milliohm, 10 A, (iii) Range: 0 - 10 milliohm, 1 A, (iv) Range: 0 - 100 milliohm, 1 A, (v) Range: 0 - 1 ohm, 1 A, (vi) Range: 0 - 3 ohm, 0.1 A; Accuracy - 1% of full scale in all ranges; Battery: 20 AH re-chargeable; Input supply:- 240 V, 50 Hz.
4.8	Cable for wiring up to marshaling kiosk/ fan control panel from associated equipment of transformers will be supplied by BHEL and cabling & termination, etc will be carried out by the contractor as per scope of this tender within the quoted/ accepted rates.
4.9	Cabling from bus-duct CTs to CT junction boxes will be in the scope of contractor. The contractor shall also erect, test (eg ratio, polarity, IR, winding resistance, magnetizing current/ knee point voltage test) and commission all the CTs integral to bus-duct.
4.10	Before mounting of all CTs in position, the tests for healthiness of all CTs, eg primary & secondary injection tests for all cores, magnetizing current/ knee point voltage test, secondary winding resistance measurement, continuity test, polarity tests on each winding, insulation resistance test on each winding by megger to earth and between windings for all cores, are to carried out by the contractor.
4.11	Moreover, after wiring of the CTs to local JB/ panels, the above testing are to carried out again from JB/ panel end without incurring any extra cost to ensure the wire connection of current transformers.
4.12	Deleted
4.13	The fixing arrangement of CTs may need the holes enlargement, filing, and additional drilling of the support for mismatch of the same with the main equipment. The contractor has to carry out on free of cost.
4.14	The contractor has to arrange all the consumables for cleaning/ servicing (dismantling and re-assembly of equipment(s) after proper cleaning) of transformer accessories during installation.
4.15	Transformer oil filling and oil filtration: Handling of transformer oil drums issued to the contractor shall be done with utmost care to avoid any damage or loss of oil. Provision of oil filtration machine (recommended capacity 24KL/ 15KL/ 12KL per hour discharge along with simultaneous vacuum capacity of 1 Torr as per the requirement) and two numbers oil tank (recommended capacity one 30 KL and one 20KL) is in the scope of contractor. Also the contractor has to provide one no. calibrated vacuum gauge of 1 Torr, two no oil gauge glass and three number steel containers for collection of oil samples at the time of oil filtration. The filter machine should have the capacity of simultaneous filling of oil along with vacuum action. Other than the filter machine, if the contractor fails to bring the mandatory materials required for filtration, BHEL will arrange at the overhead cost of the contractor. Before filling oil in the transformer, oil shall be filtered separately in a tank of adequate capacity and suitable for the purpose (to be supplied by the contractor) by the contractor to meet proper dielectric strength, resistivity, acidity, moisture content, etc to the entire satisfaction of BHEL engineers at site. The transformer oil testing covers Electric Strength (Break down voltage) in rms KV, Moisture Content in ppm, Neutralisation Value (Total acidity) in mg KOH/ gm, Dissolved Gas Analysis, Interfacial Tension @ 27° C mN/ m, Flush point °C, Dielectric Dissipation Factor (tan delta) @ 90 °C, pour point etc. The contractor's responsibility to make the oil testing at authorized testing laboratory, eg Power Grid Corporation/ Central Power Research Institute/ or any other national institute, approved by BHEL.
4.16	The contractor has to carry out the above tests in each steps, eg (i) Testing of oil before pouring of oil from auxiliary tank (approximate 30 KL arranged by subcontractor) to main transformer tank; (ii) Testing of oil before pouring of oil from auxiliary tank to OLTC; (iii) Testing of oil before pouring of oil from auxiliary

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 6 OF 21

	tank to radiators; (iv) Testing of oil before pouring of oil from auxiliary tank to conservator tank via main transformer tank. However, the repeated testing of oil may be at the discretion of BHEL/ customer.
4.17	The contractor should make the record of BDV value of each oil drum before and in between after the start of oil filtration.
4.18	For the distribution transformers/ small power transformer, where the main tank is supplied with oil filled in, the filtration can be carried out after the topping of oil to radiators, pipes etc. from oil drums. However, the oil testing of the drums before pouring is mandatory.
4.19	During filtration of transformer oil 2 % of wastage is allowable and no charge will be recovered for loss of this quantity of oil. However, any wastage beyond this 2% will be chargeable and will be recovered at the rate of actual cost plus 30% overhead.
4.20	Erection of bushings and connections of internal terminals of transformer winding to bushing terminals must be carried out with utmost care by competent technicians and supervisors.
4.21	At site, testing/ calibration of all the meters/ relays/ thermal O/L relays, OTI, WTI including CT/ PT, etc are included in the scope, disconnection of components as required shall be done without extra cost. For calibration of OTI and WTI, the contractor has to arrange oil bath and calibrated standard thermometer.
4.22	Nitrogen gas pressure in all such transformers shipped without oil will be maintained by the contractor without any extra cost after receipt of equipment by contractor. Nitrogen gas cylinders suitable for the purpose filled with gas will be arranged by the contractor. Records of gas pressure will be taken weekly or as per direction of BHEL and a log book will be maintained by the contractor till the transformer are filled with oil till the execution of work.
4.23	Proper records for glands and lugs if supplied loose with the equipments. However, if the same are assembled with the equipments, the contractor is to dismantle the same before erection of the same and will be handed over for external and internal cabling or maintained by the contractor for reconciliation.
4.24	The contractor may have to mobilise more than 1 no oil filtration (one 24KL/ 15KL and one 24KL/ 12KL/ 6KL) machine with accessories to meet parallel oil filtration requirement at various working fronts.
5.0	TRANSFORMER
5.1	The contractor will have to erect the fan and cooler control cabinet/ marshalling kiosk for GTs, UATs, UTs, STs and SATs along with other accessories that will be supplied loose and are the part of the transformers. Grounding resistors for transformer neutral are also to be erected.
5.2	Transformer bushings are supplied loose. These are to be erected with utmost care under BHEL supervision. Bushing-CTs are to be tested for polarity, ratio, and insulation resistance. Bushings are to be tested for dielectric strength, dissipation factor (Tan-delta), IR before and after erection. For testing of these bushings, the contractor has to supply or fabricate the bushing stand at free of cost. After erection and charging of the transformer, if any leakage is found in the transformer body/ bushings/ pipes, etc the contractor has to repair the same without any extra cost and the contractor has to deploy the manpower round the clock, if the work is to carry out during shutdown.
5.3	Oil piping is to be erected separately along with conservator tanks, radiator banks.
5.4	Cabling (Cable trays laying, glanding, laying of cables termination and lugging) from Buchholz relay, oil level gauge, sudden pressure relay, WTI, OTI, RTDs, Bushing CTs, Neutral CTs, Cooling fan motors, oil pumps to the marshaling kiosk are to be done by contractor with in quoted rates. Cables, cable trays, lugs will be supplied by BHEL.
5.5	Deleted
5.6	The contractor will carry out following (but not limited to) tests at site as per applicable standards, codes, manufacturer's instructions, drawings, documents and subject to the approval.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 7 OF 21

5.6.1	Construction inspection.
5.6.2	Hydraulic test/air seal test for radiator banks and air tightness test for air seal of conservator tank.
5.6.3	Drying out of transformer. Adequate quantity of Nitrogen gas cylinders are to be arranged by contractor free of cost for the purpose of Nitrogen purging. For this purpose, contractor has to arrange nitrogen cylinders of 99.99% purity and -50 deg cen dew point along with supplier certificate of purity. Also contractor has to arrange for dew point checking of transformer during nitrogen purging cycles.
5.6.4	Oil test of transformer oil (As per IS: 335).
5.6.5	Insulation resistance test of winding.
5.6.6	Measurement of winding resistance at all taps.
5.6.7	Phase sequence check.
5.6.8	Voltage ratio test at all tap position.
5.6.9	Tap changing operation test.
5.6.10	Breather check for Silica Gel.
5.6.11	Zero-sequence test.
5.6.12	Neutral connection to earth effectively.
5.6.13	Polarity, magnetic balance test, magnetizing current at 415 V, 3 phase and vector group test.
5.6.14	LV to HV winding ten-delta test after complete erection of bushings.
5.6.15	Low oil level for main tank and OLTC tank.
5.6.16	Measurement of zero sequence reactance.
5.6.17	Polarity and turns ratio test of bushing CTs.
5.6.18	Tan-delta test of bushing insulator.
5.6.19	Alarm and trip test for Buchholz relay operation, oil surge relay, PRV, MOG, SP relay, oil level indicator.
5.6.20	Cooling fans and pumps operation test.
5.6.21	Calibration and testing of WTI & OTI, transducers, RTDs, etc and setting of mercury switch.
5.6.22	On load tap changer operation test for ST, stability for differential and restricted earth fault test for GT, UT, UAT and ST.
5.6.23	Scheme test, pre-commissioning and commissioning of cooler control cabinet, OLTC and marshalling box.
5.6.24	All remote operation from DCS and relay panel.
5.6.25	Acoustic noise level.
5.6.26	Earthing of transformer body, NGR, marshalling box, OLTC cabinet.
5.6.27	Earthing of HV neutral to a separate earth pit.
5.7	NEUTRAL GROUNDING RESISTOR The transformer is equipped with a neutral grounding resistor whose secondary is connected across a resistor. Erection of NGR, HT cabling from transformer neutral terminal to NGR (XLPE cable and jointing kit is to be supplied by BHEL), control cabling of resistor and upto JB/ TB/ marshalling box associated for this item, HV test of the cables is included in this contract and the quote rates by contractor shall be inclusive of the required cabling and termination work. The contractor will carry out following (but not limited to) tests at site as per applicable standards, codes, manufacturer's instructions, drawings, documents and subject to the approval.
5.7.1	Resistance measurement of NGR (the contractor is to achieve the specified resistance value as per factory test report).
5.7.2	Insulation resistance.
5.7.3	Space heater healthiness.
5.7.4	HV test of HT cable.
5.7.5	Tightness test.
5.7.6	Earthing of NGR.
5.8	The breathers and associated piping supplied loose are to be erected by the contractor. The pipes may be supplied in running meters which are to be properly

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 8 OF 21

	erected as per layout drawing. Necessary work like pipe fitting, threading / welding etc. including supply of all required pipes fittings elbows, socket bends, union reducers etc. are to be carried out by the contractor within his quoted rate. Necessary supporting arrangements are to be provided for installations of equipments and associated piping jobs by the contractor. Structural steel, if required for this shall be supplied by BHEL free of cost. First filling of breathers with SILICA – GEL after conditioning of the Silica Gel if required, is to be carried out by the contractor. Subsequent change, if required, is also to be done by the contractor. Silica gel for the purpose will be supplied by BHEL. Grouting of oil pipes, fan supports, supports of radiators, conservator tank and finishing of each foundation pedestal in the scope of contractor.
5.9	The oil testing of transformer is to carry out in phase wise. The oil is shifted in the auxiliary oil tank from oil drums and after filtration, the oil is required to carry out the tests e.g. BDV, ppm, acidity, DGA etc. before pouring the same to main oil tank. After completion of oil filling to the main tank, the similar process i.e. transfer shift from aux. oil tank to OLTC, radiator, conservator tank, piping etc. is to carry out and every time the tests is to be carried out and after getting the satisfactory results, the oil pushing is allowable. Finally, the oil is to be tested, the details of which is mentioned in relevant clause of this tender.
5.10	The brief description and specification for LT, HT transformers, etc. as indicated above is subject to change in respect of specification & description and contractor shall carry out work as per approved drawing/ BHEL's instruction
6.0	ISOLATED PHASE BUS – DUCT
6.1	The Isolated Phase Busduct is metal enclosed busduct in which each phase conductor is enclosed by an individual metal housing and separated from adjacent conductor housing by an air space. Isolated phase busducts are of two basic types in general, ie discontinuous and continuous. In conductor continuous Isolated phase busducts system, the various sections of the busducts are so inter connected that low resistance path for the induced circulating current is provided from one phase enclosure to other phase enclosure.
6.2	After final alignment followed by welding works, the contractor has to grout the duct support (grouting materials being in the scope of the contractor and to supply as per BHEL recommendation). Also before grouting by the contractor as well as before floor finish work (being carried out by civil contractor), the laying of earth flat from nearest riser, its welding and painting (eg Aluminium painting followed by primer as supplied by contractor) are in the scope of the contractor.
6.3	26,000 A bus-duct (made of Aluminum alloy) meant for 21 KV system is being supplied by BHEL. The bus-duct is having phase side and neutral side bus-bar chamber for generator phase and neutral side terminal bushings. It is having NGT (Neutral Grounding Transformer) for generator neutral earthing, one SPVT cubicle and one LAVT cubicle on generator phase side, bus-duct CTs, One no hot air blower, Air pressurising unit, silicagel breather, adopter box, seal off bushings, shunts, sun canopy over the bus enclosure outside the TG hall. The bus-bar is connected with the generator as well as generator transformer by copper flexible. The bus-duct enclosure is made of Aluminum alloy sheet and supplied in parts. The bus-duct is having three different sizes 1700 mm dia for main, 780 mm dia for tee-off and 1200 mm dia for delta busduct. Bus-duct is supported on steel structure and shunts at different locations. Different sections of the enclosures are connected together by Aluminium make up pieces welded at site. Various sections of the bus-bars are joined together by bolting and/ or welding.
6.4	Shorting busbar(s) will be supplied by BHEL for "SCC" test of generator. Connection and dismantling of the bus-bar(s) is in the scope of contractor. After testing the loose bar as mentioned is to be returned to BHEL.
6.5	BUSBAR JOINTS OF IP BUSDUCT The busbar joints may be bolted type or welded type as specified for installation. For making the busbar joints, the contractor strictly follow the specified procedures which will be communicated by BHEL engineer and precautions are to

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 9 OF 21

	follow. Wire, brush, emery cloth or jointing compound containing metallic particles or other abrasive should not be used on plated surfaces.	
6.5.1	To obtain the correct tightening pressure on contact surfaces the following torques are recommended for various bolt sizes to conductors' bolted joints.	
	BOLT	RECOMMENDED TORQUE
	M10	2.80 ~ 4.15 KG-M
	M12	4.15 ~ 5.53 KG-M
	M16	5.53 ~ 6.91 KG-M
	M20	6.91 ~ 8.29 KG-M
6.5.2	Alternatively tighten the nut till Belleville washer becomes flat. Then unscrew the nut by about 1-8 th turn.	
6.5.3	For enclosure window over bolted joint with neoprene gasket - For M10 bolt size, recommended torque size is 1.4 – 1.8 KG-M.	
6.5.4	For tightening of insulator with conductor - For M20 bolt size, recommended torque size is 5.0 – 5.5 KGM	
6.5.5	For tightening of enclosure at terminations, etc, with Nitrile bonded cork gasket For M 12 bolt size, recommended torque is 2.0 – 2.5 KG-M. For M 16 bolt size, recommended torque is 3.0 – 3.5 Kg-M.	
6.5.6	Before putting the enclosure make up pieces (Welded to enclosure) & covers of inspection windows, all the insulators should be cleaned again. The busduct should also be cleaned and dried up for any moisture condensates to obtain the desired IR value of the bus duct. Thoroughly check the interior of every enclosure and ensure that these are free from any foreign material.	
6.5.7	WELDING OF IP BUSDUCT:	
6.5.7.1	Box section circumferential weld	
6.5.7.1.1	A fully penetrated, fully fused weld with a 10% T (4mm max) reinforcement is required. The joint preparation with a permanent overlap is shown in the attached figure 4. In case of splice plate joints, please refer to figure 5 (generally on side of splice plates are welded at site)	
6.5.7.1.2	Welding conditions MIG process	
	Filler wire	1.6 mm dia (NG :21 with 5% silicon)
	Angle	10° F to 15° F
	Cleaning	Degrease and scratch brush
	Setting	250 A to 320 A, 28 to 30 Volts (Dependent on thickness)
	Process	4 off 25 mm long equispaced tack weld
	Gas supply	10 to 12 ltr/ min argon.
	Shield	5/8" dia.
6.5.7.2	Tubular/ conductors weld:	
6.5.7.2.1	Butt welding is done as per fig.6. Align and tack weld in four positions and complete the weld all around.	
6.5.7.2.2	Welding Conditions MIG process	
	Filler wire	1.6 mm dia (NG :21 with 5% silicon)
	Angle	10° F to 15° F
	Cleaning	Degrease and scratch brush
	Setting	215 A to 275 A, 22 to 23 Volts (Dependent on thickness)
	Process	4 off 25 mm long equispaced tack weld
	Gas supply	10 to 12 Lt./min argon
	Shield	5/8" dia.
6.5.7.3	Enclosure: Circumferential welds	
6.5.7.3.1	Fillet weld for make up pieces/ shunts after tack weld at four places.	
6.5.7.3.2	Welding conditions MIG process	
	Filler wire	1.6 mm dia (NG :21 with 5% silicon)
	Angle	10° F to 15° F
	Cleaning	Degrease and scratch brush

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 10 OF 21

	Setting	200 A to 300 A, 25 to 30 Volts (Dependent on thickness)
	Process	4 off 25 mm long equispaced tack weld
	Gas supply	10 to 12 Lt./min argon
	Shield	5/8" dia.
6.5.7.4	Welded conductor joint: Ensure that the 'in position' conductor has been cleaned and prepared for welding. If due to site variation, length of conductor is modified, re-prepare the ends for welding, in accordance with joining recommendations and drawings.	
6.5.7.5	With the conductors in correct relative position and the permanent backing plates having a good fit, it is suggested that the conductors are clamped in alignment at top and bottom, by means of clamps made locally from channel section and on the sides by means of channels and large C-clamps. The clamping is particularly important where site joint is adjacent to an expansion joint.	
6.5.7.6	Before welding check, once again that the joint faces and permanent backing bars are clean from paint, grease and oxide film. Using asbestos cloth protect any insulator assembly close to the welded joint.	
6.5.7.7	Due to cold start condition, the resultant bead contour or beginning of run may be poor with inadequate penetration and porosity. This can be improved by striking the arc approximately on inch ahead of the beginning of the run and then quickly bring the arc to the weld starting point, reverse the direction of travel and proceed with normal welding. While finishing, a similar practice may be followed by reversing the direction of welding and simultaneously increasing the speed of welding to taper the width of the molten pool prior to breaking the arc.	
6.5.7.8	The root run should be chipped back to sound metal and the start & finish chipped to a taper to allow smooth continuity of the root run on the remaining faces.	
6.5.7.9	The root run requires a short arc to provide desired penetration. A longer arc and higher arc voltage may be used on subsequent filler passes. After welding, remove any temporary packing, clean out busduct and make good any damage paint work.	
6.5.7.10	Welded bus enclosure joint	
6.5.7.10.1	Bridge the gap between the bus enclosure by means of make up pieces and clean the area by paint remover (the cleaning agent being supplied by the contractor), which is to be welded. Tack welds the make up pieces before final weld all around.	
6.5.7.10.2	Welded joints of shunts Various locations of shunts to be welded to the enclosures are shown in the layout drawing. Welding of shunts to the enclosures.	
6.6	EARTHING OF ISOLATED BUSDUCT AND CUBICLES	
6.6.1	EARTHING OF ISOLATED PHASE BUSDUCT One end of the electrical continuous enclosure should be earthed to station earth at the shunt location where all the three enclosures are shorted. Location of earth points are shown in the layout drawing. For this purpose, two drilling are to be done on the shunt to suit at site and two separate earth strips are to be connected to the station earth thus ensuring double earthing. In some assemblies (such as transformer hood etc) due to short length enclosures shunts are not provided. In such cases, phase enclosure should be separately earthed.	
6.6.2	CUBICAL EARTHING One end of the electrical continuous enclosure should be earthed to station earth at the shunt location where all the three enclosures are shorted. Location of earth points are shown in the layout drawing. For this purpose, two drilling are to be done on the shunt to suit at site and two separate earth strips are to be connected to the station earth thus ensuring double earthing. In some assemblies (such as transformer hood etc.) due to short length enclosures shunts are not provided. In such cases, phase enclosure should be separately earthed.	
6.7	Site welding of Aluminum is to be done as per BHEL standard practice. For aluminium welding work (IP duct joints being Splice plate type welding joint and /	

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 11 OF 21

	or peripheral back tube type welding joint) of IP busduct and enclosures of SP busduct (if required), the contractor is to supply Aluminum welding machine, filler, argon gas and welding electrodes. The rate of erection of IP Duct is inclusive the provision of welding accessories including consumables also.																										
6.8	Each section of the bus-assembly is to be cleaned thoroughly before erection. The insulators shall be properly cleaned with required chemical, Carbon tetra chloride and IP busduct conductor joints shall be properly cleaned with required chemical, Methyl Ethyl Ketone (the cleaning agent is to be supplied by the contractor on free of cost). Physical checking of busduct conductor, insulator and insulator support assembly, initial meggering, etc before placement of duct and contractor should keeps the proper record before placement.																										
6.9	Contractor should ensure special care during assembly, alignment of current transformers, epoxy insulators, seal of bushings inside the IP duct before final tightening of hardware. For hole matching of the above materials, it may be required to enlarge or minor shift of holes in the structure/ aluminium conductor of IP busduct. The contractor is to carry out the work without any extra cost.																										
6.10	TEST VOLTAGE																										
6.10.1	The test voltage shall be applied between each phase and in turn with the remaining phases earthed. The test voltage shall be alternating current on any frequency between 25 Hz to 100 Hz and approximately in sine-wave form. The rms value is given below.																										
6.10.2	For AC voltage, duration of test shall be one minute. The test with DC at a voltage not in excess of the values given below, for the corresponding rated voltage may be substituted for the ac test prescribed. The duration of the test shall be 15 minutes. The corresponding test voltage as indicated below shall be applied in turn between each phase conductor and its enclosure which shall be kept at ground potential. Remaining two phase conductors and and their enclosure shall be properly grounded. The test voltage shall be increased by the measuring instrument. The full test voltage shall then be maintained for the specified duration. Each bus including tap-off must withstand the above voltage.																										
6.10.3	<table><tr><th colspan="3">TABLE-1</th></tr><tr><th>RATED VOLTAGE/ HIGHEST SYSTEM VOLTAGE (KV)</th><th>TEST VOLTAGE (AC) (KV)</th><th>TEST VOLTAGE (DC) (KV)</th></tr><tr><td>3.6</td><td>16.8</td><td>16.8</td></tr><tr><td>7.2</td><td>21.6</td><td>21.6</td></tr><tr><td>12</td><td>28</td><td>28</td></tr><tr><td>17.5</td><td>30</td><td>30</td></tr><tr><td>24</td><td>44</td><td>44</td></tr><tr><td>36</td><td>60</td><td>60</td></tr></table>			TABLE-1			RATED VOLTAGE/ HIGHEST SYSTEM VOLTAGE (KV)	TEST VOLTAGE (AC) (KV)	TEST VOLTAGE (DC) (KV)	3.6	16.8	16.8	7.2	21.6	21.6	12	28	28	17.5	30	30	24	44	44	36	60	60
TABLE-1																											
RATED VOLTAGE/ HIGHEST SYSTEM VOLTAGE (KV)	TEST VOLTAGE (AC) (KV)	TEST VOLTAGE (DC) (KV)																									
3.6	16.8	16.8																									
7.2	21.6	21.6																									
12	28	28																									
17.5	30	30																									
24	44	44																									
36	60	60																									
6.11	MEGGER CHECKS Before the application of high voltage check the insulation value of each bus conductor by means of 2.5 KV megger. A value of exceeding 100 mega ohms is expected under normal conditions. However, during rain seasons, the value may fall down considerably and drying up by hot air may be required before the test Minimum acceptable value is around 20 mega ohms. After the application of high voltage, the insulation value is checked again.																										
6.12	Handling during erection: The busducts are in un-packed condition, therefore great care is necessary in handling. Moreover, Aluminium being softer material, great care must be taken in handling enclosures and entire aluminium items.																										
6.12.1	While lifting enclosure assemblies, manila ropes are passed round the busduct enclosure near the support channels.																										
6.12.2	All shipping steel clamps are tight and busbars do not slip out while handling, if the busbar is assembled in enclosure. While inserting and mounting the busbar in the enclosure care is taken that the bubar does not hit and damage the insulators.																										

