



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TCN – 05

Ref: PSER:SCT:KGN-C2105:TCN-05

Date: 28-05-2021

Sub	Tender Change Notice (TCN) - 05	
Job	CIVIL, STRUCTURAL & ARCHITECTURAL WORKS (INCLUDING PILING WORKS) FOR FGD SYSTEM AREA OF 4 X 210 MW, STAGE-I & COMMON SYSTEM KAHALGAON STPP, BIHAR.	
Ref	1.0	Tender no. PSER:SCT:KGN-C2105:21.
	2.0	BHEL's NIT, vide reference no PSER:SCT:KGN-C2105:8609 Date: 27-04-2021
	3.0	BHEL's TCN-01, vide reference no PSER:SCT:KGN-C2105:TCN-01, dated 06-05-2021.
	4.0	BHEL's TCN-02, vide reference no PSER:SCT:KGN-C2105:TCN-02, dated 10-05-2021.
	5.0	BHEL's TCN-03, vide reference no PSER:SCT:KGN-C2105:TCN-03, dated 13-05-2021
	6.0	BHEL's TCN-04, vide reference no PSER:SCT:KGN-C2105:TCN-04, dated 17-05-2021
	7.0	All other pertinent issues till date.

With reference to above, following points/ documents, relevant to tender, may please be noted and complied with while submitting offer.

- 1.0 Revised Volume-IF-TCC-CML-Rev-01 is attached, superseding Volume-IF-TCC-CML-Rev-00 issued earlier along with NIT. Bidders are requested to go through entire volume before submitting their offer.
- 2.0 The clarifications to bidder's queries are attached as **Annexure-A** to this TCN-05.
- 3.0 Revised 'No deviation certificate' as per enclosed Annexure-2. Bidder shall submit no deviation certificate as per enclosed format only.
- 4.0 All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,
for BHARAT HEAVY ELECTRICALS LTD

DY. MGR (SCT)

Encl : As above.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

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

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691, 23211798, 23211796

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 1 OF 49

CONTENTS

CLAUSE NO	DESCRIPTION
1.0	PROJECT SYNOPSIS AND GENERAL INFORMATION
2.0	SITE VISIT
3.0	NAME OF WORK
4.0	SCOPE OF WORK
5.0	DEVIATIONS
6.0	DEWATERING
7.0	GENERAL TECHNICAL REQUIREMENTS (CODES AND STANDARDS)
8.0	GENERAL SERVICES TO BE RENDERED BY THE BIDDER
9.0	PROTECTION
10.0	GENERAL GUIDELINES FOR FIELD ACTIVITIES
11.0	QUALITY ASSURANCE PROGRAMME
12.0	HEALTH, SAFETY & ENVIRONMENT
13.0	LAND
14.0	WATER
15.0	ELECTRICITY
16.0	PROCUREMENT OF CONSUMABLE
17.0	TEST CERTIFICATES
18.0	PROJECT MANAGEMENT/ CONSTRUCTION MANAGEMENT
19.0	TOOLS & PLANTS (TO BE PROVIDED BY CONTRACTOR)
20.0	INTEREST BEARING RECOVERABLE ADVANCE/ MOBILISATION ADVANCE
21.0	OVER RUN CHARGES
22.0	REVISION ON ACCEPTED CONTRACT RATE
23.0	INSURANCE
24.0	MATERIAL HANDLING (BHEL ISSUED MATERIAL)
25.0	ISSUE OF MATERIALS
26.0	CONSUMPTION AND WASTAGE RETURN OF MATERIALS
27.0	CEMENT & STEEL CONSUMPTION AND WASTAGE
28.0	RECONCILIATION OF BHEL ISSUED MATERIALS
29.0	RECOVERY OF MATERIAL
30.0	CONSTRUCTION OF TEMPORARY OFFICE, STORES ETC
31.0	CIVIL LABORATORY AT SITE
32.0	CONSTRUCTION SCHEDULE
33.0	COMPLETION PERIOD
34.0	LIQUIDATED DAMAGE/ PENALTY
35.0	CERTIFICATE TOWARDS COMPLETION
36.0	GUARANTEE
37.0	PRICE VARIATION CLAUSE
38.0	EXTRA/ ADDITIONAL ITEMS OF WORK
39.0	SECURITY DEPOSIT, PERFORMANCE BOND & FINAL BILL
40.0	TAXES, DUTIES ETC
41.0	INTERIM PAYMENTS
42.0	CONTRACT PRICE
43.0	DESIGN OFFICE, FABRICATION DRAWING FOR STRUCTURAL STEEL WORKS
44.0	METHOD OF MEASUREMENT
45.0	OTHER TERMS
	ANNEXURE-A
	ANNEXURE-I
	ANNEXURE-II
	ANNEXURE-III

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 2 OF 49

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 conflict or inconsistency between the general and technical conditions, the same shall be brought out by the bidder in writing to BHEL for clarification during pre-bid discussions; failing which most stringent interpretation/ clause 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 package of the tender.