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 12 OF 21

6.12.3	During erection of IP duct, it may be required to transport the materials from store in advance. During this period, the materials must not be laid directly on ground but stacked on wooden battens (if the wooden battens not available at site, contractor is to arrange from outside) to avoid contact with soil, water etc.
6.12.4	Items such as rubber components gaskets, insulation boards, busbar jointing compound, insulating compound and Belleville spring washer, etc should be protected against dirt, dust, grease and moisture, etc. Flexible connections made of thin Al or Cu require additional care to prevent physical damage. These connections should also be protected against dirt, dust, grease, moisture, etc.
6.12.5	Doors of cubicles must always be closed during storage to avoid ingress of vermins dirt, dust, grease and moisture etc.
6.12.6	Contractor should not stack busduct assly. packings one above the other, also avoid stacking of heavier items on busduct packings.
6.12.7	The CTs, VTs, LA's Capacitances, NG Transformers, Grounding resistors, insulators, bushings, moulded and rubber items and flexibles are normally supplied in loose condition along with the main materials. Contractor should keep this materials in indoor and well ventilated area.
6.12.8	The opening of the TG wall through bus-duct enters the TG hall from GT is to be sealed by wall frame assly. completely to avoid rain entry.
6.12.9	The supporting structural fabrication and erection for the bus-duct and grouting of the structures (after alignment and preferably after welding of duct) are also included in the scope of the contractor. The structures shall be assembled, aligned, grouted and are to be earthed through earth flat from nearest earth riser. Payment against this shall be made as per applicable item rate of price schedule.
6.12.10	Contractor will be given details of welding procedure for executing the job. Before starting the welding, the contractor's qualified welder will have to demonstrate his ability to BHEL engineers by making sample welds. The contractor will engage the welders only after written clearance from BHEL after assessing the quality of the sample weld subject to various tests as per procedure of BHEL. Test pieces for the testing welder performance will be supplied by contractor. Consumption of welding rod should be inclusive in the price and the rate remains same independent of splice plate joint or back tube joint between two IP ducts
6.12.11	All the steel members are hot-dip galvanized. Adequate care is to be taken during erection as mentioned elsewhere in the specification. Welding if required shall be touched up with red-oxide followed by cold galvanizing paint.
6.12.12	The shorting of busbars/ flexibles, opening of the same for OCC and SCC of the generator, and dry out of the generator through IP busduct is in the scope of contractor. Apart from this, any other checks/ test mandatory as per Indian/ International Standards/ IE rules is to be carried out, without any extra cost.
6.13	NEUTRAL GROUNDING TRANSFORMER
6.13.1	The neutral side busduct emerging from top chamber is terminated to neutral grounding transformer whose secondary is connected across a secondary load resistor, erection, alignment, grouting of the base frame of NGT (grouting materials being in the scope of contractor), Assembly. of space heaters with thermostat, fluorescent tubes, marshalling box, cabling of resistor and upto JB/ TB/ marshalling box associated for this item, assembly of CT, VT if any, space heaters, conduit wiring for illumination if any, internal wiring from equipment to JB, continuity test of the cables is included in this contract.
6.13.2	Lightning arrestor, surge capacitor (checking of connection to ground and line, continuity test, operation check of discharge counter, IR measurement by 5 KV megger), insulator NGT tests as per standard codes & practice.
6.13.3	Following tests of NGT are to be carried out.
6.13.3.1	Visual inspection.
6.13.3.2	Insulation resistance by 1 KV megger.
6.13.3.3	PI value by 5 KV megger.
6.13.3.4	Ratio test.
6.13.3.5	Magnetising current.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 13 OF 21

6.13.3.6	Contact resistance.
6.13.3.7	NGT resistance.
6.13.3.8	HV tests of HT cables.
6.13.3.9	Milli-volt drop test.
6.13.3.10	Limit switch healthiness.
6.13.3.11	Illumination circuit check, space heater connection.
6.13.4	The bolt tightness of copper/aluminium flexible at generator end (Top chamber) and generator transformer should preferably be of 36 N-Metre. However, BHEL will confirm specified value at the time of work and contact resistance is preferably 10 watt loss. So contractor should arrange torque wrench well in advance.
6.13.5	SPVT/LAVT CUBICLE Placement, Levelling, alignment, grouting of cubicle (grouting materials under the scope of contractor), assembly of voltage transformer, lightning arrestor, surge capacitance, HT fuses, space heaters with thermostats, fluorescent tubes, busbar adjustment for earthing, assy of marshalling box, internal wiring, fixing of luminaries, etc. Adjustment of draw out trolley of each VT cells with its locking system and secondary connections of each VT cells through terminals and fuses in the Marshalling box (fixed in one of the cubicle) to the external equipments.
6.13.6	Checking voltage ratios on all windings, primary & secondary injection tests for all cores, magnetizing current/ knee point voltage test, secondary winding resistance measurement, continuity test, polarity tests on each winding, insulation resistance test on each winding by megger to earth and between windings for all cores, tightness test of flexible with tap-off busduct, earthing contact during draw out of the PT module, fuse healthiness check, illumination circuit check, space heater connection.
6.14	HOT AIR BLOWER UNIT Placement, levelling, alignment, grouting of hot air unit (grouting materials under the scope of contractor), piping of blower line to and from IP busduct assembly (Transformer end & generator end), from top chamber, from NGT, etc with support, fittings, etc, painting (primar is to be supplied by the contractor and touch up paint being supplied by BHEL) of the pipes and pipe support, earthing of HAB unit, assembly of the instruments and its calibration, red oxide primar painting, final painting of the pipes, pipe support and accessories (only final paints being supplied by BHEL), heater box, commissioning of blower motor, compressor, commissioning of related panels (testing and setting of monitoring relays, wiring inside the panels being inclusive). The contractor is to ensure the air tightness of air line on using consumables teflon tapes, jutes, etc during pre-commissioning and commissioning checks.
6.15	The contractor should complete the hot air piping work at the entry and exit point at top chamber side as well as generator transformer side before HV test of the duct in order to avoid the constraint piping work with charging of duct.
6.16	SITE TEST The following tests, not limited to following, will be carried out by the contractor at site as per applicable standards, codes, manufacturer's instructions, drawing and documents and subject to the approval and to the satisfaction of BHEL engineers.
6.16.1	Construction inspection.
6.16.2	Welding joint check (Dye-Penetration and Radiography of each joint).
6.16.3	Conductor resistance test.
6.16.4	Bolt torque check (Tentatively tightness being 20 N-Metre for 10 mm bolt and 30 N-Metre for 12 mm bolt for LT board and for SP/ IP bus-duct the tightness being 36 N-Metre).
6.16.5	Inter cubicle and equipment wiring check.
6.16.6	Cleaning of bus-ducts.
6.16.7	IR test.
6.16.8	HV test (all CT secondaries being shorted and grounded before HV test).
6.16.9	Milli-volt drop test for bus bar joints (recommended 10 Watt loss per joint).
6.16.10	CURRENT TRANSFORMER

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 14 OF 21

	Primary & secondary injection tests for all cores, magnetizing current/ knee point voltage test, secondary winding resistance measurement, continuity test, polarity tests on each winding, Insulation resistance test on each winding by megger to earth and between windings for all cores.
6.16.11	POTENTIAL TRANSFORMERS Checking voltage ratios on all windings, primary & secondary injection tests for all cores, magnetizing current/ knee point voltage test, secondary winding resistance measurement, continuity test, polarity tests on each winding, Insulation resistance test on each winding by megger to earth and between windings for all cores.
6.16.12	Air tightness and water tightness test.
6.16.13	Hot air blowing operational tests.
6.16.14	Open circuit tests.
6.16.15	Dry-out of generator through generator bus-duct.
6.16.16	The list of above tests to be carried out by the contractor is not exhaustive and they may have to carry out separate tests, which may be necessary for satisfactory completion of the job at no extra cost.
7.0	24 KV INTEGRATED PHASE BUS-DUCT
7.1	Shall broadly be as like clause no. 8.0
8.0	11/ 3.3 KV SEGREGATED PHASE BUS-DUCT
8.1	11/ 3.3 KV bus-ducts are phase segregated housed in rectangular enclosures. The bus-duct is supported from the roof ceiling by tie rods and also by structural supports from ground. The following are the scope under 11/ 3.3 KV bus-duct.
8.2	The bus-duct is having suitable opening for bus-joints, transformer terminals, switch gear terminals etc. The inspection covers are having sealing arrangement with neoprene gasket. Bus duct shall be joined by flange to flange bolting. The gasket may be supplied in loose sheet. So contractor has to make the gasket with proper hole match without incurring any additional cost.
8.3	Seal off bushings, silica gel breathers, filtered drains are provided at different locations.
8.4	Space heaters/ hot air blowers have been provided to prevent moisture condensation inside the bus-duct. Before placement of duct, contractor should ensure the healthiness of the insulators, conductors and space heaters. For that, initial megger of the duct, continuity test of space heater is to carry out as a part of check list of busduct erection. If any space heater(s) is/ are required to replace even after placement of busduct, the contractor has to replace the same by new one (the new one being supplied by BHEL).
8.5	A separately run 50/ 6 mm GS (or of suitable dimensions) flat suitably clamped along the enclosures shall be used as the ground bus. All parts of the bus enclosures, supporting structures, equipment frames shall be connected to the ground bus.
8.6	All the steel members are hot-dip galvanized. Adequate care is to be taken during erection as mentioned in the tender. Welding if required shall be touched up with red-oxide followed by cold galvanizing paint.
8.7	In case of space heaters, GI conduiting, installation of JB's, cabling/ wiring from distribution board to JB of individual bus ducts is in the scope of contract. Cable tray/ conduiting work is also included in the scope of work. No separate payment shall be made against this.
8.8	The supporting structural erection for the bus-duct and grouting of the structures are also included in the scope of the contractor. The structures shall be assembled, aligned grouted and are to be earthed. Payment against the same shall be as per the applicable item rate of price schedule.
8.9	Following tests are to be carried out.
8.9.1	Visual inspection.
8.9.2	Insulation resistance.
8.9.3	HV tests.
8.9.4	Milli-volt drop test.
8.9.5	Water tightness test.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 15 OF 21

8.9.6	Any other test as specified by BHEL.
8.10	The list of above tests to be carried out by the contractor is not exhaustive and they may have to carry out separate tests, which may be necessary for satisfactory completion of the job at no extra cost.
9.0	ADDITIONAL WORK ON IP/ SP BUSDUCT DUE TO SITE MISMATCH RESULTING IN SITE EXTRA WORK
9.1	During erection of IP/ SP busduct, there may be discrepancies like mismatch of bus duct conductors joints in between two successive busduct enclosure, structure of IP duct wrt civil foundation and the foot plate of IP duct enclosure, erection mismatch of SPVT and NGT cubicle wrt civil foundation, intermediate flexible/ splice plate connection hole mismatch, termination of the duct/ rubber bellow/ hood at equipment end (like generator, seal of bushing, common chamber, generator transformer, unit aux transformer, SPVT, NGT cubicle), fixing of seal of bushing, hot air piping work, etc.
9.2	The contractor has to modify above mismatch work by cutting, grinding, and Aluminium/ arc welding as required, with required consumables.
9.3	For cutting and grinding work of IP duct enclosure and conductor, the contractor have to arrange special type of cutting machine jig saw tooth machine & blades, circular saw tooth machine & blades, hack saw blades (high speed tool steel) upto 300 mm as mentioned in the list of T&P. The rate of extra work is applicable as per BHEL normal rates on extra man-hour basis as detailed elsewhere in the tender, except Aluminium welding wok.
9.4	No separate rate will be entertained for above modification work except specific Aluminium welding work which may be payable per inch/ metre basis for welding of Aluminium conductor/ enclosure arising out of site-mismatch/ modification. The Aluminium welding width and thickness should match with the actual requirement during modification.
10.0	DRY TYPE LT TRANSFORMER
10.1	This is resin cast air cooled housed in enclosure, with all embedded temperature element and associated controllers, temperature indicator cum switch.
10.2	Leveling & alignment shall be under the scope of the contractor.
10.3	Removal, calibration, installation, testing, commissioning of temperature controller and switch shall be under the scope of the contractor for which the contractor shall not claim any extra cost separately.
10.4	Any loose component/ bus bars, neutral CTs are to be assembled by the contractor without any extra cost.
10.5	For fixing of wheels of the transformer, BHEL will provide the insert plate on the concrete or provide MS beam/channel on the floor/ ceiling. If the above arrangements are not provided by BHEL, the contractor has to erect the support by fixing the insert plate on anchoring to ceiling/ floor or to provide additional angle/ channel. The MS angle and channel will be provided by BHEL, but the anchoring arrangement (eg anchor bolts, nut, etc) are to be made by the contractor themselves. This type of arrangement is applicable to erection of support structure of LT busduct also and the quoted rates of contractors shall be inclusive of above work.
10.6	Following tests are to be carried out.
10.6.1	Visual inspection.
10.6.2	Insulation resistance.
10.6.3	Winding resistance with the help of micro-ohm meter.
10.6.4	Milli-volt drop test.
10.6.5	Water tightness test.
10.6.6	Phase sequence test.
10.6.7	No load voltage test.
10.6.8	Vector group and polarity.
10.6.9	Magnetising current check at 3 phase, 415 ,V 50 Hz power supply.
10.6.10	Magnetic balance test.
10.6.11	Continuity test.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 16 OF 21

10.6.12	Indication and alarm circuit alongwith door interlock switch.
10.6.13	Physical line connection as per phasing diagram
10.6.14	Neutral to earth connection effectively
10.6.15	Tests on RTDs, CT
10.6.16	Calibration temperature indicators, associated relays, switches
10.6.17	Any other test as specified by BHEL.
11.0	LT BUSDUCT
11.1	The busducts shall be supplied in parts and all the parts shall be assembled and the busbar connections shall be made including assembly of bellows at site. The insulators in bus ducts shall be inspected for any possible damage during transit and the defective ones shall be replaced. The insulators and busbar joints shall be properly cleaned with required chemical (the cleaning agent is to be supplied by the contractor on free of cost). The contact surface of bus bars, bus bar bolts and nuts shall be thoroughly cleaned with petrol and wiped. Petroleum jelly shall then be applied and bolted connections made. The busduct enclosures shall be checked for earth continuity and then earthed at required points. The busduct shall be duly supported between the switchgear and transformer end. The opening in the wall where the busduct enters the switchgear room shall be completely sealed to avoid rain water entry. Expansion joints, flexible connections etc supplied by the manufacturer of the busduct shall be properly connected.
11.2	The vertical structures shall be assembled, aligned and grouted and the horizontal structures shall be welded with inserts made available as per the layout drawings.
11.3	The entire run of the busduct from the switchgear end upto the transformer shall be aligned and erected as per the approved layout drawings and as per direction of BHEL site engineers to avoid any stress either on switchgear terminals or transformer terminals and the entire work is to be carried out only by competent and experienced manpower. Also, wherever bus duct is crossing through wall, it has to be erected with Bracket being supplied alongwith the bus duct.
11.4	All bolts in the joints will be tightened by torque wrench as per approved pressure and subject to approval of the BHEL site engineer. Anti oxidation compound will be used for bolted joints and will be supplied by the contractor free of cost.
11.5	Erection of supporting structures supplied along with the busduct is to be done by the contractor. The painting (eg primar and shaded paint) of the busduct support are in the scope of contract including supply of the paints and payment shall be made as per the applicable item rate of price schedule. For fixing of LT duct support, BHEL will provide the insert plate on the concrete or provide MS beam/ channel on the floor/ ceiling. If the above arrangements are not provided by BHEL, the contractor has to erect the support by fixing the insert plate on anchoring to ceiling/ floor or to provide additional angle/ channel. The MS angle and channel will be provided by BHEL, but the anchoring arrangement (eg anchor bolts, nut, etc) are to be made by the contractor themselves. This type of arrangement is applicable to installation of dry type transformer also and the quoted rates of contractors shall be inclusive of above work.
11.6	WELDING OF BUS-DUCT CROSS-SECTION The successful contractor will be given details of welding procedure for executing the job. The contractor shall submit the names of qualified welders before start of job, giving particulars of experience. Each welder shall have to demonstrate his ability to BHEL by making sample welds. The contractor will engage these welders only after written clearance from BHEL after assessing the quality of the sample weld subject to visual, mechanical or metallurgical test.
12.0	SCHEDULE OF SITE TESTS
12.1	Site testing shall be required for all electrical equipment installed by contractor to ensure proper installations, setting, connection and functioning in accordance with drawings, specification, manufacturer's recommendations and approved quality plan for installation, testing & commissioning.
12.2	Contractor shall take full responsibility for satisfactory testing, pre-commissioning,

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 17 OF 21

	commissioning and trial run of the connected equipment under overall guidance of BHEL and shall locate any cause of malfunction and shall make the necessary minor wiring changes or cable connections to obtain the intended operation. Testing shall also include any additional tests which the engineer deems necessary because of site conditions to determine that equipment, material and system meets requirement of the specification. Following are some of the major site tests. Checking shall be done on all circuits & modules and not as a typical checking in sample basis.
12.3	The contractor shall deploy experienced and specialised team of commissioning engineers for commissioning of the equipments/ systems under the scope of this contract. Contractor will also be responsible for mobilizing all T&P, etc as required for successful commissioning of the equipments/ systems under the scope of this contract and shall carry out all necessary pre-commissioning and commissioning checks/ tests. No separate amount will be paid for such deployment. The quoted rate shall be deemed to be inclusive of this cost.
12.4	Checks after erection: checks shall be carried out not limited to following details.
12.4.1	BUSDUCT
12.4.1.1	General arrangement of various sections as per drawing.
12.4.1.2	Busbar joints between various sections use of bimetal/ flexible joints as per drawings. Tightness of busbar joints and end terminations, tentatively tightness being 36 N-Metre and recommended 10 W loss per joint).
12.4.1.3	Tightness of nut connecting intersection flanges and covers.
12.4.1.4	Busduct supports as per drawings.
12.4.2	TRANSFORMER
12.4.2.1	Construction inspection.
12.4.2.2	Hydraulic test for radiator banks and air tightness test for air seal of conservator tank.
12.4.2.3	Drying out of transformer.
12.4.2.4	Oil test of transformer oil (as per IS:335 code)
12.4.2.5	Insulation resistance test.
12.4.2.6	Polarity, turn ratio and vector group test. Magnetising current test, magnetic balance test, tan-delta test for individual HV bushings, tan-delta test of transformer HV and LV side after oil filtration.
12.4.2.7	Polarity and turn ratio test of bushing CT's. Primary injection of CT's, secondary injection and loop test for CT's. Injection kits (3-ph & 1-ph) to be arranged by contractor.
12.4.2.8	Alarm and trip test for Buchholz relay, SP relay, oil level indicator.
12.4.2.9	Cooling fans and pumps operation test.
12.4.2.10	Calibration and testing of WTI & OTI.
12.4.2.11	On load tap changer operation test for ST, stability of differential and restricted earth fault test for GT, UAT and ST.
12.4.3	Special check for busduct
12.4.3.1	Cleanliness of busbar, supports etc.
12.4.3.2	Earth & insulation resistance
12.4.3.3	Measurement of contact resistance
12.4.3.4	HV test.
12.4.3.5	Busduct CT test: Primary injection of CT's, secondary injection and loop test for CT's. Injection kits (3-ph & 1-ph) to be arranged by contractor.
12.4.4	Commissioning checks
12.4.4.1	Power cable connection for tightness & phase sequence test
12.4.4.2	Energisation by closing I/C breaker
12.4.4.3	Control circuit operation of each starter module
12.4.4.4	Verification of timer settings
12.4.4.5	Verification of bus zone protection, bus transfer & auto re-closing.
12.4.4.6	Energisation of power circuit of each module & operating motors on no load
12.4.4.7	Checking operation from local push button station, switchgear and remote (CR),

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 18 OF 21

	with and without all interlocks.
12.4.5	All necessary site tests in respect to VFD system and DG sets and other system as per scope of work shall be carried out by contractor with in quoted rates
12.4.6	The list of above tests to be carried out by the contractor is not exhaustive and they may have to carry out separate tests which may be necessary for satisfactory completion of the job, at no extra cost.
13.0	DG SET
13.1	The contractor will have to do erection, testing, commissioning of DG set along with accoustic enclosure, fuel tank, fuel oil piping, exhaust piping, installation of generator terminal adaptor, current transformer, instrument, power jb, control jb, cleaning of radiator tube (cleaning agent to be supplied by bhel free of cost), replacement of engine oil and its filter, lub oil filter, radiator coolant (diesel for commissioning, engine oil & its filter, lub oil filter, coolant being supplied by bhel free of cost) cabling, above ground earthing including separate earth pit, if necessary, etc, complete.
13.2	The major components comprise of following.
13.2.1	Panel/ cable, comprising of following.
13.2.1.1	AMF panel: Approximate dimensions - 2.5m(W) x 2.5m(H) x 1.65m(D).
13.2.1.2	Auxiliary distribution board: Approximate dimensions – 3.1(W) x 0.7m(D) x 2.2m(H).
13.2.1.3	Cranking battery with stand: 24V, 360AH (12V, 180AH - 4 nos) – Total 3 sets.
13.2.1.4	Control supply battery with stand – 24V, 120AH (12V, 120 AH – 2 nos) – Total 3 sets in each of the above project.
13.2.1.5	Battery charger: 1.2m(W) x 0.6m(D) x 0.75m(H) –Total 3 sets in each of the above project.
13.2.1.6	Total weight of one set of all above is approximately 7 tonnes.
13.2.2	Approximate cable, applicable per DG set shall be as per following.
13.2.2.1	1C x 630 sqmm XLPE – 350 m.
13.2.2.2	4C x 2.5 sqmm - 150 m.
13.2.2.3	2C x 2.5 sqmm – 50 m.
13.2.2.4	2C x 4 sqmm – 100 m.
13.2.2.5	3C x 6 sqmm – 50 m.
13.2.2.6	3C x 4 sqmm – 25 m.
13.2.2.7	24C x 0.75 sqmm screened – 20 m.
13.2.2.8	12C x 1.5 sqmm – 100 m.
13.2.3	DG set mechanical equipment, comprising of following.
13.2.3.1	DG set dimension – 3 m(W) x 6.5 m(L) x 3.5 m(H) – Approximate weight - 20 tonnes per DG set.
13.2.3.2	Fuel tank – 2 nos per DG set – 1 m(W) x 1 m(D) x 1.15 m(H) – Approximate dry weight – 140 kg each – Total 6 nos for each of the above project.
13.2.3.3	Fuel piping- ½" and 1" – 1 lot (approximately 20 mtr).
13.2.3.4	Exhaust pipe 350 mm (with & without insulation) – 1 lot (60 mtr per DG set).
13.2.4	For above cabling of the DG set, the same is included in the scope of work. However, no separate payment shall be made for the same and the quoted rates shall be inclusive of same.
13.2.5	Common items 3 DG sets
13.2.5.1	Cable tray 600 mm/ 300 mm - 1 lot (approximately 150 mtr).
13.2.5.2	Earthing material – 1 lot (earth pit – 8 nos; GI strip/ Cu cable – 200 mtr).
13.2.5.3	Support structure for cable trays/ exhaust pipe) – Total 5 tonnes (per DG set).
13.2.5.4	Diesel – 3000 ltr for commissioning.
13.2.5.5	DG room acoustic material – Approximate 25 tonnes.
13.2.5.6	Fuel transfer pump - 2 nos.
13.2.6	The above shall be erected including cleaning of radiator tubes (cleaning agent to be supplied by BHEL), cleaning of fuel pipes &, lub oil pipe, replacement of engine oil & its filter, lub oil filter, super lub oil filter, radiator coolant before commissioning (Engine oil & its filter, lub oil filter, coolant will be supplied by BHEL), Acid pouring

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 19 OF 21

	to batteries, which are supplied with DG set package, 1st charging of the same by charger (Acid arrangement and charger to be provided by contractor). The plant charger cannot be utilized for battery charging, and the battery specification will be intimated by BHEL. Mounting of current transformers & assembly of busbars inside the terminal box adaptor, cabling, earthing, etc.
13.2.7	The pre-commissioning and commissioning of DG set is to carry out under the guidance of authorised dealers' service engineer. The charge for service engineer is provided by BHEL, but for assisting the commissioning work, the contractor has to supply T & Ps and consumables along with deployment of their engineer. Also, the arrangement of accommodation, transportation, etc. of the service engineers are the contractor's responsibility.
13.2.8	For testing, commissioning, trial run and handing over, procurement of diesel from BHEL's authorized petrol pump, handling, transportation and filling in various stages including arrangement of container is in the scope of contractor. BHEL will reimburse the cost of diesel on submission of the bill of petrol pump.
13.2.9	For fabrication and erection of supporting structure for the DG set, payment shall be made as per the applicable item rate of price schedule.
13.2.10	For cabling of the DG set, the same is included in the scope of work. However, no separate payment shall be made for the same and the quoted rates shall be inclusive of same.
13.2.3	PANEL Making base frame/ foundation frame/ support frame or structure as per drg/ procedures, painting of the supports, base channels, placement, levelling, alignment of the items/ panels, fixing its base of the items to foundation/ frames by fasteners, welding as per drg/ procedure mentioned in field quality plan and erection manuals. Red oxide primer and finishing paint as per BHEL approved shade and grade is to be applied on the structures/ foundation frames/ support frames in this contract.
13.2.4	All internal or external wiring, cabling, fixing of current transformers, voltage transformers, relays, meters, sensors (which are supplied with materials in loose condition), are to installed in the panels with appropriate fixing supports, etc as per the instruction of BHEL are covered in the scope of work in contractor .
13.2.5	Earthing of the panels by GI flat, flexible wire from the nearest earth pit/ point, external cabling, tray fixation is in the scope of the contract.
13.2.6	For testing of generator and DG set as well as panel, the testing protection & metering relays, numerical relays (Omicron relay kit if required, is to be provided by contractor), functional & stability tests, OCC & SCC, auto synchronization, auto close on main power failure (for DG only), interlock with other incomer breaker/ bus-coupler, sequential operation, Auto start and auto trip of pre-lub. oil pump (DG only), auto start & auto trip of DG set, interlock protection check, stability tests, current transformer (only testing of CT before mounting & testing with wires from panels), voltage transformers, sensors, RTDs, etc, are in the scope of the contractor.
14.0	GENERATOR CIRCUIT BREAKER(GCB)
14.1	GCB will be placed in between main run IPBD from Generator to GT inside Power House area. The contractor will have to do its erection, testing, commissioning along with fittings of loose items (if any) and tit-bit internal wiring if required. After erection and proper alignment, it will be welded/ bolted with main run IPBD enclosure. To connect the conductor, 26 nos. Flexibles are to be connected to each side of the unit. The tightening torque of fixation screw for connecting braids and the mounting procedure for elastic washers have to comply with busbar supplier instructions.
14.2	Making base frame/ foundation frame/ support frame or structure as per drg/ procedures, painting of the supports, base channels, placement, levelling, alignment, fixing its base of the items to foundation/ frames by fasteners, welding as per drg/ procedure mentioned in field quality plan and erection manuals.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 20 OF 21

14.3	All internal or external wiring, cabling, fixing of loose items are to be installed are covered in the scope of work in contractor. Above work will be carried out under supervision of BHEL Engineer/ dealer's service engineer.
14.4	The pre-commissioning and commissioning of GCB is to be carried out under the guidance of authorised dealers' service engineer. The charge for service engineer is provided by BHEL, but for assisting the commissioning work, the contractor has to supply T & Ps and consumables along with deployment of their engineer.
14.5	Earthing of the equipment by GI flat/Flexible from the earth pit/ point is under contractor scope.
15.0	MEASUREMENT OF QUANTITIES, RETURN OF SURPLUS AND WASTAGE
15.1	In addition to the technical requirements stipulated above, unless otherwise specified elsewhere in the tender, following technical requirements shall also be complied with by the contractor.
15.2	The contractor shall, upon receipt of execution drawings, plan, assess and ensure availability of materials for execution. A rolling stock shall be maintained throughout the tenure of the contract for the material with up-to date reporting on stock position, as well as drawing-wise/ area-wise material consumption for the supply package items (eg cable trays and accessories, tray support material, cables, cable termination and jointing kits, earthing materials, lugs, glands, etc) as well as items supplied by the contractor as part of the package. Any perceived shortages/ immediate requirements shall be brought to the notice of the BHEL so that such exigencies can be effected without affecting the work schedule. In no case shall work be allowed to suffer on account of shortages, while wastages/ surplus shall be minimised. While, allowable wastages are quantified in the specification.
15.3	For all payment purposes, measurement shall be made on the basis of the execution drawings/ physical measurements. Physical measurements shall be made by the contractor in the presence of BHEL.
15.4	Measurements for cable laying shall be made on the basis of length actually laid from lug to lug including that of loops provided and paid accordingly.
15.5	All surplus, scrap & serviceable cables cut out of the cables quantity, ie issued by BHEL/ customer to the contractor shall be returned by the contractor to BHEL/ customer's stores/ yard in good condition and as directed by BHEL.
15.6	All cables being returned to stores should carry an aluminium tag indicating the size & type of cable. Cable of less than 5m length will be termed as scrap. Cable of length 5m and above shall be termed as serviceable material and shall be returned size wise and category wise to BHEL/ customer's stores/yard.
15.7	Cable of serviceable lengths being returned to the stores in drums shall have their free ends sealed and the balance lengths on the drum(s) shall be noted and certified by BHEL. This shall be applicable only for the purpose of accounting the cables issued by BHEL/ customer for installation.
15.8	While carrying out material appropriation with contractor, all above points will be taken into account. All serviceable material returned by the contractor shall be deducted from the quantities issued for the respective sizes and categories and the balance quantity(ies) will be taken as the net quantity(ies) issued to the contractor. Material appropriation shall then be done and allowable scrap quantity calculated as per wastage allowance percentage specified in tender.
15.9	Any scrap/ wastage generated by the contractor in excess of allowable percentage shall be charged at the rates decided by BHEL/ customer, whose decision shall be final & binding on the contractor.
15.10	For steel material supplied by the contractor, all scrap shall be returned to BHEL/ customer's store/ yard with due accounting.
15.11	Contractor shall carefully plan the cutting schedule of each cable drum in consultation with BHEL such that wastages are minimised and any resultant short lengths can be used where appropriate route lengths are available.
15.12	The wastage allowances as permissible for various items are indicated below.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-1-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 21 OF 21

15.13	Cutting and wastage allowance shall be computed on the lengths of cables and weight of steel actually used, measured and accepted.	
15.14	All wastages shall be properly accounted for and stored as directed by engineer.	
15.15	Wastage allowance for different items shall be as per following.	
	Item	Wastage allowance
15.15.1	HT cables.	1%
15.15.2	LT cables above 70 mm ² .	1%
15.15.3	LT cables upto 70 mm ² .	2%
15.15.4	Control & special cable.	3%
15.15.5	Fire survival cable.	1%
15.15.6	Steel material (For cable trays/ tray support installation/ supplied by BHEL free of cost or the contractor).	1% by weight
16.0	AS BUILT DRAWING	
	The contractor has to prepare and submit final approved as-built drgs for all applicable erected equipments.	
17.0	FINAL PAINTING	
	Supply and application of Final painting including touch up painting is included in the scope of work of contractor. However, paint has to be as per BHEL's/ customer's specification and from approved vendor.	
	Nomenclature of erected item is to be done as per BHEL/ customer requirement.	
	The contractor shall provide identification/ marking of all the equipments erected/ commissioned by them, by engaging a professional gang with paints & consumables, as required under the IE rules/ customers practices, before handing over of the systems. Contractor's quoted rate/ price shall be inclusive of above activities..	
18.0	ELECTRICAL INSPECTOR'S APPROVAL AND POLLUTION CONTROL BOARD CLEARANCE	
	The contractor shall arrange to obtain clearance from the Electrical Inspectorate (CEA) and Pollution Control Board and arrange for the authorities' visit to site, as required. He will also arrange visit of electrical Inspector and obtain his approval for the installation work to be carried out under this scope of work and get the work done by the license holder electricians and supervisors as per local statutory requirement. The statutory fees only shall be reimbursed by BHEL. All other expenses in this regard shall be borne by the contractor.	
	On-line application for inspection and approval for energisation by the Electrical Inspector will be required to be done by the contractor.	

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 1 OF 15

CONTENTS

CLAUSE NO	DESCRIPTION
1.0	NAME OF WORK
2.0	BROAD SCOPE OF WORK
3.0	CABLE TRAY, EARTHING & LIGHTNING PROTECTION SYSTEM WORK
4.0	CABLING, PANELS ETC
5.0	HT SWITCHGEAR
6.0	LT SWITCHGEAR
7.0	ELECTRICALS PANEL/ DESK
8.0	PUSH BUTTON, STARTER, FUSE FOARD, ETC
9.0	GENERAL CHECKS ON SWITCHBOARD, TRANSFER PANEL & PUSH BUTTON STATION.
10.0	SCHEDULE OF SITE TESTS
11.0	COMMISSIONING
12.0	DELETED
13.0	MEASUREMENT OF QUANTITIES, RETURN OF SURPLUS AND WASTAGE
14.0	AS BUILT DRAWING
15.0	FINAL PAINTING
16.0	ELECTRICAL INSPECTOR'S APPROVAL AND POLLUTION CONTROL BOARD CLEARANCE
17.0	ANNEXURE V (Brief Write up on BHEL Cable Management System)

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 2 OF 15

This volume shall be construed as part of tender and shall be read along-with other volumes of tender. Unless otherwise specified, in case of any confusion of any clause/ provision of this volume or any conflict/ inconsistency of any clause/ provision of this volume with that of other volume, the same shall be brought out by the bidder in writing to BHEL for clarification or during pre-bid discussions, if applicable, failing which most stringent interpretation in favour of BHEL shall be adopted and the same shall be binding to the bidder. Unless otherwise specified, all terms & conditions shall be applicable for entire scope and for each part/ package of the tender.

CLAUSE NO	DESCRIPTION
1.0	NAME OF WORK
	ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND.
2.0	BROAD SCOPE OF WORK
2.1	The scope under this tender shall cover receipt of materials from site stores/ open yards/ unloading bay of power house, dragging to position (place of erection)/ loading in the truck/ trailer with the help of crane, handling at site/ dragging to place of erection (wherever applicable), watch & ward for safe custody of materials, inspection of materials, submission of inspection reports for any shortage/ damage or anything else called for, preservation/ conservation, fixing of supports (base channels), pre-assembly, supply of necessary consumables/ hardware, as specified in the tender, all erection of equipment & support structures, levelling, alignment, grouting, earthing of necessary equipment with nearest earthing point, testing, commissioning, calibration, trial operation, assistance to PG test, handing over to the entire satisfaction of BHEL/ customer, reconciliation of materials, returning of unused materials, scrap materials, packing cases/ wooden boxes/ cable drums, etc to BHEL's/ customer's stores/ yards, etc of various equipments/ items/ materials covered under this tender.
2.2	It is not the intent to specify completely here in all details of handling, erection, testing, commissioning of the equipment. Omission of specific reference to any method, or test & equipment or material necessary for the proper and efficient services towards installation of the plant shall not relieve the contractor of the responsibility of providing such facilities/ services to complete the project or portion of the project awarded to them. The quoted rates shall deem to be inclusive of all such contingencies. Only exclusions specifically mentioned in this tender shall be entertained in all matters.
2.3	If any damage or discrepancy is found, the contractor should inform BHEL immediately and make a joint inspection of materials, submission of inspection reports for any shortage/ damage or anything else called for preservation/ conservation / insurance claim. If any theft occurs when the materials are in the contractor' custody, the contractor have to lodge FIR to the nearest police station.
2.4	The work shall conform to dimensions and tolerances given in various drawing & documents that will be provided during erection. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at their cost, failing which, job will be carried out by BHEL by engaging other agencies/ departmentally and recoveries will be affected from contractor's bills towards expenditure incurred including BHEL's usual overhead charges.
2.5	The contractor should deploy fire extinguishers of required number in their office and work areas on daily basis. During oil filling as well as during filtration of transformers, the round the clock watch out service with requisite fire extinguisher are mandatory.
2.6	The contractor shall take the full responsibility of testing, pre-commissioning and

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 3 OF 15

	commissioning of the equipment being installed by them under overall supervision of BHEL. It shall be the responsibility of the contractor to arrange all the testing/ measuring instruments with the calibration certificates and complete all the testing, pre-commissioning, commissioning activities for the particular equipment as per relevant standards, code of practice, manufacturer's instructions, applicable quality plans for installation, testing & commissioning and BHEL norms. All these will be witnessed by BHEL/ customer or both and reports signed jointly. The contractor shall submit a check list to BHEL prior to taking up testing, commissioning activities which shall be approved by BHEL and the activities shall be carried out in accordance with the check list.
2.7	The contractor shall provide necessary supervision, skilled/ semi-skilled workmen, competent experienced erection and commissioning engineers to carry out the tests independently, electrical license holder supervisors & electricians, erection tools & tackles, consumable, testing, measuring & commissioning instruments/ equipment of required range, administrative personnel, transport vehicles, security guards for timely execution of the contract.
2.8	If situation so demands that in order to achieve project schedule/ milestone, various activities are to be carried out at a time and the contractor should be able to provide necessary manpower, tools, tackles, equipment testing & measuring instruments for simultaneous working round the clock, at no extra cost to BHEL.
2.9	While testing/ commissioning, if the system involving equipment erected & commissioned by contractor is observed to be not functioning properly and the contractor considers it to be arising due to defects in the purchaser's equipment/ system, it shall be the responsibility of the contractor to check, establish and demonstrate that either the defect exists in the purchaser's equipment/ system terminals or there is no defect in the equipment/ system installed by the contractor inclusive of interconnecting cabling up to the terminals of purchaser's equipment. If the defect is established to be in purchaser's equipment or in interconnecting cables not erected by the contractor, the same shall be rectified by the purchaser.
2.10	Manufacturer's drawings must be studied before handling, erection, testing and commissioning of equipments. Dragging of the equipment should be avoided and use of a crane and trailer/ truck should be made for the handling purpose while transporting to various site of erection from the site stores. While lifting panels in packed condition, utmost care should be taken to avoid any damage to protective and metering equipments. The panels should preferably be kept inside the packing box till the foundations are made ready. However, once the material is issued to the contractor for handling/ erection from BHEL custody, the preservation/ conservation will be completely in the scope of the contractor.
2.11	Deleted.
2.12	It will be the responsibility of contractor to re-serve/ preserve the materials equipment, provide watch & ward after issued from BHEL stores. Contractor will do the routine maintenance of the equipment or will attend minor repair/ trouble shooting jobs during handling, erection, commissioning till taken over by customer for commercial operation of the plant. Contractor have to follow the Field Quality Plan, from erection of the equipment to its commissioning. In each RA bill, the contractor have to submit the reconciliation statement, measurement sheet, protocols, etc as supporting documents of the bill. Contractor will have to submit test reports protocols, log-sheets as per Field Quality Plan at different stages of commissioning and trial operation in formats prescribed by BHEL.
2.13	Civil works including drilling, chipping, enlarging cut-outs, foundation pockets, cable cut-outs, grouting, etc, wherever required will be carried out by contractor at no extra cost. Contractor will have to erect temporary scaffolding (scaffolding materials being arranged by contractor) for erection and provide suitable platform at places (as desired by BHEL) for the purpose of inspection/ testing.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 4 OF 15