CLAUSE NO	DESCRIPTION
1.0	PROJECT SYNOPSIS AND GENERAL INFORMATION Kahalgaon Super Thermal Power Plant has been set up by NTPC, is located near Kahalgaon town in Bhagalpur district of Bihar State. The Stage-I & Stage -II of the Project were comprised of four (4) units of 210 MW, three (3) units of 500 MW respectively. The ultimate capacity of the project is 2340 MW (4 X 210 MW, Stage-I + 3 X 500 MW, Stage-II). As per Govt. of India norms, Flue Gas Desulphurization (FGD) system is being set up by NTPC for all units. 1. Owner : NTPC Ltd. 2. Project title : Flue Gas Desulphurisation (FGD) system Package for 2x210 MW Kahalgaon STPS Stage-I 4. Location : Kahalgaon town in Bhagalpur district, Bihar 5. Nearest Rly Stn : Colgong (Kahalgaon) 2.0 km away from project site 6. Nearest Port : Paradip 7. Nearest Airport : Patna (250 KM FROM PROJECT LOCATION) 8. Road Approach : Bhagalpur - Sahibganj State Highway 9. Lattitude : 25 o 15 N 10. Longitude : 87 o 15 E 11. Average Elavation : 16 MTR. 12. Average Temp : 35-40°C During summer 13. Average Rainfall : 50-75 CM
2.0	SITE VISIT The contractor should visit project site and acquire full knowledge and information about conditions prevailing at site and in & around the plant premises, together with all the statutory, obligatory, mandatory requirements of various authorities before submission of the bid.
3.0	NAME OF WORK Civil, structural and Architectural Works of Main Plant FGD including common systems of lime & gypsum handling system of Unit#1 ,2,3 & 4 (4X210MW), NTPC, Kahalgaon, Bihar

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 3 OF 49

4.0	SCOPE OF WORK
4.1	<p>Following area/structures are broadly covered under this Package: Civil, structural and Architectural works including piling and pile cap of Main plant FGD Civil works of Unit #1, 2 & 3 & 4 (4x210 MW) which covers the following:</p> <ol style="list-style-type: none"> 1. Test piles installation and testing & report submission 2. Absorber foundation 3. FGD control room 4. Booster fan 5. Truck Tippler 6. LBC 7. Limestone Transfer Point 8. Crusher House 9. Silo 10. Gypsum Conveyor 11. Gypsum Shed 12. MCC 13. Transformer foundation 14. RC pump & oxidation blower building & equipment foundation 15. ECW pump house 16. SO2 analyser room foundation 17. Misc. tank foundation 18. Misc. pump /equipment 19. Duct foundations 20. Pipe rack 21. Paving, roads & drains 22. Filling and micro grading as per site requirement 23. Misc. sumps, plinth protection & underground works 24. Sewage network, 25. Plumbing, sanitary works, micrograding etc 26. Any other structures as per scope of works required for system completion. <p>Note: Pile installation of Chimney structure is also covered in agency's scope. However, pile cap & other work of Chimney is not covered under scope of this tender</p>
4.2	<p>The scope shall include other related works although they may not be specifically mentioned. All incidental items, although not mentioned, but are necessary for completion of the work as a whole are covered in the scope of this contract. The scope also includes supply of all labour, technical personnel, materials, consumables and equipment for execution of work and getting all materials tested at site laboratory or approved laboratory outside, submitting test reports, arranging supervision etc. and execution of the contract with major areas of work mentioned above.</p>
4.3	<p>Cement, Reinforcement steel & Factory made shop fabricated Structural steel for civil works & MS round bar for below ground earthing shall be provided by BHEL free of cost only for incorporation in the permanent work wherever specifically mentioned in the BOQ. Embedments /inserts required for the works in general shall be supplied by the bidder and payment shall be made as per corresponding item in BOQ.</p>
4.4	<p>Any buried pipe / cable coming in the working fronts are to be removed safely & re-routed by the contractor at no extra cost to BHEL.</p>
4.5	<p>The work to be performed under this specification consists of providing all temporary works, temporary storage sheds for contractors own use, temporary colony for labour and staff, temporary site offices, constructional plant's transportation / handling and all incidental items not shown or specified but reasonably implied or necessary for the completion of subject scope, all in strict accordance with the specifications including revisions and amendments thereto as may be required during the execution of work.</p>