2.14	During welding of supports with existing embedded insert plates, the contractor have to chip on the wall for the insert plate. Also before grouting of equipment, the contractor have to chip the concrete to get the iron materials for welding of the equipment support. However, in any case, the insert plates are not found in position, the contractor may fix the insert plate by using anchor fastener (the plate being supplied by BHEL and the anchor fastener being in the scope of the contractor). The size of the fastener bolts may be communicated by BHEL at the time of requirement. If insert plate is not available, same will be fabricated by the contractor (plate will be supplied by BHEL). Payment for fabrication of insert plate and installation of anchor fasteners will be made as per applicable item rate.
2.15	The panels may be supplied in detachable units housed in wooden case which will be opened properly at the place of erection and will be placed on supports (base channels) levelled, aligned and subsequently fixed by welding/ bolting as per drawing. The complete assembly, erection and connection of inter-panel wiring, bus-bars between adjacent panels, mounting of loose supplied component as per drawing will be the responsibility of contractor. If any additional wiring or modification of wiring is required, the contractor has to carry out without incurring any extra cost.
2.16	If necessary, dismantling, mounting, testing, etc of field instruments/ devices, is under the scope of work.
2.17	During any stage of execution, if any discrepancies/damage is found in any equipment/item, the contractor have to report the same immediately to BHEL engineer. BHEL will arrange for repair of the same at the manufacturers' workshop or other authorized repairing agency, but the contractor has to give all sorts of support, eg loading of the materials, exit of the same through plant's materials gate with duly entry by security, transportation arrangement from erection site/ stores to the transporters' loading point/ go-down located at project site/ nearby area and hand over of the same safely.
2.18	At site, testing/ calibration of all the meters/ relays/ thermal O/L relays, OTI, WTI including CT/ PT, etc are included in the scope, disconnection of components as required shall be done without extra cost. For calibration of OTI and WTI, the contractor has to arrange oil bath and calibrated standard thermometer.
2.19	Proper records for glands & lugs if supplied loose with the equipments. However, if the same are assembled with the equipments, the contractor shall dismantle the same before erection and will be handed over for external & internal cabling or maintained by the contractor for reconciliation.
2.20	All the requirements of the IE rules are to be strictly fulfilled and to be completed with providing required consumables without any extra cost. All the test records & joint protocols are to be furnished to BHEL in three sets. With each RA bill, the related protocols, FQP dully filled in is to be submitted by contractor along with reconciliation statement upto that period of billing.
2.21	In each protocols, the joint signature of BHEL as well as customeris to be considered for further valuation of the work. The signature of BHEL only will not be sufficient for billing purpose.
3.0	CABLE TRAY, CABLING, EARTHING & LIGHTNING PROTECTION SYSTEM WORK
3.1	In respect of scope of installation work for cabling, cable tray work, earthing & lightning protection system work, this volume is to be read in conjunction with other volumes of this tender for cabling, earthing & lightning protection systems.
3.2	The cable tray work (ladder or perforated type) as per price schedule includes associated accessories, like horizontal bend, vertical bend, tee, cross, reducer (LHS), reducer (RHS). Total quantity of associated items erected for respective tray size shall be measured upon and paid as per relevant item rate. Bidder's quoted rates against cable tray shall be in consideration to this.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 5 OF 15

3.3	Fabrication of irregular cable tray bends at site, if required, is included in the scope of the work. Sketches of various types of such bends are available in the tender. Material (cable tray materials) required for this purpose will be issued by BHEL free of cost.
3.4	Fabrication of cable tray, type A, B, C and D, as per relevant sketch of the tender, or similar bends are considered part of the normal tray erection work and shall be done by the contractor within the tray erection rates. Rate for fabrication shall be deemed to be included in the rate for erection of cable tray of price schedule. No separate payment shall be made for such fabrication.
3.5	Fabrication of cable tray type, E, F and G, as per relevant sketch of the tender, are payable separately as per applicable item of price schedule.
4.0	CABLING, PANELS ETC
4.1	BHEL has already implemented 'Cable Management System' software, brief description is given in the Annexure V. Contractor has to follow the same.
4.2	Any minor modification and rectification required for complete installation, testing and commissioning, and satisfactory trial operation and PG testing will be carried by the contractor at no extra cost.
4.3	Pre-commissioning, checks for correctness of erection to the entire satisfaction of the BHEL is included in the scope of work.
4.4	Independent testing and commissioning of equipments erected by competent commissioning engineers to the entire satisfaction of BHEL is included in the scope of work.
4.5	Successful trial operation and PG testing till handing over of the equipments is included in the scope of work.
4.6	If necessary, dismantling of protective relays, switches, fuses, CTs, meters, etc and making minor changes in wiring and remounting of such components or mounting of such items supplied loose and connections thereof will be carried out by the contractor at no extra cost.
4.7	Any work beyond the scope of work, viz major rectification due to manufacturing defect/ modification arising out of design changes or damages in transit and reworks on works already completed satisfactorily for reasons not attributable to the contractor, etc will be treated as "Extra work" and the contractor will have to carry out such works at the extra man-hour rate as indicated in this tender.
4.8	Proper records for glands and lugs, if supplied loose & handed over for external & internal cabling will be maintained by the contractor for material reconciliation.
4.9	The contractor shall set each piece of equipment on its foundation or supporting structures. The contractor shall assemble equipment as required. All equipment to be installed with parallel, horizontal and vertical alignment by skilled craftsman.
4.10	Equipment furnished with finished coat of paint shall be touched up by contractor, so as to attain required dry film thickness, if their surface is spoilt during handling.
4.11	For commissioning of system covering mechanical, C&I and electrical, while BHEL engineer shall coordinate, necessary assistance required for labour, supervisor, engineer, etc shall be arranged by the contractor for the scope of this tender at no extra cost.
4.12	The post-commissioning activities will include the trial run and PG testing of all the connected equipment/ system which will continue upto the handing over of the unit and performance guarantee test. The contractor shall arrange for sufficient numbers of manpower along with engineers and supervisors for carrying out the activities under their own responsibility in coordination with other agencies.
4.13	In case, any rework is required because of faulty erection of contractor, which is noticed during commissioning, the same has to be rectified by the contractor at their cost.
4.14	The bill of material for the above equipment/ material under the scope is given in the relevant annexure.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 6 OF 15

4.15	The activities in specific but not limited to following for HT & LT switchgear, electrical control panels, etc as detailed in the tender and shall also be under the scope of the contractor.
4.16	The boards will be delivered in sections. Necessary interconnection of busbar, bolting of panels, inter-panel wiring, etc will have to be done by the contractor.
4.17	Normally the panels shall be complete with instrument mounting and wiring. However, if necessary, dismantling of existing components, making modifications in wiring to suit operating conditions, mounting and rewiring of new components will be carried out by the contractor at no extra cost. Mounting of any instruments, meters, relays, etc, if supplied loose for safety in transit, are included in the scope of work, which will have to be carried out by the contractor at no extra cost.
4.18	Interposing relays will be generally supplied fitted in the switchboard before dispatch. However, if in some cases, the same is supplied loose which will be required to be installed in various switchboards at site as per instruction of BHEL site engineers, it will be done by the contractor at no extra cost.
4.19	Commissioning of HT & LT switchgear and panels will include operation of all connected components like motors, valves, dampers and finally commissioning of TG sets upto PG test of the unit(s). The contractors will have to keep their people round the clock, if necessary, during milestone activities, viz boiler light up, EDTA cleaning, steam blowing, synchronisation, full loading, trial run, and promptly take action for any repair, check and rectification, etc as required in the equipment erected and/ or commissioned by them.
4.20	Where assemblies are supplied in more than one section, contractor will make all necessary mechanical & electrical connections including connection between the buses. The contractors shall also do necessary adjustments/ alignment necessary for proper operation of circuit breakers and their operating mechanisms. All insulators and bushings shall be protected against possible damage due to negligence or carelessness of contractor during installation. Insulators/ bushings chipped/ cracked due to negligence/ carelessness of the contractor shall be replaced by the contractor at their own cost.
4.21	Base channels shall be normally supplied with switchboard/ panels. These will have to be aligned, levelled and grouted in position as per approved drawings. Wherever the base channels are not supplied, structural materials will be supplied by BHEL free of cost and the same will be fabricated and painted at site. Payment shall be made as per applicable item rate. Opening will be left on the floor during the time of casting where the base channels will have to be grouted. All minor concrete chipping and finishing works will be included in the scope of job.
4.22	Fabrication, painting and erection of cross channel, may be required to be done at site. Materials will be supplied by BHEL free of cost as per tender and the same will be fabricated & painted at site. Payment shall be made as per applicable item rate.
4.23	Fixing of support (base channel), alignment, leveling of supports and equipments, erections, testing and commissioning including earthing, checking of wiring, terminating protective relays, instruments, switches, etc of connecting internal wiring, testing of current transformers, potential transformers and all other internal components mounted in these equipments shall be under the scope of contractor.
4.24	The panels may be supplied in detachable unit housed in wooden case which will be opened properly at the place of erection and will be placed on supports (base channels) levelled, aligned and complete assembly, erection and connections of inter-panel wiring and bus-bars between two adjacent despatchable units as per drawing.
4.25	Subject to requirement, the contractor shall fabricate and erect canopy for

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 7 OF 15

	various equipment erected outside. Necessary structural materials, GI sheets, etc will be provided by BHEL free of cost.
4.26	The contractor has to arrange for necessary cleaning and suitable disposal of cable waste and working debris arising out of job executed by them, at designated location, on a daily basis. Failure to upkeep cleanliness and housekeeping will attract penalty as per relevant clause of tender.
4.27	Unless otherwise specified elsewhere in tender, for cable of size 2.5 sqmm and below, cable termination rate (including shortings, etc) shall be inclusive of supply of lugs.
5.0	HT SWITCHGEAR
5.1	The contractor will properly level and align foundation channels with panels and foundation channel will be space welded with embedment and switchgear panels will be bolted. After completion of this work, clearance will be given for floor finishing. The contractor shall co-ordinate with BHEL to achieve the desired technical requirement to ensure free movement of truck at all times and prevent damage to the finished floor during truck movement.
5.2	If necessary, dismantling of protective relay, switch, fuse, CT and making minor changes in wiring and remounting of such components or mounting of such items supplied loose and connections will be carried out by contractor at no extra cost.
5.3	Bus-bars are supplied loose for inter connecting two despatchable units. These are to be connected at site by the contractor after erection of panels by bolted joints by applying anti-oxidation Densal compound and tightening of bolts to be checked by torque wrench subject to the approval and entire satisfaction of BHEL. The contractor shall not claim any extra cost separately as this would be deemed to have been included in the scope of installation of each circuit breaker/ panel.
5.4	HT SWITCHGEAR, MAINLY CONSISTS OF BUT NOT NECESSARILY LIMITED TO THE FOLLOWING.
5.4.1	Main breaker chamber.
5.4.2	Instrument and relay chamber.
5.4.3	Busbar chamber.
5.4.4	CT chamber.
5.4.5	Moving portion.
5.4.6	Secondary plug and socket arrangement.
5.5	Cable glands whenever supplied with equipments will be handed over to the contractor for glanding of cable at the time of work and contractor to maintain proper record and hand over to BHEL for material reconciliation.
5.6	Removable undrilled gland plate with gaskets may be provided in each panel to facilitate for cable glanding and termination of external cables in the scope of the contractor. If removal gland plates are not provided, making holes on the fixed plate by drilling & glanding, tapping is also under the scope of the contractor for which contractor shall not claim any extra cost.
5.7	Double compression tinned brass cable glands and tinned copper lugs of 2.5 sqmm wherever supplied loose for each panel will be handed over to the cabling contractor at the time of work and a proper record will be maintained by the contractor for material reconciliation.
5.8	For making holes on removable gland plate or fixed gland plate the contractor shall use suitable drilling machine. No gas cutting will be allowed.
6.0	LT SWITCHGEAR
6.1	The base channels shall be normally supplied with the switchboards. These will have to be aligned, levelled and grouted in position as per approved drawings. Wherever the base channels are not supplied the same will be fabricated and painted at site. Structural steel will be issued by BHEL free of cost, payment shall be released as per applicable item rate.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 8 OF 15

	Openings will be left on the floor during the time of casting, where the base channel will have to be grouted. All necessary concrete chipping and finishing works will be included in the scope of the job. Making base frame/ foundation frames/ support frame or structure as per drg/ procedures, painting of the supports, base channels, placement, levelling, alignment of the items/ panels, fixing its base of the items to foundation/ frames by fasteners, welding as per drg/ procedure mentioned in field quality plan and erection manuals. Red oxide primer and finishing paint as per BHEL approved shade and grade is to be applied on the structures/ foundation frames/ support frames in this contract.
6.2	Fixing of supports (base channels), alignment, levelling of supports & equipments, erection, testing and commissioning including earthing, checking of wiring, terminating protective relay, instrument, switch, etc of connecting internal wiring, testing of current transformer, potential transformer and other internal components, mounted in the equipments, shall be under the scope of contractor.
6.3	LT SWITCHBOARD WILL INVOLVE, NOT LIMITED TO FOLLOWING MODULE.
6.3.1	Incoming & buscoupling module containing air circuit breakers, electrically operated drawout type duly protected by overload, short circuit and earth fault relays and having auto transfer facility of breakers. All relays involved in each incoming circuits to be checked for calibration. Indicating instruments like power factor meter, voltmeter, ammeter, watt/ kilowatt hour meter, wherever involved will also to be checked. CTs & PTs shall also to be checked.
6.3.2	Outgoing air circuit breakers, which will have similar kind of protection as above will have to be checked.
6.3.3	Direct on line/ reversible DOL starter circuits will involved switch with fuse, have power contactors, overload Relays and auxiliary contactors. Wherever higher KW rating modules are involved, air circuit breakers incorporating motor protection relays will be involved.
6.3.4	Auxiliary switch fuse feeders, containing air break switch & fuses.
6.3.5	Bus VT modules.
6.3.6	Control transformer feeders.
6.3.7	PLC controls wherever involved will have to be checked
6.4	Removable undrilled gland plates with gaskets may be provided in each panel to facilitate for cable glanding and termination of external cables in the scope of the contractor. If removal gland plates are not provided, making holes on the fixed plate by drilling and glanding, tapping is also under the scope of the contractor for which contractor shall not claim any extra cost.
6.5	Double compression tinned brass cable gland and tined copper lug of 2.5 sqmm, wherever supplied loose for each panels will be handed over to the contractor at the time of work and a proper record will be maintained by the contractor for material reconciliation.
6.6	For making holes on removable gland plate or fixed gland plate the contractor shall use suitable drilling machine. No gas cutting will be allowed.
7.0	ELECTRICALS PANEL/ DESK
7.1	The base channels may be simplex or duplex type.
7.2	The base channels shall be normally supplied with the switchboards. These will have to be aligned, leveled and grouted in position as per approved drawings. Wherever the base channels are not supplied, the same will be fabricated and painted at site as stated elsewhere in tender. Structural steel will be issued by BHEL free of cost, payment shall be released as per applicable item rate. Opening will be left on floor during the time of casting where the base channels will have to be grouted. All necessary concrete chipping and finishing works will be included in the scope of the job. Making base frame/ foundation frames/ support frame or structure as per drg/ procedures, painting of the supports, base channels, placement, levelling, alignment of the items/ panels, fixing its base of

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 9 OF 15

	the items to foundation/ frames by fasteners, welding as per drg/ procedure mentioned in field quality plan and erection manuals. Red oxide primer and finishing paint as per BHEL approved shade and grade is to be applied on the structures/ foundation frames/ support frames in this contract.
7.3	Fixing of supports (base channels), alignment, leveling of support & equipment, erection, testing and commissioning including earthing, checking of wiring, terminating protective relay, instrument, switch, etc of connecting internal wiring, testing of current transformer, potential transformer & other internal components mounted in the above equipments shall be under scope of the contractor.
7.4	Removable undrilled gland plates with gaskets are provided in each panel to facilitate for cable glanding and termination of external cables in the scope of the contractor. If removable gland plates are not provided, making holes on the fixed plate by drilling and glanding, tapping is also under the scope of the contractor for which contractor shall not claim any extra cost.
7.5	Double compression tinned brass cable gland and tinned copper lug of 2.5 sqmm wherever supplied loose for each panel will be handed over to the contractor at the time of work and a proper record will be maintained by the contractor for material reconciliation.
7.6	For making holes on removable gland plate or fixed gland plate the contractor shall use suitable drilling machine. No gas cutting will be allowed.
7.7	Salient particulars of equipments/ instruments/ components provided in panels are briefly but not necessarily limited to mentioned here below.
7.7.1	PT.
7.7.2	Timer.
7.7.3	Aux. plug relays of various types and application.
7.7.4	Check synchronising relay.
7.7.5	Facia window.
7.7.6	Counter.
7.7.7	Fuse.
7.7.8	Selector switch.
7.7.9	Space heater with switch.
7.7.10	Printed circuit board
7.7.11	Push button.
7.7.12	Lamp for interior illumination.
7.7.13	Door switch.
7.7.14	Socket with switch.
7.7.15	Bus wires terminal blocks, etc.
7.7.16	The swing type synchronizing panel
7.7.17	Voltmeter.
7.7.18	Ammeter.
7.7.19	Frequency meter.
7.7.20	Synchroscope.
7.7.21	Synchroning lamps.
7.7.22	Selector switch for synch meters.
7.7.23	Alarm facia.
7.7.24	Dynamo meter.
7.7.25	Samaphore indicator.
7.7.26	Thermostat for heater.
7.7.27	Alarm chasis, with relay.
7.7.28	Bell alarm.
7.7.29	Resistor.
7.7.30	KWH meter.
7.7.31	Test-link.
7.8	The contractor will have to co-ordinate in a proper manner during commissioning of system with other agencies and will ensure successful commissioning of the system in a sequential way without any hazard and interruption in work under

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 10 OF 15

	the direction and subject to the approval of BHEL.
8.0	PUSH BUTTON, STARTER, FUSE BOARD, ETC
8.1	The items shall require to be mounted on wall/ column/ floor.
8.2	For mounting of above items the required structural steel, like ISMC, ISA and flat shall be supplied by BHEL free of cost as per tender. However, rowl plug and necessary fixing hard-wares is to be supplied by the contractor at their cost and will be deemed to be included in the rate of respective item.
8.3	Checking of components, removal & reinstallation of internal component and re-wiring, testing and commissioning shall be under the scope of the contractor.
8.4	CHECK
8.4.1	General arrangement of fixing.
8.4.2	Tightness of nuts & bolt.
8.4.3	Tightness of door closing.
8.4.4	Mechanical operation of push button switch.
9.0	GENERAL CHECKS ON SWITCHBOARD, TRANSFER PANEL & PUSH BUTTON STATION.
9.1	Check of control wiring.
9.2	General check for cleanliness inside the switch board.
9.3	Operation of mechanical parts of relays, switches, push buttons, etc.
9.4	IR check of power & control circuit.
9.5	Verification of switch development.
9.6	Alignment of contacts with vertical busbars and contact pressure (Contact resistance measurement). The measurement of contact resistance at the busbar joint is to be carried out by micro-ohm meter (the provision being in the scope of contractor, the specification of which is given below). Ductor, low resistance ohm meter, make – Meggar, model - D007, range (adjustable), (1) Range 0-100 micro ohm, 10A; (2) Range 0-1 milliohm, 10A; (3) Range 0-10 milliohm, 1A; (4) Range 0-100 milliohm, 1A; (5) Range 0-1 ohm, 1A; (6) Range 0-3 ohm, 0.1A, Accuracy: 1% of full scale in all ranges; Battery : 20AH rechargeable, Input Supply : 240V, 50Hz.
9.7	Verification of components like fuse, links and their ratings, etc.
9.8	Connection to earthing point. Earthing of the panels by GI flat, flexible wire from the nearest earth pit/ point, External cabling, tray fixation is in the scope of the contract.
10.0	SCHEDULE OF SITE TESTS
10.1	Site testing shall be required for all electrical equipment installed by contractor to ensure proper installation, setting, connection and functioning in accordance with drawing, specification, manufacturer's recommendation and approved quality plan for installation, testing & commissioning.
10.2	The following section will give a general guideline of tests, but not limited, to be carried out by the contractor at site as per applicable standards, codes, manufacturer's instructions, drawing and documents and subject to the approval and to the satisfaction of BHEL engineers.
10.3	Contractor shall take full responsibility for satisfactory testing, pre-commissioning, commissioning and trial run of the connected equipment under overall guidance of BHEL and shall locate any cause of malfunction and shall make necessary minor wiring changes or cable connections to obtain intended operation. Testing shall also include any additional tests which BHEL engineer feels necessary because of site condition to ensure that equipment, material & system meets requirement of specification. The following are some of the major site tests. Checking shall be done on all circuits & modules and not as a typical checking in sample basis.
10.4	For commissioning of relays of various panels, as required, services of expert commissioning engineer/ OEM (Original equipment manufacturer) to be arranged by contractor at their own cost.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 11 OF 15

10.5	For commissioning of any other system/ equipment being issued by BHEL, if required, services of OEM (Original Equipment Manufacturer) shall be arranged by BHEL free of cost.
10.6	Deleted.
10.7	GENERAL CHECKS AFTER ERECTION
10.7.1	SWITCHBOARD/ PANEL.
10.7.1.1	Arrangement of various shipping sections as per GA drawing.
10.7.1.2	Front, rear side and top clearance.
10.7.1.3	Proper positioning of ends of main busbars in adjoining section.
10.7.1.4	Tightness of busbars joints between adjoining sections and its shrouding.
10.7.1.5	Alignment of panel.
10.7.1.6	Welding of base channel to embedded plates/ bolting with foundation bolt.
10.7.1.7	Adequacy of supporting channels 3rd its arrangement.
10.7.1.8	Free closing and opening of door, tight closing of door.
10.7.1.9	Free movement of drawout modules and proper alignment of fixed and moving contacts, including terminals.
10.7.2	Construction inspection.
10.7.3	Welding joint check (Dye-penetration and radiography of each joint).
10.7.4	Conductor resistance test.
10.7.5	Bolt torque check (Tentatively tightness being 20 N-Metre for 10 mm bolt and 30 N-Metre for 12 mm bolt for LT board and for SP/ IP bus-duct the tightness being 36 N-Metre).
10.7.6	Inter cubicle and equipment wiring check.
10.7.7	Cleaning of bus-ducts.
10.7.8	IR test.
10.7.9	HV test (all CT secondaries being shorted and grounded before HV test).
10.7.10	Milli-volt drop test for bus bar joints (recommended 10 Watt loss per joint).
10.7.11	CURRENT TRANSFORMER Primary & secondary injection tests for all cores, magnetizing current/ knee point voltage test, secondary winding resistance measurement, continuity test, polarity tests on each winding, Insulation resistance test on each winding by megger to earth and between windings for all cores.
10.7.12	POTENTIAL TRANSFORMERS Checking voltage ratios on all windings, primary & secondary injection tests for all cores, magnetizing current/ knee point voltage test, secondary winding resistance measurement, continuity test, polarity tests on each winding, Insulation resistance test on each winding by megger to earth and between windings for all cores.
10.7.13	Air tightness and water tightness test.
10.7.14	Hot air blowing operational tests.
10.7.15	Open circuit tests.
10.7.16	Dry-out of generator through generator bus-duct.
10.7.17	The list of above tests to be carried out by the contractor is not exhaustive and they may have to carry out separate tests, which may be necessary for satisfactory completion of the job at no extra cost.
10.8	CHECK FOR CIRCUIT BREAKER PANEL
10.8.1	Operation of shutters
10.8.2	Manual closing/ opening of CB, measurement of contract resistance.
10.8.3	Operation of spring charging motor & limit switches.
10.8.4	Proper closing of CB
10.8.5	Trip free & anti pumping operation
10.8.6	Verification of minimum pick up voltage of closing & tripping coil.
10.8.7	Wiring of relays.
10.8.8	Functional test of protection relays by secondary injection, verification of settings & characteristics.
10.8.9	IR & earth resistance check for CTs & VTs.