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 4 OF 49

4.6	All quality standards, tolerances, welding standards & other technical requirements shall be strictly adhered to. The bidder shall fully apprise himself of the prevailing conditions at the proposed site, climatic conditions including monsoon pattern, soil conditions, local conditions and site specific parameters and shall include for all such conditions and contingent measures in the bid, including those which may not have been specifically brought out in the specifications.
4.7	The scope shall also include setting up by the bidder a testing room with compressive strength testing machine and other site test instruments for conducting day to day testing of concrete cubes, compaction of earth & road work, brick & other material testing. One Qualified quality engineer to be deployed as necessary.
4.8	Before execution of work the bidder shall ensure that there is no obstruction to underground/over ground facilities like sewer lines, pipe lines etc. Any such damage and remedial/ rectification measures shall be at the contractors cost. For underground facilities survey, Ground Penetration Radar (GPR) has to be used to avoid any untoward incident during execution/excavation. No sepearate payment will be entertained in this regard.
4.9	Detailed Technical specification for the job is attached. Bidder is requested to refer relevant applicable portion.
4.10	TEST PILE INSTALLATION AND LOAD TESTING
4.10.1	Commencement of test pile installation work and completion of all initial pile load test is very critical for this package. Hence, contractor has to mobilize minimum necessary T & Ps required for completion of test pile work, within 15 days of placement of LOI or 7 days of handing over of drawings for test pile work, whichever is later.
4.10.2	Approximate number of tests piles are 27 nos. for 600 mm dia and 10 nos 760 mm dia piles. Depth of pile for 600 mm dia will vary tentatively from 19 m to 32m & depth of pile for 760 mm dia will vary tentatively from 31 m to 33m. For exact length of pile, drawings for test pile shall be referred, which will be issued after award of contract.
4.10.3	Arrangement of Cement & Reinforcement steel required for test pile work is in the scope of contractor. Reinforcement steel shall be high yield strength deformed TMT steel bars of grade Fe-500 having minimum elongation of 14.5 % or Fe-500D conforming to IS:1786. All bars shall be of tested quality. Reinforcement steel shall be procured from Primary Steel Producers viz. SAIL, JSW Steel Ltd, Jindal Steel & Power, Tata steel Ltd., RINL, Electrosteel steel Ltd., Monnet Ispat and Energy. Prior to procurement of cement, approval shall be sought from BHEL/ Owner. For RMC, approval shall be taken for cement to be used by RMC supplier
4.10.4	For casting of test piles, effort shall be made for making tie up with available RMC supplier in and around Kahalgaon for supply of ready-mix concrete for faster execution of test piles. Prior approval of RMC supplier shall be sought from BHEL/ Customer/ Owner. In connection to approval of RMC, all the relevant document of RMC supplier viz. source of aggregate, petrographic examination report of aggregates, initial tests and routine tests of aggregates (as per technical specification or IS:383), calibration certificate of batching plant, License for RMC production, water test report, etc. shall be submitted for BHEL/ Owner review.
4.10.5	Contractor has to carry out design mix for M30 grade concrete of required specification for initial test piles through agency duly approved by BHEL/Customer. Alternatively, contractor can use design mix for M30 grade concrete of required specification which is already established and approved at site.
4.10.6	Prior to use, trial mix at site shall be taken and to be tested for establishment of concrete strength. Subject to approval by customer, curing of samples may be

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 5 OF 49

	carried out by ACT (Accelerated curing tank) method for which, all necessary arrangement to be made by the contractor. Minimum number of cubes to taken should be in line with specification and instruction of BHEL/customer.
4.10.7	Minimum one hydraulic rotary rig for test pile works shall be arranged within 15 days of placement of LOI or 7 days of handing over of drawing for test pile, whichever is later.
4.10.8	Tie up with technically capable pile load testing agency shall be made within 20 days of placement of LOI and all relevant document shall be submitted to BHEL/ Owner for approval. Subsequently methodology for initial pile load testing shall be submitted to BHEL/ Owner for approval prior to commencement of initial load testing work.
	Kentledge arrangement along with concrete blocks, required for testing purpose, are to be made available at site within one month from the LOI or date of handing over of site, whichever is later.
4.11	FABRICATED STRUCTURAL STEEL
4.11.1	Supply of Factory Made Shop Fabricated Structural Steel shall be in BHEL Scope.
5.0	DEVIATIONS
	The bidder is required to submit with his offer in the relevant 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 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.