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 12 OF 15

10.8.10	Polarity & ratio check.
10.8.11	Magnetising characteristics check for CTs
10.8.12	Operation of indication/ alarm operation of auxiliary contractors, timers etc.
10.8.13	Primary injection test to verify correctness of releases
10.8.14	Operation of panel space heaters & thermostats.
10.9	PRIMARY/ SECONDARY INJECTION TEST FOR BIMETAL/ OTHER RELAYS
10.9.1	Verification of operation of control circuit in selected starter modules of different categories.
10.9.2	Operation of panel space heater/ thermostat.
10.10	SPECIAL CHECK FOR BUSDUCT
10.10.1	Cleanliness of busbar, supports etc.
10.10.2	Earth & insulation resistance
10.10.3	Measurement of contact resistance
10.10.4	HV test.
10.11	COMMISSIONING CHECKS
10.11.1	Power cable connection for tightness & phase sequence test.
10.11.2	Energisation by closing incoming breaker.
10.11.3	Control circuit operation of each starter module.
10.11.4	Verification of timer setting.
10.11.5	Verification of bus transfer & auto re-closing.
10.11.5	Energisation of power circuit of each module & operating motors on no load.
10.11.6	Checking operation from local push button station, switchgear and remote (CR), with and without all interlocks.
10.12	The list of above tests to be carried out by the contractor is not exhaustive and they may have to carry out separate tests which may be necessary for satisfactory completion of the job, at no extra cost.
11.0	COMMISSIONING
11.1	The contractor shall deploy experienced and specialised team of commissioning engineers for commissioning of the equipments/ systems under the scope of this contract. Contractor will also be responsible for mobilizing all T&P, etc as required for successful commissioning of the equipments/ systems under the scope of this contract and shall carry out all necessary pre-commissioning and commissioning checks/ tests. No separate amount will be paid for such deployment. The quoted rate shall be deemed to be inclusive of this cost.
11.2	Remote operation: Necessary coordination with C&I counterpart for commissioning checks of HT/ LT switchgear, actuators, HT/ LT motors, transformers feedbacks, any other electrical feedbacks to DCS system or any other controller is included in the scope. Commissioning engineers must be provided by the contractor during commissioning of these equipments for loop-tests with multimeter at C&I panel end as well as electrical equipment end.
11.3	DRIVES
11.3.1	Electrical testing of HT motors, LT uni & bi directional motors and DC motors (to be erected by other contractors) is included in the scope (detail is given in price schedule). Payment shall be made as per applicable item of price schedule. Before starting the motor, IR values of insulation shall be recorded and if found necessary, dry out operation shall be carried out by the contractor to improve the IR values as per rate schedule. Necessary cabling from suitable MCB/ DB with all necessary assistance for motor drying out will be in contractor's scope. Cables for this purpose will be issued by BHEL on returnable basis free of hire charges. Necessary lugs with crimping tools are to be arranged by the contractor within their quoted rates.
11.3.2	Rotation of motor terminal boxes and minor modification to suit cable termination, if required, shall be carried out at no extra cost.
11.3.3	For valves and dampers operated through associated MCCs, entire commissioning including setting of limit/torque switch and position feedback unit,

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 13 OF 15

	electrical control gear of actuators of MOVs & damper, is included in the scope of contractor. Payment shall be made as per applicable item of price schedule.
11.3.4	SOOT BLOWER: Commissioning including setting of all limit switch, etc of soot blowers operated through associated soot blower MCC will be within the scope. Payment shall be made as per applicable item of price schedule.
11.4	BATTERY: Contractor have to arrange all safety appliances required during acid filling/ charging of battery and other items like sp gravity meter, thermometer, jerrycans, funnels, etc. Resistance box with all interconnecting cables, PVC drums, salt, acid for waterloads, etc of suitable rating/ capacity for carrying out capacity/ discharge test of batteries shall be arranged by the contractor at no extra cost. During commissioning of battery sets the contractor has to arrange for necessary skilled manpower round the clock for charging, discharging, etc. Also, maintenance of battery parameters on a regular basis, after commissioning till handing over shall be carried out at no extra cost.
11.5	RELAY PANEL: Providing Omicron/ Dobbie relay kit for testing of GRP, STRP, BTS, DAVR, T & AVT is in the commissioning scope of the contractor, The test kits along with operator needs to be arranged by contractor as per requirement and satisfaction of BHEL engineers. Functional stability and loop tests from switch yard/ transformer yard, HT/ LT SWGR has to be carried out for respective equipments and to be recorded. OCC & SCC, auto synchronization, interlock with other incomer breaker/ bus-coupler, sequential operation are also included in the scope of commissioning of respective relay panels/ equipments. For DAVR pre-commissioning checks and tests has to be carried out as specified in manufacturer's manual and as required by BHEL engineer. Arrangement of load (eg lamp, heaters with wires) for dummy load test has to be done by the contractor at no extra cost.
12.0	DELETED
13.0	MEASUREMENT OF QUANTITIES, RETURN OF SURPLUS AND WASTAGE
13.1	In addition to the technical requirements stipulated above, unless otherwise specified elsewhere in the tender, following technical requirements shall also be complied with by the contractor.
13.2	The contractor shall, upon receipt of execution drawings, plan, assess and ensure availability of materials for execution. A rolling stock shall be maintained throughout the tenure of the contract for the material with up-to date reporting on stock position, as well as drawing-wise/ area-wise material consumption for the supply package items (eg cable trays and accessories, tray support material, cables, cable termination and jointing kits, earthing materials, lugs, glands, etc) as well as items supplied by the contractor as part of the package. Any perceived shortages/ immediate requirements shall be brought to the notice of the BHEL so that such exigencies can be effected without affecting the work schedule. In no case shall work be allowed to suffer on account of shortages, while wastages/ surplus shall be minimised. The responsibility for estimation of cabling package material quantities based on execution of work and engineering inputs provided by BHEL rests with the contractor. These estimates shall be provided by the contractor periodically to BHEL for ensuring material availability at site to suit erection schedule.
13.3	For all payment purposes, measurement shall be made on the basis of the execution drawings/ physical measurements. Physical measurements shall be made by the contractor in the presence of BHEL.
13.4	Measurements for cable laying shall be made on the basis of length actually laid from lug to lug including that of loops provided and paid accordingly.
13.5	All surplus, scrap & serviceable cables cut out of the cables quantity, ie issued by BHEL/ customer to the contractor shall be returned by the contractor to BHEL/ customer's stores/ yard in good condition and as directed by BHEL.
13.6	All cables being returned to stores should carry an aluminium tag indicating the size & type of cable. Cable of less than 5m length will be termed as scrap. Cable of length 5m and above shall be termed as serviceable material and shall be

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 14 OF 15

	returned size wise and category wise to BHEL/ customer's stores/yard.	
13.7	Cable of serviceable lengths being returned to the stores in drums shall have their free ends sealed and the balance lengths on the drum(s) shall be noted and certified by BHEL. This shall be applicable only for the purpose of accounting the cables issued by BHEL/ customer for installation.	
13.8	While carrying out material appropriation with contractor, all above points will be taken into account. All serviceable material returned by the contractor shall be deducted from the quantities issued for the respective sizes and categories and the balance quantity(ies) will be taken as the net quantity(ies) issued to the contractor. Material appropriation shall then be done and allowable scrap quantity calculated as per wastage allowance percentage specified in tender.	
13.9	Any scrap/ wastage generated by the contractor in excess of allowable percentage shall be charged at the rates decided by BHEL/ customer, whose decision shall be final & binding on the contractor.	
13.10	For steel material supplied by the contractor, all scrap shall be returned to BHEL/ customer's store/ yard with due accounting.	
13.11	Contractor shall carefully plan the cutting schedule of each cable drum in consultation with BHEL such that wastages are minimised and any resultant short lengths can be used where appropriate route lengths are available.	
13.12	The wastage allowances as permissible for various items are indicated below.	
13.13	Cutting and wastage allowance shall be computed on the lengths of cables and weight of steel actually used, measured and accepted.	
13.14	All wastages shall be properly accounted for and stored as directed by engineer.	
13.15	Wastage allowance for different items shall be as per following.	
	Item	Wastage allowance
13.15.1	HT cables.	1%
13.15.2	LT cables above 70 mm ² .	1%
13.15.3	LT cables upto 70 mm ² .	2%
13.15.4	Control, instrumentation & special cable.	3%
13.15.5	Fire survival cable.	1%
13.15.6	Steel material (For cable trays/ tray support installation/ supplied by BHEL free of cost or the contractor).	1% by weight
14.0	AS BUILT DRAWING	
	The contractor have to prepare and submit final approved as-built drgs for all applicable erected equipments.	
15.0	FINAL PAINTING	
	Supply and application of Final painting including touch up painting is included in the scope of work of contractor. However, paint has to be as per BHEL's/ customer's specification and from approved vendor.	
	Nomenclature of erected item is to be done as per BHEL/ customer requirement.	
	The contractor shall provide identification/ marking of all the equipments erected/ commissioned by them, by engaging a professional gang with paints & consumables, as required under the IE rules/ customers practices, before handing over of the systems. Contractor's quoted rate/ price shall be inclusive of above activities.	
16.0	ELECTRICAL INSPECTOR'S APPROVAL AND POLLUTION CONTROL BOARD CLEARANCE	
	The contractor shall arrange to obtain clearance from the Electrical Inspectorate (CEA) and Pollution Control Board and arrange for the authorities' visit to site, as required. He will also arrange visit of electrical Inspector and obtain his approval for the installation work to be carried out under this scope of work and get the work done by the license holder electricians and supervisors as per local statutory requirement. The statutory fees only shall be reimbursed by BHEL. All other expenses in this regard shall be borne by the contractor.	

TENDER NO. PSER:SCT:NKP-E2053:20		
VOLUME-IF-TS-2-R-0	TECHNICAL CONDITIONS OF CONTRACT (TCC)	PAGE 15 OF 15

	On-line application for inspection and approval for energisation by the Electrical Inspector will be required to be done by the contractor.

VOLUME-III PRICE SCHEDULE, REV-00	
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND	
TENDER NO PSER:SCT:NKP-E2053:20	
PREAMBLE	
SL NO	DESCRIPTION
1	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully before filling in rates for various items. Clauses under this preamble shall be read in conjunction with various volumes of tender and other tender sections as applicable and shall have precedence over any contrary statement mentioned anywhere in this document.
2	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions. Drawings enclosed with the tender are only preliminary and for tender purposes and giving some idea of the work involved. The work is to be executed as per drawings & documents, which shall be furnished during execution.
3	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, levies, transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the complete tender document and this schedule.
5	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains, within plus minus fifteen percent ($\pm 15\%$) of the awarded price as per LOI.
6	Prior written approval of BHEL shall be sought by the contractor in case quantity variation of any item crosses +50% (plus fifty percent) limit during execution and approval to be obtained before execution of further quantity for this item.
7	In case Sealed /Paper Price Bids are opened for finalisation of the tender, for any Item Rate/BOQ based contract, possibility of variation of quantity/ addition/deletion of items can not be ruled out. Under such circumstances, after execution of work, if it is observed that standing as L-1 is changed based on actual quantity executed, the bidder shall give suitable rebate to maintain your standing as L-1. Since this aspect can be assessed at the end of execution, necessary adjustment will be effected at the end of execution in final bill. This condition shall not be applicable where the tender is finalised through Reverse Auction.
8	BHEL reserve the right to rationalize the rates, quoted by L-1 bidder against unit rate items and/ or other optional items with respect to item-wise lowest rates (amongst the participating bidders), before placement of order.
9	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing, clearing of old structures and leveling etc. including fixing of grid pillars, benchmarks etc. required for commencement of site activities. No separate payment will be made towards the same. However, if separate rate for such item is available in the rate schedule, the same shall be considered.
10	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language.
11	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted as per BHEL approved payment schedule/billing break-up.
12	The tender shall be deemed to have visited site and made himself aware of all the site conditions, studied the specifications and details of work to be done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
13	No splitting of the job is envisaged. Decision of BHEL in this regard shall be final and binding to the bidders.
14	Bidders are not allowed to alter the Price Schedule format including item description, quantity etc. and the offer is liable for rejection if the bidders submit their prices in Price Schedules modified by them. BHEL reserves the right to reject the offers of bidders who submit offers in Price Formats which are modified/altered by them. Also putting any comments instead of rates/price in the designated column of the rate schedule shall make the offer liable for rejection.
15	Bidders to note that for Civil &/Structural packages, against a particular item against a ST No. appearing in more than one schedule of the BOQ, same rate must be quoted in all schedules for that particular items with same descriptions. If by error, different rates are quoted in different schedules for same ST No. (i.e. item with same description), then the higher of the rates shall be considered for evaluation but awarding shall be done with the lower rate, if the bidder becomes L-1."
16	For Lumpsum Service Contract : The items/components indicated in the tender is indicative and may vary to any extent. No compensation shall be payable in case of any variation in the items/components listed in the bill of quantities if the executed weight remains within the variation limit. However, in case of deletion of any item or addition of new items over and above the items listed or variation of existing quantity beyond variation limit specified, adjustment (i.e. Payment or recovery as the case may be) shall be done on pro-rata basis based on the Rate per MT worked out from the quoted lump-sum Price and the total weight of components listed /indicated in price schedule plus 15% weight variation limit.
17	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.
18	In case of tender for Civil and/or Structural works, if the Non-schedule items are not quoted by the bidder, it will be treated at par with rate of corresponding item of CPWD/PWD/DSR schedule as prescribed in the tender/BOQ cum Rate Schedule.
19	No interest, whatsoever, shall be payable by BHEL on the security deposit, any bank guarantee submitted or any amount due to successful bidder/contractor.
20	Size and weights of various items are mentioned in the attached BOQ cum rate/price schedule for reference purpose only & these shall not be taken into consideration for quoting/calculating amount in the rate schedule. These shall be utilised as per relevant sections of tender. Bidders shall quote for each item in the rate column, taking unit as mentioned in the quantity column. Rates shall be filled in both figures and words. Amount shall be calculated based upon these rates multiplied by the mentioned quantity for the respective items.
21	Bidder's Total price will be considered for evaluation unless stated otherwise.
22	In case of BOP packages, if Bidder does not quote/indicate the price for freight charges against indicated rate schedule, the same shall be considered as 2% of basic price and adjusted with the total quoted price against each item keeping the total quoted price unaltered.

VOLUME-III PRICE SCHEDULE, REV-00			
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND			
TENDER NO PSER:SCT:NKP-E2053:20			
SCH-1 - TOTAL PRICE			
SL NO	DESCRIPTION	PRICE SCHEDULE REF	TOTAL PRICE (IN INR)
1.0	TOTAL PRICE FOR ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND	SCH 2 - BREAK UP OF TOTAL PRICE	<u>IN FIGURES:-</u> <u>IN WORDS:-</u>
NOTE			
1.0	Bidder shall quote total price for total price of SCH-1- Part only at SI No. 1 above. All other amounts / rates of each item of works in respective schedules / parts will be derived based on allocated percentages. As such, any uncalled figure/ amount noted at any other place / schedule of Volume-III will not be reckoned & will stand null & void.		
2.0	Bidder to note that total price at SI No. 1 above shall be considered for evaluation & awarding. As such grand total price should be complete in all respect for the full scope defined and considering all terms and conditions.		
3.0	Bidder's quoted total price of SCH-3, SCH-4 at SI. No 1 above, respectively shall be apportioned into amount of various items of works based on allocated percentages against respective item, in respective schedules / parts. As such, bidder shall not indicate / quote any amount / rate in these schedules / parts and any amount / rate quoted against any item shall not be taken into cognizance / account and offer may be liable for rejection.		
4.0	Based on the itemwise percentage allocations, the amount for the individual items of the Bill of Quantity shall be arrived at. The rates of individual items shall be derived from the amount against each items after roundeding off .		
5.0	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 SI No.3.0 above.		
6.0	Based on the itemwise percentage allocations, the amount for the individual items of the Bill of Quantity shall be arrived at. The rates of individual items shall be derived from the amount against each items and its quantity after rounding off to upto 9 decimal places. However, RA bill payment shall be done after rounding off the gross amount to two decimal points. Any adjustment, if required, due to such methodology, will be effected / adjusted in final bill.		
7.0	Any item as per scope of work, if not included in the price quoted above and shown separately will not be taken cognizance of and the offer shall be liable for		
8.0	Price format shall not be changed by bidder in any case and it may lead to cancellation of their offer.		
9.0	The quoted price shall be excluding GST including freight on FOR site basis.		
10.0	The quantity of items may vary during execution mainly due to actual requirement etc. The unit rates work out from the overall amount quoted & accepted by BHEL shall be considered and no separate unit rates shall be allowed. Unit rates shall be valid throughout the contract period.		

VOLUME-III PRICE SCHEDULE, REV-00		
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND		
TENDER NO PSER:SCT:NKP-E2053:20		
SCH-2 BREAK UP		
SL NO	DESCRIPTION	WEIGHTAGE
1.0	TOTAL SERVICE PART (SCH-3).	0.97016165
2.0	TOTAL SUPPLY PART (SCH-4).	0.02983835
3.0	TOTAL PRICE	1.00000000

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
A	CABLE TRAYS (complete with Coupler plate, Fastners, clamp, and fixing hardware etc.) (including site modifications required for 'A', 'B', 'C' & 'D' types of bends / turns as required to suit site layout)			
A.1	GALVANISED MS LADDER TYPE CABLE TRAY			
1.0	600mm wide	Metres	22855.00	0.02457569
2.0	450mm wide	Metres	3967.00	0.00341258
3.0	300mm wide	Metres	8852.00	0.00671883
4.0	150mm wide	Metres	4200.00	0.00270983
5.0	100mm wide	Metres	167.00	0.00010774
A.2	GALVANISED MS PERFORATED TYPE CABLE TRAY			
1.0	600mm wide	Metres	6300.00	0.00812909
2.0	450mm wide	Metres	840.00	0.00090324
3.0	300mm wide	Metres	1050.00	0.00090325
4.0	150mm wide	Metres	1700.00	0.00129033
5.0	100mm wide	Metres	4200.00	0.00318788
6.0	50mm wide (ladder/ perforated/solid bottom)	Metres	500.00	0.00032260
A.3	CABLE TROUGH			
1.0	CABLE TROUGH 2 MM THICK 50 MM WIDTH	Metres	200.00	0.00012904
2.0	CABLE TROUGH 2 MM THICK 75 MM WIDTH	Metres	200.00	0.00012904
B	CABLE TRAY ACCESSORIES			
B.1	(LADDER TYPE)			
B.1.1	HORIZONTAL 90 DEG. BEND 600 MM RADIUS			
1.0	600mm wide	Nos.	220	0.00118282
2.0	450mm wide	Nos.	20	0.00010752
3.0	300mm wide	Nos.	45	0.00019355
B.1.2	VERTICAL 90 DEG. BEND 600 MM RADIUS (INSIDE)			
1.0	600mm wide	Nos.	65	0.00034947
2.0	450mm wide	Nos.	20	0.00010752
3.0	300mm wide	Nos.	30	0.00012904
B.1.3	VERTICAL 90 DEG. BEND 600 MM RADIUS (OUTSIDE)			
1.0	600mm wide	Nos.	100	0.00064898
2.0	450mm wide	Nos.	20	0.00012979
3.0	300mm wide	Nos.	40	0.00023885
B.1.4	TEES 600 MM RADIUS			
1.0	600mm wide	Nos.	400	0.00301080
2.0	450mm wide	Nos.	20	0.00015054
3.0	300mm wide	Nos.	35	0.00026345
B.1.5	CROSSES 600 MM RADIUS			
1.0	600mm wide	Nos.	25	0.00018817
2.0	450mm wide	Nos.	20	0.00015054
3.0	300mm wide	Nos.	4	0.00003011
B.1.6	REDUCERS LHS /RHS			