6.0	DEWATERING
	Contractor shall ensure at all times that his 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. Unless otherwise specified in BOQ or contract, 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.
7.0	GENERAL TECHNICAL REQUIREMENTS (CODES AND STANDARDS)
7.1	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.
7.2	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.
7.3	In the event of any conflict between the codes & standards referred above and requirements of this specification, the requirements which are more stringent shall govern.
7.4	Tools used during erection and commissioning shall not be accepted except with the specific approval of the engineer.
7.5	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.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF- CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 6 OF 49

8.0	GENERAL SERVICES TO BE RENDERED BY THE BIDDER
8.1	Services for construction, fabrication, equipment erection, testing, trial run, commissioning of various equipment & accessories under the contract shall include but not be limited to the following:
8.2	Collecting materials from store / open yard from time to time for fabrication / erection as per the construction program and unloading of steel 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 the owner / BHEL after complete erection and commissioning. The contractor shall maintain adequate security personnel and security measures for proper precaution and safety of material.
8.3	Deployment of all skilled and unskilled manpower required for erection supervision, watch & ward, for commissioning and other services to be rendered under this specification.
8.4	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.
8.5	Supply of all consumables, e.g. welding electrodes, etc as well as materials required for temporary supports, scaffolding etc as necessary for such construction work, unless specified other wise.
8.6	Providing support services for the contractor's staff e.g. construction of site offices, temporary stores, residential accommodation and transport to work site for construction personnel, watch and ward for security and safety of the materials under the Contractor's custody etc. as required.
8.7	Maintaining proper documentation of all site activities undertaken by the contractor as per the proforma mutually agreed with BHEL / owner, submitting monthly progress reports / as and when desired by BHEL/ owner, taking approval of all statutory authorities e.g., Factory Inspector, Provident Fund authority etc. for respective portions of work under the jurisdiction of such statutes of laws.
8.8	As part of overall project management activity, the contractor shall be responsible for proper co-ordination of construction 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.
8.9	The contractor shall confine all his field 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 unfavourable construction conditions in no way relieve the contractor of his responsibility to perform the works as per the schedule.
8.10	The contractor shall supply all the skilled workmen like labour, welders, gas cutters, electricians, sarangs, erectors, carpenters, bar bender, pipe fitters, masons, ladders, instrument machanic etc, in addition to other skilled, semi-skilled and unskilled workmen required for all works of handling and transportation from site store to construction site, execution, testing contemplated under this specification. Only fully trained and competent men with previous experience on the job shall be employed. They shall hold valid

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 7 OF 49

	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 reserves 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.
8.11	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 / owner.
8.12	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.
8.13	The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall co-operate with other personnel, and other contractors, co-ordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.
8.14	The contractor's supervisory staff shall 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.

8.15	It is the responsibility of the contractor to engage his workman in shifts or on overtime basis for achieving the target set by BHEL during construction and testing period. Contractor's quoted rate shall include all these contingencies.
8.16	Any other service, although not specifically called for but required for a contract of the size and nature indicated in the specification.
9.0	PROTECTION
9.1	Equipment having anti-friction or sleeve bearings 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.
9.2	Electrical equipments, controls and insulations shall be protected against moisture and water 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 and protected with metallic or other substantial type protectors
9.3	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.
9.4	All other consumables including wire brush, emery papers, painting brush etc to be supplied by the contractor within the quoted rate.
10.0	GENERAL GUIDELINES FOR FIELD ACTIVITIES
10.1	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.
10.2	The contractor shall co-operate with owner / BHEL 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

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 8 OF 49

	promptly of any defect in other contractors' works that could affect the contractor's 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 compiled 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.
10.3	The engineer shall hold weekly meeting of all the contractors working at site at a time and a place to be designated by the engineer. 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.
10.4	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 the engineer, satisfying that his action will compensate for the delay. The contractor shall not be allowed any extra compensation for such action.
10.5	The engineer shall however not be responsible for provision of additional labour and or materials or supply of any other services to the contractor except for the co-ordination work between various contractors as set out earlier.