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
1.0	600mm wide - 450mm wide	Nos.	7	0.00003763
2.0	600mm wide - 300mm wide	Nos.	18	0.00009678
3.0	450mm wide - 300mm wide	Nos.	4	0.00002151
B.2	(PERFORATED TYPE)			
B.2.1	HORIZONTAL 90 DEG. BEND 600 MM RADIUS			
1.0	600mm wide	Nos.	196	0.00105378
2.0	450mm wide	Nos.	7	0.00003763
3.0	300mm wide	Nos.	28	0.00012043
4.0	150mm wide	Nos.	7	0.00003011
B.2.2	VERTICAL 90 DEG. BEND 600 MM RADIUS (INSIDE)			
1.0	600mm wide	Nos.	15	0.00008065
2.0	450mm wide	Nos.	7	0.00003763
3.0	300mm wide	Nos.	14	0.00006022
B.2.3	VERTICAL 90 DEG. BEND 600 MM RADIUS (OUTSIDE)			
1.0	600mm wide	Nos.	25	0.00018817
2.0	450mm wide	Nos.	7	0.00005269
3.0	300mm wide	Nos.	42	0.00022581
B.2.4	TEES 600 MM RADIUS			
1.0	600mm wide	Nos.	266	0.00200218
2.0	450mm wide	Nos.	7	0.00005269
3.0	300mm wide	Nos.	14	0.00010538
B.2.5	CROSSES 600 MM RADIUS			
1.0	600mm wide	Nos.	300	0.00225810
2.0	450mm wide	Nos.	7	0.00005269
3.0	300mm wide	Nos.	4	0.00003011
B.2.6	REDUCERS LHS /RHS			
1.0	600mm wide - 450mm wide	Nos.	7	0.00003763
2.0	600mm wide - 300mm wide	Nos.	7	0.00003763
3.0	450mm wide - 300mm wide	Nos.	4	0.00002151
C	GALVANISED CABLE TRAY COVER COMPLETE WITH ACCESSORIES			
1.0	600mm wide	Metres	1400	0.00451621
2.0	450mm wide	Metres	500	0.00161293
3.0	300mm wide	Metres	850	0.00182799
4.0	150mm wide	Metres	200	0.00032385
D	CABLE TRAY SUPPORT MATERIAL (INCLUDING FABRICATION OF BASE FRAME OF SWITCHGEAR, PANEL,LPB. STARTER ETC.) (Angles, Channels, beams etc.)	MT	100	0.03225360
DA	CABLE TRAY SUPPORT MATERIAL (BOLTING TYPE)			
1.0	CABLE TRAY SUPPORT SYSTEM, WITH ANGLE FITTING, CLAMP, CHANNEL, ETC (BOLTABLE TYPE)			
1.1	SINGLE CHANNEL SC1	Mtr.	15000	0.02435128
1.2	DOUBLE CHANNEL DC1	Mtr.	4000	0.00757557

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
SI No	ITEM DESCRIPTION	Unit	Quantity	Weightage
2.0	CANTILEVER ARM WITH HEX BOLT & WASHER, SPRING NUT, PAN HEAD SCREW & WASHER, ETC			
2.1	CANTILEVER ARM 750 MM FOR 600MM WIDE CABLE TRAY	No	400	0.00030305
2.2	CANTILEVER ARM 620/650 MM FOR 600 MM WIDE CABLE TRAY	No	23000	0.01742556
2.3	CANTILEVER ARM 500 MM FOR 450 MM WIDE CABLE TRAY	No	250	0.00016574
2.4	CANTILEVER ARM 320 MM FOR 300MM WIDE CABLE TRAY	No	8000	0.00394010
2.5	CANTILEVER ARM 170 MM FOR 150MM WIDE CABLE TRAY	No	1200	0.00036372
AE.1	FABRICATION OF IRREGULAR BEND TO BE DONE FROM THE EXISTING LADDER TYPE CABLE TRAY AS PER SITE REQUIREMENT (cable tray material will be issued by BHEL free of cost) (CONSUMABLES etc. TO BE PROVIDED BY VENDOR) (Applicable for BEND TYPE 'E', 'F' & G)			
1.0	IRREGULAR BEND FOR LADDER 600 MM WIDE TRAYS	NOS	350	0.00188175
2.0	IRREGULAR BEND FOR LADDER 450 MM WIDE TRAYS	NOS	280	0.00120432
3.0	IRREGULAR BEND FOR LADDER 300 MM WIDE TRAYS	NOS	280	0.00090324
4.0	IRREGULAR BEND FOR LADDER 150 MM WIDE TRAYS	NOS	500	0.00107529
AE.2	FABRICATION OF IRREGULAR BEND TO BE DONE FROM THE EXISTING PERFORATED TYPE CABLE TRAY AS PER SITE REQUIREMENT (cable tray material will be issued by BHEL free of cost) (CONSUMABLES etc. TO BE PROVIDED BY VENDOR) (Applicable for BEND TYPE 'E', 'F' & G)			
1.0	IRREGULAR BEND FOR PERF 600 MM WIDE TRAYS	NOS	170	0.00127960
2.0	IRREGULAR BEND FOR PERF 450 MM WIDE TRAYS	NOS	200	0.00129034
3.0	IRREGULAR BEND FOR PERF 300 MM WIDE TRAYS	NOS	200	0.00107529
4.0	IRREGULAR BEND FOR PERF 150 MM WIDE TRAYS	NOS	260	0.00111828
E	GALVANISED MS CONDUIT/ PIPE WITH COUPLER, BEND, CLAMP, ETC			
E.1	GALVANISED MS RIGID CONDUITS			
1.0	20-30 mm diameter	Metres	500	0.00039847
2.0	50 mm diameter	Metres	100	0.00009741
3.0	75 mm diameter	Metres	300	0.00032259
4.0	100-125 mm diameter	Metres	300	0.00047820
E.2	FLEXIBLE CONDUIT (MADE OF COLD ROLLED ANNEALED ELECTRO GALVANISED MS STRIP, CLAMP, ETC)			
1.0	20-25 mm diameter	Metres	300	0.00015939
2.0	40-50 mm diameter	Metres	150	0.00012145
3.0	75-100 mm diameter	Metres	70	0.00007527
F	CABLE LAYING (INCLUDES SUPPLY & INSTALLATION OF REQUIRED CLAMP, AL STRIP, SADDLE, ETC FOR CABLE DRESSING, CLAMPING, ETC. TREFOIL CLAMP FOR SINGLE CORE CABLE OF OD 30 MM TO 50 MM, WILL BE SUPPLIED BY BHEL FREE OF COST)			
F.1	11/ 11 KV AL CONDUCTOR/ XLPE INSULATED/ ARMoured/ GRADE POWER CABLE			
1.0	1C-300 SQMM	KM	0.5	0.00032259
2.0	1CX630 SQMM	KM	5	0.00379514
3.0	3C-185 SQMM	KM	1	0.00086023
F.2	11/ 11 KV AL CONDUCTOR/ XLPE INSULATED/ UN-ARMoured/ GRADE POWER CABLE			
1.0	1CX630 SQMM	KM	7	0.00531319
2.0	3C-185 SQMM	KM	9	0.00774208

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
F.3	3.3/ 3.3 KV AL CONDUCTOR/ XLPE INSULATED/ ARMoured/ UNEARTHED GRADE POWER CABLE			
1.0	1C-630 SQMM	KM	1	0.00064517
F.4	3.3/ 3.3 KV AL CONDUCTOR/ XLPE INSULATED/ UN-ARMoured/ UNEARTHED GRADE POWER CABLE			
1.0	1C-185 SQMM	KM	1	0.00054397
2.0	3C-185 SQMM	KM	8	0.00607222
F.5	1.1 KV LT ALUMINIUM .XLPE POWER CABLE (ARMoured/UNARMoured)			
1.0	1C-6 sq mm	KM	0.5	0.00005708
2.0	1C-10 sq mm	KM	0.5	0.00005708
3.0	1C-25 sq mm	KM	0.5	0.00005708
4.0	1C-35 sq mm	KM	15	0.00322586
5.0	1C-50 sq mm	KM	0.5	0.00010753
6.0	1C-70 sq mm	KM	13	0.00361803
7.0	1C-95 sq mm	KM	0.5	0.00013916
8.0	1C-120 sq mm	KM	4	0.00172046
9.0	1C-185 sq mm	KM	0.5	0.00021506
10.0	1C-400 sq mm	KM	6	0.00387104
11.0	1C-630 sq mm	KM	20	0.01290346
12.0	2C-2.5 sqmm	KM	42	0.00425055
13.0	2C-10 sqmm	KM	4	0.00050602
14.0	2C-25 sqmm	KM	1	0.00021506
15.0	2C-50 sqmm	KM	0.5	0.00013916
16.0	2C-95 sqmm	KM	8	0.00263130
17.0	2C-120 sq mm	KM	80	0.03440926
18.0	2C-150 sqmm	KM	0.5	0.00021506
19.0	2C-185 sqmm	KM	0.5	0.00021506
20.0	3C-2.5 sq mm	KM	180	0.01821665
21.0	3C-6 sq mm	KM	0.5	0.00006325
22.0	3C-10 sq mm	KM	18	0.00227709
23.0	3C-16 sq mm	KM	10	0.00126505
24.0	3C-25 sq mm	KM	40	0.00506018
25.0	3C-35 sq mm	KM	0.5	0.00006325
26.0	3C-50 sq mm	KM	10	0.00215058
27.0	3C-70 sq mm	KM	3	0.00064517
28.0	3C-95 sq mm	KM	6	0.00166986
29.0	3C-120 sq mm	KM	0.5	0.00013916
30.0	3C-150 sq mm	KM	4	0.00258069
31.0	3C-240 sq mm	KM	18	0.01161311
32.0	3C-400 sq mm	KM	0.5	0.00037951
33.0	3.5C-25 sq mm	KM	12	0.00197347
34.0	3.5C-50 sq mm	KM	20	0.00556620
35.0	3.5C-95 sq mm	KM	8	0.00263130
36.0	3.5C-120 sq mm	KM	0.5	0.00016446
37.0	3.5C-150 sq mm	KM	0.5	0.00016446
38.0	3.5C-185 sq mm	KM	4	0.00258069
39.0	3.5C-300 sq mm	KM	0.5	0.00032259
40.0	4C- 4 sq mm	KM	10	0.00126505
41.0	4C-10 sq mm	KM	0.5	0.00006325
42.0	4C-16 sq mm	KM	0.5	0.00006325
43.0	4C-50 sq mm	KM	1.5	0.00032259
F.6	1.1 KV LT COPPER XLPE POWER CABLE			
1.0	1C-70 sq mm	KM	0.5	0.00013916
2.0	1C-240 sq mm	KM	0.5	0.00021506
3.0	1C-630 sq mm	KM	0.5	0.00032259
4.0	2C-2.5 sq mm	KM	12	0.00121444

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
5.0	2C-6 sq mm	KM	0.5	0.00006325
6.0	2C-10 sq mm	KM	0.5	0.00006325
7.0	2C-25 sq mm	KM	0.5	0.00010753
8.0	2C-70 sq mm	KM	0.5	0.00013916
9.0	3C-2.5 sq mm	KM	73	0.00738786
10.0	3C-6 sq mm	KM	0.5	0.00006325
11.0	3C-50 sq mm	KM	0.5	0.00010753
12.0	4C-1.5 sq mm	KM	0.5	0.00005060
13.0	4C-35 sq mm	KM	0.5	0.00008222
F.7	LT. COPPER FIRE SURVIVAL CABLE			
1.0	1C-150 sq mm	KM	0.5	0.00021506
2.0	1C-400 sq mm	KM	0.5	0.00032259
3.0	2C-95 sq mm	KM	0.5	0.00016446
4.0	3C-2.5 sq mm	KM	0.5	0.00005060
5.0	5C-2.5 sq mm	KM	0.5	0.00006325
F.8	1.1 KV LT. COPPER CONTROL CABLE (AROURED/UNARMOURED)			
1.0	2C-1.5 sq mm	KM	72	0.00728666
2.0	2C-2.5 sq mm	KM	1	0.00010121
3.0	2C-4 sq mm	KM	0.5	0.00006325
4.0	3C-1.5 sq mm	KM	90	0.00910832
5.0	3C-2.5 sq mm	KM	5	0.00050602
6.0	4C-1.5 sq mm	KM	15	0.00189757
7.0	4C-4 sq mm	KM	0.5	0.00006325
8.0	4C-2.5 sq mm	KM	0.5	0.00006325
9.0	5C - 1.5 sqmm	KM	52	0.00657823
10.0	5C - 2.5 sqmm	KM	30	0.00379514
11.0	5C - 4 sqmm	KM	0.5	0.00008222
12.0	5C - 10 sqmm	KM	0.5	0.00008222
13.0	7C - 1.5 sqmm	KM	41	0.00622403
14.0	7C - 2.5 sqmm	KM	5	0.00075902
15.0	10C - 1.5 sqmm	KM	40	0.00607222
16.0	10C - 2.5 sqmm	KM	10	0.00151805
17.0	12C - 1.5 sqmm	KM	46	0.00698305
18.0	12C - 2.5 sqmm	KM	0.5	0.00007590
19.0	14C-1.5 sq mm	KM	0.5	0.00009488
20.0	16C-2.5 sq mm	KM	3	0.00056927
21.0	19C-1.5 sq mm	KM	2	0.00037951
22.0	19C-2.5 sq mm	KM	0.5	0.00009488
23.0	24C-1.5 sq mm	KM	1.5	0.00032111
24.0	24C-2.5 sq mm	KM	1	0.00021407
25.0	1C-2.5 sq mm COPPER Wire for ACC system (including termination)	KM	8	0.00080963
F.9	1.1 KV SCREENED CABLE			
1.0	Individual & Overall Screened Cable (Type-F) - Unarmoured cable			
	Multi pair (twisted) individual & overall shielded instrumentation cables (Type-F)			

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
1.1	225V Type-F(IO) 2P-0.5 unarmoured	KM	16	0.00161926
1.2	225V Type-F(IO) 4P-0.5 unarmoured	KM	68	0.00860230
1.3	225V Type-F(IO) 8P-0.5 unarmoured	KM	26	0.00394694
1.4	225V Type-F(IO) 12P-0.5 unarmoured	KM	18	0.00318791
1.5	225V Type-F(IO) 20P-0.5 unarmoured	KM	7	0.00185962
2.0	Overall Screened cable (Type-G) - Unarmoured cable			
	Multi pair (twisted) overall shielded instrumentation cables (Type-G)			
2.1	225V Type-G(O) 2P-0.5 unarmoured	KM	12	0.00121444
2.2	225V Type-G(O) 4P-0.5 unarmoured	KM	160	0.02024072
2.3	225V Type-G(O) 8P-0.5 unarmoured	KM	40	0.00607222
2.4	225V Type-G(O) 12P-0.5 unarmoured	KM	12	0.00212528
3.0	Overall Screened cable (Type-G) - Armoured cable			
	Multi pair (twisted) overall shielded instrumentation cables (Type-G)			
3.1	225V Type-G(O) 2P-0.5 Armoured	KM	1	0.00010121
3.2	225V Type-G(O) 4P-0.5 Armoured	KM	4	0.00050602
3.3	225V Type-G(O) 12P-0.5 Armoured	KM	2.5	0.00044277
F.10	OTHER CABLES (including termination)			
1.0	CAT - 5e COMMUNICATION CABLE WITHOUT CONDUIT	KM	1	0.00007136
2.0	CAT - 5e COMMUNICATION CABLE WITH CONDUIT	KM	1	0.00015180
3.0	OPTICAL FIBRE CABLE WITHOUT CONDUIT	KM	1.5	0.00017125
4.0	OPTICAL FIBRE CABLE WITH CONDUIT	KM	1.5	0.00034253
5.0	PTFE signal cable, earthing cable alongwith flexible GI conduit for Hopper Ash level indicator system.	KM	3	0.00045541
6.0	LT SCREENED CU UNARMoured CABLE - 4C x 1.5 SQ. MM FOR ESP	KM	59	0.00746377
G	CABLE TERMINATION & JOINT KITS			
G.1	FOR 11/11 KV GRADE, XLPE INSULATED, ALUMINIUM CONDUCTOR CABLES FOR THE FOLLOWING SIZES			
1.0	1CX630 Unarmoured (Indoor type)	Nos	80	0.00344092
2.0	1CX630 Armoured (Indoor type)	Nos	12	0.00051614
3.0	3C X 185 SQ. MM Unarmoured (Indoor type)	Nos	80	0.00344092
4.0	3C X 185 SQ. MM Armoured (Indoor type)	Nos	4	0.00017204
G.2	FOR 3.3/3.3 KV GRADE, XLPE INSULATED, ALUMINIUM CONDUCTOR CABLES FOR THE FOLLOWING SIZES			
1.0	1C X 185 SQ. MM Unarmoured (Indoor type)	Nos.	10	0.00037952
2.0	3C X 185 SQ. MM Unarmoured (Indoor type)	Nos.	70	0.00301081
3.0	1C X 630 Armoured (Indoor type)	Nos.	15	0.00064517
4.0	1C X 400 SQ. MM Unarmoured (Indoor type)	Nos.	6	0.00025807
G.3	FOR 11/11 KV GRADE, XLPE INSULATED, ALUMINIUM CONDUCTOR CABLES STRAIGHT THROUGH JOINTS FOR THE FOLLOWING SIZES			
1.0	1CX630 Unarmoured (Indoor type)	Nos.	1	0.00005376
2.0	1CX630 Armoured (Indoor type)	Nos.	6	0.00032259
3.0	03C X 185 SQ. MM Unarmoured (Indoor/Outdoor type)	Nos.	12	0.00064515
4.0	03C X 185 SQ. MM Armoured (Indoor/Outdoor type)	Nos.	12	0.00064515

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
G.4	FOR 3.3/3.3 KV GRADE, XLPE INSULATED, ALUMINIUM CONDUCTOR CABLES STRAIGHT THROUGH JOINTS FOR THE FOLLOWING SIZES			
1.0	3C X 185 SQ. MM Unarmoured (Indoor type)	Nos.	1	0.00005376
G.5	FOR 1.1 KV LT ALUMINIUM .XLPE POWER CABLE			
1.0	1C-6 sq mm	Nos.	10	0.00001948
2.0	1C-10 sq mm	Nos.	10	0.00002138
3.0	1C-25 sq mm	Nos.	10	0.00002138
4.0	1C-35 sq mm	Nos.	40	0.00010778
5.0	1C-50 sq mm	Nos.	10	0.00002695
6.0	1C-70 sq mm	Nos.	30	0.00008084
7.0	1C-95 sq mm	Nos.	10	0.00002695
8.0	1C-120 sq mm	Nos.	10	0.00008071
9.0	1C-185 sq mm	Nos.	4	0.00003228
10.0	1C-400 sq mm	Nos.	20	0.00016142
11.0	1C-630 sq mm	Nos.	60	0.00048426
12.0	2C-2.5 sqmm	Nos.	150	0.00032259
13.0	2C-10 sqmm	Nos.	16	0.00004311
14.0	2C-25 sqmm	Nos.	6	0.00001617
15.0	2C-50 sqmm	Nos.	6	0.00001617
16.0	2C-95 sqmm	Nos.	26	0.00007006
17.0	2C-120 sq mm	Nos.	240	0.00193704
18.0	2C-150 sqmm	Nos.	10	0.00008071
19.0	2C-185 sqmm	Nos.	10	0.00008071
20.0	3C-2.5 sq mm	Nos.	600	0.00129034
21.0	3C-6 sq mm	Nos.	30	0.00006452
22.0	3C-10 sq mm	Nos.	80	0.00021556
23.0	3C-16 sq mm	Nos.	60	0.00016167
24.0	3C-25 sq mm	Nos.	120	0.00032335
25.0	3C-35 sq mm	Nos.	10	0.00002695
26.0	3C-50 sq mm	Nos.	40	0.00010778
27.0	3C-70 sq mm	Nos.	12	0.00003233
28.0	3C-95 sq mm	Nos.	26	0.00007006
29.0	3C-120 sq mm	Nos.	6	0.00001617
30.0	3C-150 sq mm	Nos.	12	0.00009685
31.0	3C-240 sq mm	Nos.	62	0.00050040
32.0	3C-400 sq mm	Nos.	6	0.00004843
33.0	3.5C-25 sq mm	Nos.	46	0.00012395
34.0	3.5C-50 sq mm	Nos.	60	0.00016167
35.0	3.5C-95 sq mm	Nos.	20	0.00005389
36.0	3.5C-120 sq mm	Nos.	6	0.00001617
37.0	3.5C-150 sq mm	Nos.	6	0.00001617
38.0	3.5C-185 sq mm	Nos.	12	0.00009685
39.0	3.5C-300 sq mm	Nos.	4	0.00003228
40.0	4C- 4 sq mm	Nos.	30	0.00006452
41.0	4C-10 sq mm	Nos.	10	0.00008071
42.0	4C-16 sq mm	Nos.	8	0.00006457
43.0	4C-50 sq mm	Nos.	8	0.00006457
G.6	1.1 KV LT COPPER .XLPE POWER CABLE			
1.0	1C-70 sq mm	Nos.	6	0.00001617
2.0	1C-240 sq mm	Nos.	4	0.00003228
3.0	1C-630 sq mm	Nos.	4	0.00003228
4.0	2C-2.5 sq mm	Nos.	40	0.00008602
5.0	2C-6 sq mm	Nos.	10	0.00002151
6.0	2C-10 sq mm	Nos.	10	0.00002151
7.0	2C-25 sq mm	Nos.	10	0.00002151
8.0	2C-70 sq mm	Nos.	6	0.00001290