10.6	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 owner / BHEL.
10.7	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. If any error or ambiguity be discovered in such documents the same shall be brought to the notice of BHEL's engineer. Manufacturer's interpretation in such cases shall be binding on the contractor.
10.8	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. Contractor has to arrange Police verification for all workmen prior to mobilisation at site
10.9	All the works such as cleaning, checking, levelling, aligning, assembling, temporary erection for alignment, opening, surface preparation, edge preparation, fabrication as per general engineering practice at site, cutting, grinding, straightening, chamfering, filling, chipping, drilling, 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.
10.10	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.
10.11	Foundation, pedestals and material, in case wrongly constructed, shall be removed and to be redone to comply with the design requirement at the contractor expense, to the satisfaction of BHEL / owner.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 9 OF 49

10.12	After identification of materials 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 under supervision of BHEL's engineer.
11.0	QUALITY ASSURANCE PROGRAMME
11.1	INSPECTION & FIELD QUALITY ASSURANCE
11.1.1	Contractor shall carry out all activities conforming to the approved Field Quality Plan (FQP) & technical instructions 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.
11.1.2	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.
11.1.3	The protocols between contractor and customer / BHEL shall be made 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 and to avoid accumulation and multiplication of errors.

11.1.4	<p>A daily log book (with proper indexing) should be maintained by every supervisor / engineer of contractor, for respective area of work, on the job for detailing and incorporating alignment/ clearance / centering / levelling readings and inspection details of various equipment, etc. This log book shall be always accessible to BHEL engineers.</p> <p>High pressure welding (as applicable under the scope of this contract) 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.</p> <p>Record of radiography (as applicable under the scope of this contract) 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.</p> <p>Record of heat treatments (as applicable under the scope of this contract) performed shall be maintained as prescribed by BHEL.</p>
11.1.5	<p>The contractor has to take prior permission / approval before deployment of NDE & Heat Treatment agencies at site as per BHEL document no. PP-QLY-AA-DC-106/01-20.</p> <p>The contractor's employees involved in NDE & Heat treatment job must be qualified & experienced as per the requirement of the above document.</p>
11.1.6	<p>The performance of welders (as applicable under the scope of this contract) will be reviewed from time to time as per the BHEL standards. Welders' performance record shall be furnished periodically for scrutiny of BHEL's Engineer. Currently, BHEL follows online Welder Performance Monitoring System. Contractor shall extend necessary support, as deemed fit by BHEL site-in-charge, regarding data entry into the system.</p> <p>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.</p>
11.1.7	Only welders duly authorized by BHEL / customer / consultant after welder qualification test as per ASME Sec-IX / AWS D1.1 (as applicable) shall be

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 10 OF 49

	engaged on the work. All the welders shall carry identity cards as per the proforma prescribed by BHEL / Customer / Consultant. High Pressure welders and welders of special materail viz. C276, Ti, etc., must be trained & tested by experts from BHEL-WRI/ other units. Necessary infrastructure for welder traning & testing, as per BHEL's instruction, to be arranged by the contractor without any extra cost to BHEL.
11.1.8	Any re-laying or re-termination of cables / re-erection of instruments / recalibration of instruments etc. required due to contractor's mistake and found at any stage inspection, shall be carried out by the contractor at no extra cost. Repair / rectification procedure to be adopted to make any job acceptable shall be subject to the approval of BHEL. Weekly Quality Review Meeting at site shall be organised by BHEL to discuss quality issues and next weeks inspection plans. Site in-charge of the contractor along with QAEs of the contractor must be present in the meeting with closure report of the issues raised by BHEL in the previous meetings.
11.1.9	Weekly Quality Review Meeting at site shall be organised by BHEL to discuss quality issues and next weeks inspection plans. Site incharge of the contractor along with QAEs of the contractor must be present in the meeting with closure report of the issues raised by BHEL in the previous meetings.
11.2	REQUIREMENT OF ISO 9001
11.2.1	BHEL: PSER is accredited with ISO 9001 certification and as such this work is subject to various audits to meet ISO 9001 requirements.

11.2.2	The basic philosophy of the Quality Management System under ISO 9001 is to define the organizational responsibility, work as per 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 non-conformities 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.
11.2.3	BHEL reserves the right to carry out quarterly quality audits and quality surveillance of the systems and procedures of contractor's quality management. Contractor shall provide all necessary assistance to enable BHEL to carry out such audit & surveillance.
11.2.4	Quality audits / approval of the results of test & inspection will not prejudice the right of BHEL to reject an equipment service not giving desired performance and shall not in no way limit the liabilities and responsibilities of the contractor in earning satisfactory performances of equipment / service as per specification.
11.3	MMEs / MMRs
11.3.1	Contractor shall ensure deployment of reliable and calibrated MMEs (Measuring and Monitoring Equipment). The MMEs shall have test / calibration certificates from authorised / Government approved / Accredited agencies traceable to National / International Standards. Retesting / 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