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
9.0	3C-2.5 sq mm	Nos.	1400	0.00301080
10.0	3C-6 sq mm	Nos.	10	0.00002151
11.0	3C-50 sq mm	Nos.	8	0.00001720
12.0	4C-1.5 sq mm	Nos.	10	0.00002151
13.0	4C-35 sq mm	Nos.	8	0.00006457
G.7	LT. COPPER FIRE SURVIVAL CABLE			
1.0	1C-150 sq mm	Nos.	10	0.00008071
2.0	1C-400 sq mm	Nos.	10	0.00008071
3.0	3C-2.5 sq mm	Nos.	10	0.00002151
4.0	5C-2.5 sq mm	Nos.	10	0.00002151
G.8	1.1 KV LT. COPPER PVC FRLS CONTROL CABLE; ARMOURED/UNARMOURED (for cable sizes upto 4.0 sqmm, cable termination rate shall be inclusive of supply of suitable Heavy duty Tinned Copper lugs).			
1.0	2C-1.5 sq mm	Nos.	260	0.00055915
2.0	2C-2.5 sq mm	Nos.	16	0.00003441
3.0	2C-4 sq mm	Nos.	10	0.00002151
4.0	3C-1.5 sq mm	Nos.	360	0.00077421
5.0	3C-2.5 sq mm	Nos.	26	0.00005591
6.0	4C-1.5 sq mm	Nos.	60	0.00012904
7.0	4C-4 sq mm	Nos.	10	0.00002151
8.0	4C-2.5 sq mm	Nos.	12	0.00002581
9.0	5C - 1.5 sqmm	Nos.	200	0.00086023
10.0	5C - 2.5 sqmm	Nos.	180	0.00077420
11.0	5C - 4 sqmm	Nos.	10	0.00004301
12.0	5C - 10 sqmm	Nos.	8	0.00003441
13.0	7C - 1.5 sqmm	Nos.	180	0.00077420
14.0	7C - 2.5 sqmm	Nos.	24	0.00010323
15.0	10C - 1.5 sqmm	Nos.	280	0.00180648
16.0	10C - 2.5 sqmm	Nos.	24	0.00015484
17.0	12C - 1.5 sqmm	Nos.	140	0.00105379
18.0	12C - 2.5 sqmm	Nos.	490	0.00368824
19.0	14C-1.5 sq mm	Nos.	14	0.00010538
20.0	14C-2.5 sq mm	Nos.	14	0.00010538
21.0	19C-1.5 sq mm	Nos.	8	0.00007742
22.0	19C-2.5 sq mm	Nos.	14	0.00013549
23.0	24C-1.5 sq mm	Nos.	14	0.00013549
24.0	24C-2.5 sq mm	Nos.	14	0.00013549
G.9	1.1 KV SCREENED CABLE			
1.0	Individual & Overall Screened Cable (Type-F) - Unarmoured cable			
	Multi pair (twisted) individual & overall shielded instrumentation cables (Type-F)			
1.1	225V Type-F(IO) 2P-0.5 unarmoured	Nos.	60	0.00012904
1.2	225V Type-F(IO) 4P-0.5 unarmoured	Nos.	240	0.00051614

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
1.3	225V Type-F(IO) 8P-0.5 unarmoured	Nos.	100	0.00021506
1.4	225V Type-F(IO) 12P-0.5 unarmoured	Nos.	90	0.00019355
1.5	225V Type-F(IO) 20P-0.5 unarmoured	Nos.	30	0.00006452
2.0	Overall Screened cable (Type-G) - Unarmoured cable			
	Multi pair (twisted) overall shielded instrumentation cables (Type-G)			
2.1	225V Type-G(O) 2P-0.5 unarmoured	Nos.	40	0.00008602
2.2	225V Type-G(O) 4P-0.5 unarmoured	Nos.	600	0.00129034
2.3	225V Type-G(O) 8P-0.5 unarmoured	Nos.	200	0.00043011
2.4	225V Type-G(O) 12P-0.5 unarmoured	Nos.	50	0.00010753
3.0	Overall Screened cable (Type-G) - Armoured cable			
	Multi pair (twisted) overall shielded instrumentation cables (Type-G)			
3.1	225V Type-G(O) 2P-0.5 Armoured	Nos.	20	0.00004301
3.2	225V Type-G(O) 4P-0.5 Armoured	Nos.	30	0.00006452
3.3	225V Type-G(O) 12P-0.5 Armoured	Nos.	24	0.00005161
G.10	CABLE JOINTS (Straight through jointing kit installation including supply)			
G.10.1	11/ 11 KV AL CONDUCTOR/ XLPE INSULATED/ ARMoured/ GRADE POWER CABLE			
1.0	1C-300 SQMM	Nos.	2	0.00008602
2.0	1CX630 SQMM	Nos.	10	0.00053764
3.0	3C-185 SQMM	Nos.	4	0.00021506
G.10.2	11/ 11 KV AL CONDUCTOR/ XLPE INSULATED/ UN-ARMoured/ GRADE POWER CABLE			
1.0	1CX630 SQMM	Nos.	20	0.00107529
2.0	3C-185 SQMM	Nos.	24	0.00129035
G.10.3	3.3/ 3.3 KV AL CONDUCTOR/ XLPE INSULATED/ ARMoured/ UNEARTHED GRADE POWER CABLE			
1.0	1C-630 SQMM	Nos.	2	0.00010753
G.10.4	3.3/ 3.3 KV AL CONDUCTOR/ XLPE INSULATED/ UN-ARMoured/ UNEARTHED GRADE POWER CABLE			
1.0	1C-185 SQMM	Nos.	2	0.00008602
2.0	3C-185 SQMM	Nos.	18	0.00096775
G.10.5	1.1 KV LT ALUMINIUM .XLPE POWER CABLE			
1.0	1C-6 sq mm	Nos.	14	0.00002727
2.0	1C-10 sq mm	Nos.	14	0.00002993
3.0	1C-25 sq mm	Nos.	14	0.00002993
4.0	1C-35 sq mm	Nos.	14	0.00003135
5.0	1C-50 sq mm	Nos.	14	0.00003135
6.0	1C-70 sq mm	Nos.	14	0.00003259
7.0	1C-95 sq mm	Nos.	14	0.00003542
8.0	1C-120 sq mm	Nos.	14	0.00003542
9.0	1C-185 sq mm	Nos.	14	0.00003542

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
10.0	1C-400 sq mm	Nos.	14	0.00003808
11.0	1C-630 sq mm	Nos.	14	0.00004357
12.0	2C-2.5 sqmm	Nos.	14	0.00002037
13.0	2C-10 sqmm	Nos.	14	0.00002037
14.0	2C-25 sqmm	Nos.	14	0.00002037
15.0	2C-50 sqmm	Nos.	14	0.00002727
16.0	2C-95 sqmm	Nos.	14	0.00003259
17.0	2C-120 sq mm	Nos.	14	0.00003259
18.0	2C-150 sqmm	Nos.	14	0.00003808
19.0	2C-185 sqmm	Nos.	14	0.00004357
20.0	3C-2.5 sq mm	Nos.	14	0.00002444
21.0	3C-6 sq mm	Nos.	14	0.00002585
22.0	3C-10 sq mm	Nos.	14	0.00002993
23.0	3C-16 sq mm	Nos.	14	0.00002993
24.0	3C-25 sq mm	Nos.	14	0.00002993
25.0	3C-35 sq mm	Nos.	14	0.00003135
26.0	3C-50 sq mm	Nos.	14	0.00003259
27.0	3C-70 sq mm	Nos.	14	0.00003259
28.0	3C-95 sq mm	Nos.	14	0.00003259
29.0	3C-120 sq mm	Nos.	14	0.00003808
30.0	3C-150 sq mm	Nos.	14	0.00004357
31.0	3C-240 sq mm	Nos.	14	0.00004622
32.0	3C-400 sq mm	Nos.	14	0.00005437
33.0	3.5C-25 sq mm	Nos.	14	0.00002727
34.0	3.5C-50 sq mm	Nos.	14	0.00002993
35.0	3.5C-95 sq mm	Nos.	14	0.00003400
36.0	3.5C-120 sq mm	Nos.	14	0.00003808
37.0	3.5C-150 sq mm	Nos.	14	0.00004357
38.0	3.5C-185 sq mm	Nos.	14	0.00004622
39.0	3.5C-300 sq mm	Nos.	14	0.00004888
40.0	4C-4 sq mm	Nos.	14	0.00002727
41.0	4C-10 sq mm	Nos.	14	0.00002993
42.0	4C-16 sq mm	Nos.	14	0.00003259
43.0	4C-50 sq mm	Nos.	14	0.00003259
G.10.6	1.1 KV LT COPPER .XLPE POWER CABLE			
1.0	1C-70 sq mm	Nos.	14	0.00003542
2.0	1C-240 sq mm	Nos.	14	0.00004073
3.0	1C-630 sq mm	Nos.	14	0.00005437
4.0	2C-2.5 sq mm	Nos.	14	0.00002037
5.0	2C-6 sq mm	Nos.	14	0.00002178
6.0	2C-10 sq mm	Nos.	14	0.00002303

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
7.0	2C-25 sq mm	Nos.	14	0.00002727
8.0	2C-70 sq mm	Nos.	14	0.00003259
9.0	3C-2.5 sq mm	Nos.	14	0.00002444
10.0	3C-6 sq mm	Nos.	14	0.00002585
11.0	3C-50 sq mm	Nos.	14	0.00003259
12.0	4C-1.5 sq mm	Nos.	14	0.00002993
13.0	4C-35 sq mm	Nos.	14	0.00004622
G.10.7	LT. COPPER FIRE SURVIVAL CABLE			
1.0	1C-150 sq mm	Nos.	14	0.00004764
2.0	1C-400 sq mm	Nos.	14	0.00006110
3.0	3C-2.5 sq mm	Nos.	14	0.00002444
4.0	2C-95 sq mm	Nos.	14	0.00003259
5.0	5C-2.5 sq mm	Nos.	14	0.00003135
G.10.8	1.1 KV LT. COPPER PVC FRLS CONTROL CABLE			
1.0	2C-1.5 sq mm	Nos.	14	0.00001771
2.0	2C-2.5 sq mm	Nos.	14	0.00001895
3.0	2C-4 sq mm	Nos.	14	0.00001895
4.0	3C-1.5 sq mm	Nos.	14	0.00001895
5.0	3C-2.5 sq mm	Nos.	14	0.00002444
6.0	4C-1.5 sq mm	Nos.	14	0.00002444
7.0	4C-4 sq mm	Nos.	14	0.00002585
8.0	4C-2.5 sq mm	Nos.	14	0.00002178
9.0	5C - 1.5 sqmm	Nos.	14	0.00002303
10.0	5C - 2.5 sqmm	Nos.	14	0.00002444
11.0	5C - 4 sqmm	Nos.	14	0.00002727
12.0	5C - 10 sqmm	Nos.	14	0.00002727
13.0	7C - 1.5 sqmm	Nos.	14	0.00002993
14.0	7C - 2.5 sqmm	Nos.	14	0.00003135
15.0	10C - 1.5 sqmm	Nos.	14	0.00003259
16.0	10C - 2.5 sqmm	Nos.	14	0.00003259
17.0	12C - 1.5 sqmm	Nos.	14	0.00003400
18.0	12C - 2.5 sqmm	Nos.	14	0.00003400
19.0	14C-1.5 sq mm	Nos.	14	0.00003542
20.0	16C-2.5 sq mm	Nos.	14	0.00003542
21.0	19C-1.5 sq mm	Nos.	14	0.00003542
22.0	19C-2.5 sq mm	Nos.	14	0.00003666
23.0	24C-1.5 sq mm	Nos.	14	0.00003808
24.0	24C-2.5 sq mm	Nos.	14	0.00004073
H	ABOVE GROUND EARTHING AND LIGHTNING PROTECTION MATERIAL			

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
H.1	INSTALLATION OF VERTICAL AIR TERMINATION (20 MM DIA GALVANISED MS ROD 1000 MM LONG)	Nos.	140	0.00060039
H.2	GALVANISED MS FLAT FOR EARTHING SYSTEM			
1.0	GALVANISED MS/GI FLAT 60 X 8 mm	MT	1	0.00026879
2.0	GALVANISED MS FLAT 70 X 10 mm	MT	1	0.00026879
3.0	GALVANISED MS FLAT 50 X 10	MT	1	0.00026879
4.0	GALVANISED MS FLAT 65 X 8	MT	100	0.02687841
5.0	GALVANISED MS/GI FLAT 50 X 6	MT	63	0.01693340
6.0	GALVANISED MS FLAT 50 X 3	MT	1	0.00026879
7.0	GALVANISED MS FLAT 25 X 6	MT	20	0.00537568
8.0	GALVANISED MS FLAT 25 X 3	MT	4	0.00107514
9.0	GALVANISED MS/GI FLAT 30 X 5	MT	7.2	0.00193525
10.0	GI WIRE 8 SWG	Metres	56000	0.00566852
H.3	FLEXIBLE COPPER BRAID FOR GATE EARTHING	NOS.	10	0.00002859
H.4	GS ROD 20 mm DIA 1000 mm LONG	NOS.	50	0.00021443
H.5	TEST LINK 150x50x6 mm GS FLAT WITH BOX	NOS.	120	0.00051463
H.6	GALVANISED MS PIPE , 3000mm LENGTH, 25 NB/50 NB, 2.5 mm Tthick WITH HOLES BELOW 1000 mm ALONG THE LENGTH WITH SUITABLE CAP FUNNEL & WIRE MESH AT ONE END AND SUITABLE CONE AT OTHER END.	NOS.	80	0.00039975
I	MINOR CIVIL WORK			
1.0	Minor Civil work (chipping)	SQM	5	0.00003574
2.0	Breaking of concrete wall/ floors including finishing	CU. M	2	0.00001430
3.0	Breaking of brick walls including finishing	SQM	10	0.00007148
4.0	EARTH EXCAVATION & BACK FILLING	CU. M	10	0.00010715
J	HT SWITCHGEAR			
1.0	11KV ,2500A,Unit Switch Board -3BA	NO.OF BOARDS	1	0.00258774
2.0	11KV ,2500A,Unit Switch Board -3BB	NO.OF BOARDS	1	0.00258774
3.0	11KV ,3500A, Station Switch Board -0BE	NO.OF BOARDS	1	0.00195753
4.0	11KV ,3500A, Station Switch Board -0BF	NO.OF BOARDS	1	0.00157208
5.0	3.3 KV, 3150A, UNIT - 3 SWITCHBOARD (3CA)	NO.OF BOARDS	1	0.00241750
6.0	33/11/3.3 KV EARTHING TRUCKS	SET	12	0.00017139
7.0	11 KV BUS TRANSFER PANEL	NO.	2	0.00043004
8.0	HT DATA CONCENTRATOR PANEL WITH ACCESSORIES	NO.	2	0.00043004
K	LT SWBD AND DC DB FOR UNIT # 3			
1.0	EMERGENCY MCC #3DG (3000A)	NO.OF BOARDS	1	0.00289711
2.0	BOILER SERVICE PMCC #3DA (3500A)	NO.OF BOARDS	1	0.00143428
3.0	BLR VALVE & DAMPER ACDB #3HA (250A)	NO.OF BOARDS	1	0.00164836
4.0	BOILER ACDB #3HB (400A)	NO.OF BOARDS	1	0.00182497
5.0	TURBINE SERVICE PMCC #3DB (4000A)	NO.OF BOARDS	1	0.00149851
6.0	UNIT SERVICE ACDB #3QA (600A)	NO.OF BOARDS	1	0.00113637
7.0	TURBINE VALVE DB #3KA (250A)	NO.OF BOARDS	1	0.00126570
8.0	STATION SERVICE PMCC #0DC (3500A)	NO.OF BOARDS	1	0.00113637
9.0	AIR CONDITIONING MCC #0TB (800A)	NO.OF BOARDS	1	0.00160554

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
10.0	VENTILATION MCC #3TA (1000A)	NO.OF BOARDS	1	0.00128444
11.0	MISC SERVICES MCC #0QC (400A)	NO.OF BOARDS	1	0.00113637
12.0	AIR WASHER MCC #0SC (800A)	NO.OF BOARDS	1	0.00090981
13.0	220V MAIN DCDB #3FA (1250A)	NO.OF BOARDS	1	0.00142715
14.0	ESP & ID FAN AREA MCC #3HD (250A)	NO.OF BOARDS	1	0.00133795
15.0	ESP AC & VENT MCC #3TB (400A)	NO.OF BOARDS	1	0.00133795
16.0	415V AC DBs (WALL MOUNTED)	NO.OF BOARDS	35	0.00299709
17.0	220V DC DBs (WALL MOUNTED)	NO.OF BOARDS	6	0.00051379
18.0	SOOT BLOWER MCC	NO.OF BOARDS	1	0.00192665
19.0	220V DCDB (WALL MOUNTED)	NO.OF BOARDS	4	0.00034252
20.0	ESP LT MAIN SWITCHBOARD	NO. OF BOARDS	8	0.00852003
21.0	ESP SWITCH GEAR PANEL (17700mm L x 1700mm D X 2450mm H)	NO. OF PANELS	6	0.00639002
22.0	DIGITAL AUTOMATIC VOLTAGE REGULATOR BOARD (COMPRISING OF TRANSFORMER, REGULATION, THYRISTOR & FIELD SUPPRESSION CUBICLE - INCLUDING FITTINGS OF LOOSE ITEMS LIKE PC MONITOR AND OTHER ITEMS)	SET	1	0.00107261
23.0	LT DATA CONCENTRATOR PANEL WITH ACCESSORIES	SET	1	0.00010751
	FOR ACC SYSTEM			
24.0	LT MCC Switch Board	SET	15	0.01685818
25.0	DATA CONCENTRATOR AND COMMUNICATIONS SYSTEM CABINET.	SET	1	0.00010751
L	GENERATOR RELAY PANEL AND UNIT CONTROL & AUX CONTROL BOARD , VARIOUS CONTROL PANELS AND OTHER PANELS			
1.0	Generator Relay Panel (GEN/GT/UT PROT. PANELS)	SET	1	0.00053755
2.0	Electrical Control Panel (ERECTION IS EXCLUDED, COMMISSIONING RATE INCL. MOUNTING OF LOOSE COMPONENTS)	SET	1	0.00053755
3.0	MASTER CLOCK SYSTEM PANEL	Nos.	1	0.00009990
4.0	HART MANAGEMENT SYSTEM	Nos.	1	0.00009990
M	MISCELLANEOUS ITEMS OF ESP & ACC			
1.0	Electronic Control Panel (with ARECA-II CONTROLLER) (Including internal wirings with ACP and other associated panels)	No. Of Panel	120	0.01290194
2.0	DATA LOGGER PC WITH COLOR MONITOR	Set	1	0.00001428
3.0	IOS PC WITH COLOUR MONITOR	Set	1	0.00001428
4.0	COLOUR LASER PRINTER (INKJET)	Nos	1	0.00001428
5.0	SAFETY INTERLOCKS	Set	6	0.00008569
6.0	IOS PANEL	NO	1	0.00001428
7.0	DUST DENCITY MONITER (OPM)	Set	6	0.00037951
8.0	ELECTRICAL OPEARTION AND CONTROL SYSTEM OF FANS FOR ACC SYSTEM (BROAD LIST OF ITEMS INVOLVED ARE: DUAL SPEED SWITCH BOX, 1 SET SAFE SLIDE WIRE AND IT'S ACCESSOPRIES, LOCAL OPEARTION BOX ETC.)	Set	90	0.00064328
9.0	ASH LEVEL INDICATOR (HIGH / LOW) Probe & Controller Installation, PTFE cable laying, Testing ,commissing	Set	240	0.00137231
10.0	OPACITY MONITOR Installation , internal cabling, JB installation, Testing, commissioning	Set	6	0.00037951
	(ONLY COMMISSIONING RATE TO BE QUOTED FOR ITEMS SL. NO. 11.0 TO 37.0 BELOW) - ERECTION IS EXCLUDED			
11.0	HEATING ELEMENTS FOR HOPPER- (PANEL TYPE HOPPER HEATER) Including cable termination to Local Control Panel	SET	240	0.00137231
12.0	HEATING ELEMENTS FOR SUPPORT INSULATOR HEATER	Nos	480	0.00274462
13.0	HEATING ELEMENTS FOR SHAFT INSULATOR HEATERS	Nos	120	0.00077118
14.0	THERMOSTAT FOR HOPPER	Nos	240	0.00154235

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
SI No	ITEM DESCRIPTION	Unit	Quantity	Weightage
15.0	THERMOSTAT FOR SUPPORT INSULATOR HOUSING	Nos	12	0.00007711
16.0	DISCONNECTING SWITCH ASSY 95KV (VAR-05)	Nos	120	0.00042961
17.0	ELECTRICALLY OPERATED HOIST 3T (EOH)	SETS	6	0.00029974
18.0	GEARED MOTOR FOR COLLECTING ELECTRODE RAPPING, 0.5 HP, 1.1 RPM (CERM)	Nos	120	0.00257007
19.0	GEARED MOTOR FOR GD SCREEN RAPPING MOTOR 0.5HP, 1.1 RPM (GDRM)	Nos	12	0.00025701
20.0	GEARED MOTOR FOR EMITTING ELECTRODE RAPPING MOTOR 0.5HP, 2.5 RPM (EERM)	Nos	120	0.00257007
21.0	LINK CHAIN FOR INSULATOR HOUSING	Nos	960	0.00048581
22.0	GALVANIZED ADAPTOR 1/2" (HALF INCH) FEMALE CONDUIT	Nos	5760	0.00058305
23.0	GALVANIZED MALE CONDUIT WITH CCHK NUT 1/2" (HALF INCH)	Nos	5760	0.00058305
24.0	1/2" (HALF INCH) GALVANIZED FLEXIBLE METALIC CONDUIT	MTR.	28800	0.01530182
25.0	GALVANIZED CLAMP SET FOR 1/2" (HALF INCH) GI CONDUIT	SET	28800	0.00109389
26.0	SHAFT INSULATOR 95KV	Nos	120	0.00018216
27.0	BUSHINGS INSULATORS 95KV	Nos	120	0.00018216
28.0	SUPPORT INSULATOR	Nos	480	0.00072869
29.0	REFRIGERATION GAS DRYER	Nos	2	0.00010753
30.0	STROBOSCOPE	Nos	1	0.00001518
31.0	3 PH UPS FOR GENERATOR	SET	1	0.00004554
32.0	ROTOR FLUX PROBE DATA ACQUISITION SYSTEM	SET	1	0.00005376
33.0	MOTORISED TEMP CONTROL VALVE	Nos	1	0.00002151
34.0	GROUNDING BRUSH MONITOR SYSTEM	Nos	1	0.00005376
35.0	BRUSHLESS EXCITER	SET	1	0.00005376
36.0	ILLUMINATION, SPACE HEATER AND BLOWER COMMNG. OF PMG ENCLOSURE	SET	1	0.00010121
37.0	CO2 VAPORIZER SYSTEM	SET	1	0.00005376
N	DC Starter Panel/ Starting Cabinet/ Local Motor Starter			
1.0	STARTER CABINET FOR DC JACKING OIL MOTOR WITH RESISTANCE BOX	SET	1	0.00005376
2.0	STARTER CABINET FOR DC EMERGENCY LUB .OIL MOTOR WITH RESISTANCE BOX	SET	1	0.00005376
3.0	STARTER CABINET FOR DC SEAL OIL MOTOR WITH RESISTANCE BOX	SET	1	0.00005376
4.0	FURNACE TEMPERATURE PROBE STARTER BOX	Nos	2	0.00010753
5.0	STARTER CABINET FOR DC SCANNER AIR MOTOR WITH RESISTANCE BOX	Nos	1	0.00005376
6.0	LOCAL MOTOR STARTER UPTO 3.7 KW	Nos	75	0.00053606
7.0	DC STARTER CONTROL PANEL OF TDBFP WITH RESISTANCE BOX	Nos	2	0.00010753
8.0	LOCAL MOTOR STARTER	Nos	450	0.00321638
O	JUNCTION BOX, PUSH BUTTON ETC.			
O.1	JUNCTION BOX			
1.0	JUNCTION BOX -6 WAY	NO	5	0.00002499
2.0	JUNCTION BOX -12 WAY	NO	5	0.00002499
3.0	JUNCTION BOX -24 WAY	NO	10	0.00004997
4.0	JUNCTION BOX -36 WAY	NO	10	0.00004997
5.0	JUNCTION BOX -48 WAY	NO	8	0.00003998
6.0	JUNCTION BOX -75 WAY	Nos.	10	0.00004997