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 11 OF 49

	right to stop the use of such item and instruct the contractor to deploy proper item and recall i.e. repeat the readings taken by that instrument, failing which BHEL may deploy MME and retake the readings at Contractor's cost.
11.3.2	Contractor shall provide all the Measuring Monitoring Equipment (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 shall give an indicative list of MMEs required for this work else where in this contract and to be made available by the contractor. The list will be reviewed by BHEL site as per the requirement of approved FQPs and the contractor shall meet any augmentation needed wherever required.
11.3.3	It is the responsibility of the contractor to prove the accuracy of the testing / measuring / calibrating equipment brought by him based on the periodicity of calibration as called for in the BHEL's quality assurance standards/BHEL Engineer's instructions.
11.3.4	Re-work necessitated on account of use of invalid MMEs shall be entirely to the 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.
11.3.5	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.

11.4	INSPECTION BY TS / FES / QA ENGINEERS OF BHEL UNITS / ENGINEERING CENTRES
11.4.1	Apart from day-to-day inspection by BHEL Engineers stationed at Site and Customer's Engineers, stage inspection of equipment under erection and commissioning at various stages may 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.
11.4.2	Any modifications suggested by BHEL FES and QA Engineers' team shall be carried out. Claims of contractor, if any, shall be dealt as per applicable clause of the contract, and provided such modifications have not arisen for reasons attributable to the contractor.
11.5	CONFORMANCE TO THE STATUTORY REQUIREMENTS (AS APPLICABLE UNDER THE SCOPE OF THE CONTRACT)
11.5.1	<p>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:</p> <ol style="list-style-type: none"> 1) Inspectorate of Steam Boilers and Smoke Nuisance 2) Electrical Inspector 3) Factory Inspector, Labour Commissioner, PF Commissioner and other authorities connected to this project work. <p>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 stamping of the pressure parts / pipes 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</p>

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 12 OF 49

11.5.2	Contractor should be qualified to execute pressure parts & piping work coming under the purview of IBR or Competant Inspecting Authority, for which he should register himself with CIB of state concerned / Competant Inspector. Contractor also should be aware of the latest Boiler regulations and Electricity Act, including the amendments thereof, as applicable under the scope of this contract.
11.5.3	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 equipment 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.
11.5.4	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 or Registration Fee as per prevailing statutory boiler regulations. 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.
11.6	STORAGE & PRESERVATION OF WELDING ELECTRODES & OTHER BHEL-ISSUED MATERIAL
11.6.1	The contractor shall be responsible for storage & preservation of welding electrodes & other BHEL-issued materials as per BHEL Storage & Preservation Guidelines / Instructions.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 13 OF 49

11.7	PENALTIES ON VENDORS / SUB-CONTRACTORS AGAINST NON-COMPLIANCE OF QUALITY NORMS			
Sl. No.	Nature of Non-compliance	Penalty for Domestic Project	Penalty for Export Project	Remarks
GENERAL				
11.7.1	Unavailability of QAE deployment schedule (duly approved by BHEL Site) matching with manpower requirement of approved L2 schedule	0.10%	0.10%	Against each RA bill
11.7.2	Unavailability of required number of QAE with proper experience & NDT certification as per the requirement of the Contract	Rs. 1,000.00	\$16.00	Per person per day
11.7.3	Not attending quality meeting of BHEL by nominated member of vendor / sub-contractor	Rs. 2,000.00	\$32.00	Per meeting
CALIBRATION				
11.7.4	Use of MMEs without valid calibration certificate	Rs. 1,000.00	\$16.00	Per equipment per instance
11.7.5	Use of NDT equipment, welding equipment without having valid calibration certificate / condition not as per requirement	Rs. 1,000.00	\$16.00	Per equipment per instance
WELDING & NDT				
11.7.6	Unqualified welders carrying out welding / tack welding	Rs. 1,000.00	\$16.00	Per welder per instance. (Gatepass of the person shall be withheld)
11.7.7	Not using portable oven for welding consumables	Rs. 500.00	\$8.00	Per welder per instance. (The consumables in the oven shall be confiscated)
11.7.8	Not using electrodes pre-baked in baking oven	Rs. 500.00	\$8.00	Per instance. (The subject consumables shall be confiscated)
11.7.9	Not using welding consumables of approved make & not using correct type of electrode as per approved EWS / Drawing / WPS	Rs. 1,000.00	\$16.00	Per instance. (The subject consumables shall be confiscated)
11.7.10	Non-removal of welding slag and spatters after welding	Rs. 500.00	\$8.00	Per joint
11.7.11	Not using NDT equipment as prescribed in the manual / FQP / guidelines / Contract	Rs. 1,000.00	\$16.00	Per equipment per instance
11.7.12	Welder doing welding	Rs. 500.00	\$8.00	Per instance

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 14 OF 49

	without valid job card			
11.7.13	Discrepancy observed in the weld joints identified by BHEL / Customer for RT vs RT film offered	Rs. 2,000.00	\$32.00	per joint
MATERIAL MANAGEMENT				
11.7.14	Non-maintenance of grid pillar marking	Rs. 200.00	\$3.00	Per location week
11.7.15	Mismatch of location of material in store area w.r.t. location mentioned in stock register	Rs. 500.00	\$8.00	Per instance
11.7.16	Non-compliance of Preservation of material as per storage & preservation manuals	Rs. 1,000.00	\$16.00	Per equipment
11.7.17	Not offering received material for verification within stipulated time as per contract	Rs. 500.00	\$8.00	Per instance
PAINTING & ALLIED WORKS				
11.7.18	Not using primer / paints of approved make and as per Specifications	Rs. 1,000.00	\$16.00	Per instance
11.7.19	Painting without proper surface preparation as per approved schedule / drawing / FQP	Rs. 500.00	\$8.00	Per instance
PROTOCOLS & LOG SHEETS				
11.7.20	Delay in preparation of Protocols / Logsheets as per approved FQP within 3 days of completion of checks	Rs. 200.00	\$3.00	Per protocol per day delay
INSPECTION OF BOUGHT-OUT ITEMS / CONSUMABLES				
11.7.21	Delay in offering inspection of Bought-out Items / Consumables / Aggregates (for items which need site inspection as per approved QP) within 3 days of receipt of material at site	1% of the item value of the LOT	1% of the item value of the LOT	per item per day delay after receipt of material
11.7.22	Delay in submission of required documents (viz. Invoice, Inspection Release Note, COC, MDCC, MTC as the case may be) of Bought-out Items (shop inspection items / consumables) with in 3 days of receipt of material at site.	1% of the item value of the LOT	1% of the item value of the LOT	per item per day delay after receipt of material

NOTE:

Any non-conformity requiring dismantling / rework, attributable to vendor / sub-contractor, shall be penalised at a rate mentioned above or cost to BHEL, which ever is higher.

12.0	HEALTH, SAFETY & ENVIRONMENT
-------------	---

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 15 OF 49

12.1	Applicable HSE norms shall be as per HSE Doc. No.: HSEP:14-ER, Rev-01 Dated 08/05/2020, OPERATIONAL CONTROL PROCEDURE , Doc. No.: HSEOCP: 61A , Rev. No.: 00 dated 27.04.2020 & of Tender OPERATIONAL CONTROL PROCEDURE , Doc. No.: HSEOCP: 61 , Rev. No.: 01 dated 01.06.2020 & of Tender
13.0	LAND
13.1	Availability of land within plant boundary is very limited and the contractor has to plan & use the existing land considering the use of land by other contractors and the storage of plant machineries and materials. The existing land shall be shared by all erections agencies. The same will be reviewed by BHEL and allotted to the extent available/ considered necessary free of cost. Contractor shall develop these areas for their site office, their own stores etc. Bidder must visit site to assess site condition, prior to quoting.
13.2	Levelled area for storage area for BHEL's material shall be provided as per availability free of cost.
13.3	Land for labour colony shall be arranged by successful bidder at their own. The contractor shall construct labour colony / hutment as per his requirements after obtaining approval of formalities from statutory body. Further, contractor must ensure minimum HSE norms and hygienic sanitary conditions in his labour colony.
13.4	The contractor will be responsible for handing back all lands, as handed over to him by BHEL/NTPC.
14.0	WATER
14.1.1	Contractor shall make all arrangements himself for the supply of construction water as well as potable water for labour and other personnel at the work site/ colony. However, drawal of construction/ potable water from the bore-well shall be permitted if found suitable. Any statutory clearance required shall be obtained by the contractor. Assistance, if required shall be provided by the BHEL/NTPC.
15.0	ELECTRICITY
15.1	BHEL shall provide construction power on chargeable basis at 415V level at one point. The charges only for the actual energy consumed by the Contractor shall be recovered by the Employer based on prevalent rate of DISCOM for type of connection(HT/LT). Contractor has to make their own distribution arrangement to draw electricity. Overall area illumination will be provided by BHEL. However, for night working contractor should arrange illumination as and when required by them. Contractor shall be responsible for fulfillment of all requirements including statutory requirements in this regard. Contractor shall deploy and install required energy meter, cables, fuses, LT distribution boards, switchboards, bus bars, earthing arrangements, protection devices i.e, required capacity ELCB/RCCB in outgoing feeders and any other installation as specified by statutory authority/act. Contractor shall also obtain approvals of appropriate authority and pay necessary fees, levies etc towards the clearance of such installations, prior to use. Sufficient power factor compensation equipments like capacitor shall be provided by contractor for reactive loads like welding machines etc. In case of any fine/penalty on account of low power factor, same shall be shared by contractor proportionately according to power consumption.
15.2	Contractor shall make necessary arrangements for onward distribution of construction power taking due care of surrounding construction activities like movement of cranes & vehicles, civil work, fabrication/construction/assembly/ erection etc and safety of personnel. It may become necessary to relocate some of the installations to facilitate work by other agencies or by him.
15.3	It shall be the responsibility of the Contractor to provide, maintain the complete installation on the load side of the supply with due regard to the safety requirements at site. All cabling and installations shall comply in all respects with the appropriate statutory requirements. The installation and maintenance of this shall be done by licensed and experienced electrician.
15.4	While reasonable efforts will be made to ensure continuous electric power