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
7.0	JUNCTION BOX -96 WAY	Nos.	10	0.00004997
8.0	FRP JUNCTION BOX : 24/48/72 WAY	Nos.	250	0.00124923
9.0	LOCAL CONTROL BOX FOR PANEL TYPE HOPPER HEATERS FOR ESP	SETS	240	0.00137231
10.0	FRB POWER JB VARIANT- P3 FOR ESP	Nos	26	0.00014866
11.0	FRB POWER JB VARIANT- P1 FOR ESP	Nos	14	0.00008005
12.0	FRB CONTROL JB VARIANT- C2 FOR ESP	Nos	130	0.00074334
13.0	FRB CONTROL JB VARIANT- C2 FOR FD, ID	Nos	10	0.00005718
14.0	LOCAL FRP JUNCTION BOX FOR ASH LEVEL INDICATOR (HIGH)- VAR-C2 FOR NTPC USE	Nos	24	0.00013723
15.0	FRB JB VAR-C4 FOR GATES AND DAMPER.	Nos	18	0.00010292
O.2	PUSH BUTTONS			
1.0	LOCAL START STOP PUSH BUTTON FOR RAPPING MOTOR	Nos.	252	0.00161947
2.0	Local Push Button Stations (TYPE A)	Nos.	1600	0.01028234
3.0	Local Push Button Stations (TYPE C)	Nos.	25	0.00016066
4.0	FIRE PROTECTION EMERGENCY PUSH BUTTON	Nos.	7	0.00005003
P	<u>DC System (Including fittings of loose items, like thyristors, transformer etc. with necessary internal wirings)</u>			
1.0	220V Battery (Ni-Cd)	Set	2	0.00396212
2.0	220V Battery Rack	Set	4	0.00021506
3.0	220V DC BATTERY HEALTH MONITORING SYSTEM	Set	2	0.00030361
4.0	Float cum Boost Battery Charger	Set	6	0.00224778
5.0	220V DC ISOLATION BOX	Nos	6	0.00025693
6.0	Battery Fuse Box	Nos	2	0.00008564
Q	MISCELLANEOUS			
Q.1	MOTORS & ACTUATORS (EXCLUDING ERECTION , ERECTED BY OTHER VENDORS)			
1.0	DRYING OUT /TESTING OF HT MOTORS	No.	150	0.00806466
2.0	DRYING OUT /TESTING OF LT MOTORS	No.	100	0.00215058
3.0	Actuators (Limit switches setting, position feedback calibration and operation/commissioning for motor operated valves/dampers / probe) (TO BE ERECTED BY OTHER VENDORS)	No.	540	0.01161314
Q.2	COMMISSIONING OF SOOT BLOWER (EXCLUDING ERECTION, ERECTED BY OTHER VENDORS)	No.	130	0.00419363
Q.3	COMMISSIONING OF ELECTRICAL OPERATED HOIST (EXCLUDING ERECTION, ERECTED BY OTHER VENDORS)	No.	45	0.00241940
Q.4	COMMISSIONING OF CONTROL PANEL OF CENTRAL OIL PURIFICATION UNIT (EXCLUDING ERECTION, ERECTED BY OTHER VENDORS)	No.	1	0.00005376
Q.5	Commissioning of Skid based Lub Oil system for different HT Motors(ERECTION EXCLUDED)	No.	20	0.00107529
Q.6	Commissioning of different types of Dosing Panels (NAOH/ NH3/Hydrazine/O2 etc.)	No.	8	0.00043012
Q.7	Self Cleaning Strainer Erection & Commissioning	No.	4	0.00021506
Q.8	Sump Pump/ Submersible Pump (Commissioning only)	No.	4	0.00021506
Q.9	Assistance in installation of Electrical Lab. Equipment	Set	1	0.00015180
Q.10	Commissioning of Misc. AC Electrical Control Panel (TO BE ERECTED BY OTHER VENDORS)	No.	10	0.00053764
Q.11	FABRICATION AND ERECTION (SUPPLY OF MATL BY BHEL FREE OF COST)			
1.0	Fabrication & erection of foundation/ base frames for switchgear ,Control Panel,LCC/LPB/Starter ,Fuse Board etc,crosschannel etc from MS Structural items (Angle ,Starter ,Fuse Board etc., cross channel etc.from MS Structural items (Angle, Channel, flat, plate etc.for)including providing of all required consumables, paints etc.	MT	15	0.00342530
Q.12	CHEQUERED PLATES (SUPPLY OF MATERIAL BY BHEL FREE OF COST)			

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
1.0	Fabrication & Installation of Chequered Plates 6 to 8 mm thick for covering up leftover floor cutout / trench around switchgear / panels (inclusive of all consumables , paints).	MT	1.5	0.00034253
Q.13	INSERT PLATES /ANCHOR FASTENERS			
1.0	Fabrication of Insert Plates by gas cutting/grinding ,from 6-8 mm thick MS plates,Angle /Flats etc and its installation on wall /floor/ceiling (Supply of material by BHEL free of cost)	MT	0.25	0.00005709
2.0	Installation of heavy duty galvanised friction anchor fasteners of Hilti/Bosch make of dia 16mm and 100 mm length in concrete (minimum grade M20)including supply of anchor fasteners material ,consumables and providing ,scaffolding etc.	Set	50	0.00013599
3.0	Supply and installation of Fasteners like nut, bolts, washer of all variants	KG	25	0.00016192
Q.14	CANOPIES (SUPPLY OF MATERIAL BY BHEL FREE OF COST)			
1.0	Fabrication and installation of canopies from 2mm thick GI sheet for protection of outdoor LPBs /starters etc.(inclusive of supply of all consumables /paints)	Square Metre	25	0.00035706
Q.15	Installation of MS HOT DIP GALVANISED THREADED & HEXAGONAL HEAD CABLE GLAND ADAPTORS/GLAND HOLE PLUGS AS PER REQUIRED SIZE AND SHAPES	KG.	125	0.00071475
Q.16	Application of Moisture Sealing compounds for wall, floor, panel openings for all variants	Sq. Mtr.	50	0.00037952
S	TRANSFORMERS			
S.1	<u>OIL FILLED TRANSFORMERS</u> (SCOPE OF WORK: a) SHIFTING OF TRANSFORMER FOR ERECTION PURPOSE (Job involving Loading from storage location at about maximum 500 Mtr. periphery inside the plant premises, Transportation through multi axle low bed trailer and unloading for erection purpose) b) Erection, Testing and commissioning of Transformer and associated Equipments / accessories.)			
1.0	265 MVA, 420/√3/21 Kv, OFAF or ODAF, YNd11, Z=15% ON 265 MVA BASE, OCTC +/- 5% IN STEPS OF 2.5% ON HV SIDE			
1.0 (a)	SHIFTING OF TRANSFORMER FOR ERECTION PURPOSE	Sets	3	0.00910832
1.0 (b)	Erection, Testing and commissioning of Transformer and associated Equipments / accessories.)	Sets	3	0.03741995
2.0	120/60/60 MVA, 400/11.5/11.5 kV, ONAN/ONAF, YNyn0yn0, OLTC +/-10% IN STEPS OF 1.25% ON HV SIDE, ZHV-LV1 = Z HV-LV2 = 28%, Z LV1-LV2 = 51% AT 120 MVA BASE WITH 02 NOS NGR (11.06 OHM, 600A FOR 10 SECS)			
2.0 (a)	SHIFTING OF TRANSFORMER FOR ERECTION PURPOSE	NOS	1	0.00248699
2.0 (b)	Erection, Testing and commissioning of Transformer and associated Equipments / accessories.)	NOS	1	0.01011823
3.0	45 MVA, 21/11.5 kV, ONAN/ONAF, Dyn1, Z=11.5% ON 45 MVA BASE, OLTC +/- 10% IN STEPS OF 1.25% ON HV SIDE WITH NGR (11.06 OHM, 600A FOR 10 SECS)			
3.0 (a)	SHIFTING OF TRANSFORMER FOR ERECTION PURPOSE	NOS	2	0.00151805
3.0 (b)	Erection, Testing and commissioning of Transformer and associated Equipments / accessories.)	NOS	2	0.00657823
4.0	16 MVA, 11/3.45 KV, ONAN, DyN1, Z= 12.5% UAT and CHP Transformer with NGR (3.32OHM, 600A, 10Secs)and accessories complete. (UAT-02 Nos)			
4.0 (a)	SHIFTING OF TRANSFORMER FOR ERECTION PURPOSE	NOS	2	0.00101204
4.0 (b)	Erection, Testing and commissioning of Transformer and associated Equipments / accessories.)	NOS	2	0.00253009
5.0	95 KV/900 mA HVR TRANSFORMER(ERECTION IS EXCLUDED , RATE TO BE QUOTED FOR OIL FILTRATION & COMMISSIONING ONLY)	NOS	120	0.01290194
S.2	OIL FILLED SERVICE TRANSFORMER			
1.0	1600kVA, 11kV/0.433kV, 3 phase, 2 winding, outdoor, ONAN, Z=8.0%, Dyn1, OFF Circuit taps ±5% in steps of 2.5% (with cable box type HV, with bus-duct type LV and with solidly grounded LVN termination)	NOS	2	0.00164455
2.0	2000kVA, 11kV/0.433kV, 3 phase, 2 winding, outdoor, ONAN, Z=10.0%, Dyn1, OFF Circuit taps ±5% in steps of 2.5% (with cable box type HV, with bus-duct type LV and with solidly grounded LVN termination)	NOS	10	0.00822279
3.0	2500kVA, 11kV/0.433kV, 3 phase, 2 winding, outdoor, ONAN, Z=13.0%, Dyn1, OFF Circuit taps ±5% in steps of 2.5% (with cable box type HV, with bus-duct type LV and with solidly grounded LVN termination)	NOS	15	0.01233419
S.3	Dry Type Transformer:			

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
Sl No	ITEM DESCRIPTION	Unit	Quantity	Weightage
1.0	11 / 0.433KV Dry Type Transformer (DTT), 1.6 to 2.5 MVA	NOS	6	0.00493368
ZA	BUSDUCTS			
ZA.1	IP BUSDUCT(24KV)			
a)	Bus Duct of Rating 24000A (Weight 500Kg/Mtr.)	MTR	190	0.01562331
b)	Bus Duct of Rating 14000A (Weight 380Kg/Mtr.)	MTR	150	0.01233419
c)	Bus Duct of Rating 2800A (Weight 220Kg/Mtr.)	MTR	90	0.00512343
d)	Top Chamber	NO	2	0.00060722
e)	NGR (0.628 Ohm with TAPs at 0.534, 0.471 & 0.094 Ohm, 240V, 400A for 5 Min) with Neutral Grounding Transformer(Rating: 13.5 KV/240V, Volt Class 22/1.1KV, AN, 1Ph, 50HZ, 65 KVA) (including assembly of loose components alongwith internal wiring,	NO	1	0.00030361
f)	LAVT Cubicle (including assembly of loose components alongwith internal wiring, mounting of VT etc.)	SET	1	0.00030361
g)	SPVT Cubicle (including assembly of loose components alongwith internal wiring, mounting of VT etc.)	SET	1	0.00030361
h)	Hot Air Blowing Equip. with piping and pipe support including air drying and compressing unit	SET	1	0.00202407
ZA.2	SP BUSDUCT(11KV & 3.3KV)			
1.0	11KV Bus Duct of Rating 3500A (Weight 180Kg/Mtr.)	MTR	155	0.00411773
2.0	11KV Bus Duct of Rating 2500A (Weight 100Kg/Mtr.)	MTR	170	0.00451622
3.0	3.3KV Bus Duct of Rating 3150A (Weight 150Kg/Mtr.)	MTR	120	0.00318792
4.0	11KV Bus Duct of Rating 3500A (Weight 180Kg/Mtr.) for Interconnecting	MTR	760	0.02019014
ZA.3	LT BUSDUCTS (each set comprising tentatively of following : Straight Run, 90 degree bend, Flexible Copper at Transformer end, Flexible at Switchgear end , Adapter, Expansion joint, Phase cross over, hardware at Transformer & SWBD end)			
1.0	SANDWICH TYPE BUSDUCT FOR EMERGENCY MCC FROM MAIN DG # 3DG (3000A)	SET	1	0.00759027
2.0	SANDWICH TYPE BUSDUCT FOR EMERGENCY MCC FROM STAND BY DG #1DG (3000A)	SET	1	0.00759027
3.0	BUS DUCT FOR BOILER SERVICE PMCC #3DA (2500A)	SET	2	0.00030361
4.0	BUS DUCT FOR TURBINE SERVICE PMCC #3DB (3500A)	SET	2	0.00030361
5.0	BUS DUCT FOR STATION SERVICES PMCC #0DC (3000A)	SET	2	0.00030361
6.0	BUSDUCT FOR LTMSB INCOMER-1 #3DC (3000A)	SET	1	0.00015180
7.0	BUSDUCT FOR LTMSB INCOMER-2 #3DC (3000A)	SET	1	0.00015180
8.0	BUSDUCT FOR LTMSB INCOMER-1 #3DD (3000A)	SET	1	0.00015180
9.0	BUSDUCT FOR LTMSB INCOMER-2 #3DD (3000A)	SET	1	0.00015180
10.0	BUSDUCT FOR LTMSB INCOMER-1 #3DE (3000A)	SET	1	0.00015180
11.0	BUSDUCT FOR LTMSB INCOMER-2 #3DE (3000A)	SET	1	0.00015180
12.0	BUSDUCT FOR LTMSB INCOMER-1 #3DF (3000A)	SET	1	0.00015180
13.0	BUSDUCT FOR LTMSB INCOMER-2 #3DF (3000A)	SET	1	0.00015180
14.0	BUSDUCT FOR LTMSB INCOMER-1 #3DH (3000A)	SET	1	0.00015180
15.0	BUSDUCT FOR LTMSB INCOMER-2 #3DH (3000A)	SET	1	0.00015180
16.0	BUSDUCT FOR LTMSB INCOMER-1 #3DJ (3000A)	SET	1	0.00015180
17.0	BUSDUCT FOR LTMSB INCOMER-2 #3DJ (3000A)	SET	1	0.00015180
18.0	BUSDUCT FOR ACC-LTMSB INCOMER (4000A)	SET	15	0.00227708
ZB)	DG SETS			
ZB.1	1750 KVA DG SETs along with Accoustic enclosure, Fuel tank(day tank, bulk oil tank), accoustic enclosure, fuel oil piping, exhaust piping,DG set stack Installation of Generator terminal adaptor/box, Current transformer, instruments, Power JB, Control JB, cleaning of radiator tubes (cleaning agent to be supplied by BHEL), replacement of engine oil and its filter, lub. oil filter, radiator coolant (Diesel for commissioning, engine oil & its filter, lub. oil filter, coolant being supplied by BHEL) Cabling, earthing, etc. complete.	SETS	1	0.00428143

VOLUME-III PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-3: SERVICE PART				
SI No	ITEM DESCRIPTION	Unit	Quantity	Weightage
ZB.2	<u>PANELS, BATTERY ETC</u>			
1.0	AMF PANEL	SET	1	0.00008563
2.0	DG Auxiliary Panel	No.	1	0.00032112
3.0	Battery charger Panel	Nos.	2	0.00019980
4.0	NGR Panel	No.	1	0.00009990
5.0	Single Breaker Panel	Nos.	1	0.00015181
6.0	3 Breaker Panel	No.	1	0.00030361
7.0	DC BATTERY for Engine Starting	SET	2	0.00003036
8.0	ELECTRONIC CONTROL PANEL	NO	1	0.00004282
9.0	INSULATION AND CLADDING	MT	2	0.00037106
10.0	FUEL TRANSFER PUMP	SET	2	0.00004284
ZC	SUPPORT STRUCTURE (FOR BUS DUCT, DG SET ETC) INCLUDING FABRICATION OF DG STRUCTURE (supply of materials is by BHEL Units free of cost)	MT	100	0.01855315
ZD	<u>LIGHTING AND MAINTENANCE SYSTEM OF ACC (Erection and Commissioning Assistance Services)</u>			
1.0	Lighting Panel	Set	2	0.00015180
2.0	Maintenance Box	Set	4	0.00004048
3.0	Metal Halide Lighting Fixture with Lamps	Set	150	0.00075903
4.0	Main Lighting Distribution Board	Set	1	0.00014590
5.0	Street Lighting Pole with lifghting fixtures and accessories	Set	25	0.00072935
TOTAL				0.97016165

VOLUME-III				
PRICE SCHEDULE, REV-00				
JOB: ERECTION, TESTING & COMMISSIONING OF ELECTRICAL SYSTEMS FOR UNIT# 3 OF 3X660 MW, NORTH KARANPURA STPP AT JHARKHAND				
TENDER NO PSER:SCT:NKP-E2053:20				
SCH-4: SUPPLY PART				
SI No	ITEM DESCRIPTION	Unit	Quantity	Weightage
A	RUBBER MAT			
1.0	Supply of 6mm thick black chequered rubber mat of appropriate voltage class Size for laying infront of switchgears upto 11 KV. (as required under IE Rule).	Pieces	250	0.01612934
B	DISPLAY BOARD			
1.0	Supply of Electric Shock Treatment Display board as per IE Rules, Laminated on hardboard material (size : 2.5 ft x 3.5 ft) and mounted on wooden frame) for switchgear rooms / substations	Pieces	200	0.00322587
2.0	Supply of 33KV/11 KV/3.3 KV/415V DANGER PLATE	Pieces	50	0.00026882
C	Supply of MS HOT DIP GALVANISED THREADED & HEXAGONAL HEAD CABLE GLAND ADAPTORS/GLAND HOLE PLUGS AS PER REQUIRED SIZE AND SHAPES	KG.	125	0.00067206
D	Supply of Moisture Sealing compounds for wall, floor, panel openings for all variants	Sq. Mtr.	450	0.00341564
E	CABLE GLANDS & LUGS			
E.1	Supply of DOUBLE COMPRESSION HEAVY DUTY CABLE GLANDS (Use upto 11KV level)			
	ABOVE (MM) UP TO (MM)			
1.0	-- 15	Nos.	25	0.00013441
2.0	15 18	Nos.	25	0.00016129
3.0	18 21	Nos.	25	0.00018817
4.0	21 24	Nos.	25	0.00021506
5.0	24 27	Nos.	25	0.00024194
6.0	27 30	Nos.	25	0.00026882
7.0	30 33	Nos.	25	0.00029571
8.0	33 36	Nos.	25	0.00032259
9.0	36 39	Nos.	25	0.00034947
10.0	39 42	Nos.	25	0.00037635
11.0	42 46	Nos.	25	0.00040324
12.0	46 50	Nos.	25	0.00043012
13.0	54 58	Nos.	25	0.00048388
14.0	58 62	Nos.	25	0.00048388
15.0	62 70	Nos.	25	0.00048388
16.0	70 78	Nos.	25	0.00053764
E.2	Supply of AL./CU. LUGS (HEAVY DUTY TYPE) - SOLDERLESS CRIMPING TYPE (Use upto 11KV level)			
1.0	4 sq mm	Nos.	25	0.00000284
2.0	6 sq mm	Nos.	25	0.00000538
3.0	10 sq mm	Nos.	25	0.00000538
4.0	16 sq mm	Nos.	25	0.00000696
5.0	25 sq mm	Nos.	25	0.00000822
6.0	35 sq mm	Nos.	25	0.00000822
7.0	50 sq mm	Nos.	25	0.0000136
8.0	70 sq mm	Nos.	25	0.0000136
9.0	95 sq mm	Nos.	25	0.00002151
10.0	120 sq mm	Nos.	25	0.00002689
11.0	150 sq mm	Nos.	25	0.00003226
12.0	185 sq mm	Nos.	25	0.00005376
13.0	240 sq mm	Nos.	25	0.00006736
14.0	300 sq mm	Nos.	25	0.00009424
15.0	400 sq mm	Nos.	25	0.00014801
16.0	630 sq mm	Nos.	25	0.00024194
TOTAL				0.02983835