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 16 OF 49

	supply, interruptions cannot be ruled out and no claim from the Contractor shall be entertained on this account such as idle labor, extension of time etc. The Contractor shall adjust his working shift accordingly and deploy additional manpower, if necessary, so as to achieve the target.
15.5	Contractor shall be well equipped with back-up power supply arrangement like DG set and diesel operated welding machine etc to tackle situations arising due to failure of supplied power, so as to ensure continuity and completion of critical processes that are underway at the time of power failure or important activities planned in immediate future.
15.6	BHEL is not responsible for any loss or damage to the Contractor's equipment as a result of variations in voltage or frequency or interruptions in power supply.
15.7	Contractor is advised to maintain the calibrated energy measuring instruments and use their system as efficiently as possible. to maintain the HT side input energy meter reading and LT side outgoing energy meter reading to sub-contractors as equal. In case there is any difference between the sum of the LT side meter readings of all sub-contractors and the HT side meter reading of M/s NTPC, same shall be distributed proportionately among all sub-contractors working during the respective calendar month.
15.8	The bidder will have to Procure & install General mobile illumination system during construction right from start of his work. This system will include temporary pole lighting, portable lighting towers with DG back-up, within the quoted price. The illumination should be such that minimum illumination requirement as specified by Indian standards for general illumination is maintained.
15.9	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.
15.10	Contractor shall make arrangement of electricity of their own for labour colony.
16.0	CONSUMABLE
16.2	All consumables, like gas, electrodes, chemicals, lubricants etc. required for the scope of work, shall be arranged by the contractor at his own cost unless otherwise specifically mentioned in the contract. Prior approval from Engineer In-Charge shall be obtained for all the consumable to be used in permanent work
16.3	In the event of failure of contractor to bring necessary and sufficient consumables, 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.
16.4	All welding electrodes shall be of Low Hydrogen type conforming to IS: 814 (Latest Revision) and shall be EB5426H3JX type. All electrodes, flux, wire etc. shall be of ADOR Welding Ltd., ESAB India Ltd., D & H Secheron Electrodes Pvt. Ltd. Or any other equivalent manufacturer accepted by Owner.
16.5	Alternatively, flux coated arc welding (FCAW) conforming to AWS-E70T-5 which is a modified procedure of MIG/CO2 (solid wire) can be used. If submerged arc welding is used, the bare wire electrodes shall be as follows: (i) Filler wire: AWS-A-5.17-EH14 (ii) Flux : agglomerated type of classification AWS-A-5.17-F7A2EH14
16.5.1	Field bolting

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 17 OF 49

	All relevant portions in respect of bolted construction of the Specification for Fabrication of Structural Steelwork applicable to the Project shall also be applicable for field bolting in addition to the following :		
16.5.1.1	Bolts shall be inserted in such a way so that they may remain in position under gravity even before fixing the nut. Bolted parts shall fit solidly together when assembled and shall not be separated by gaskets or any other interposed compressible materials. When assembled, all joint surfaces, including those adjacent to the washers shall be free of scales except tight mill scales. They shall be free of dirt, loose scales, burns, and other defects that would prevent solid seating of the parts. Contact surfaces within friction-type joints shall be free of oil, paint, lacquer, or galvanizing.		
	All high tensile bolts shall be tightened to provide, when all fasteners in the joint are tight, the required minimum bolt tension by any of the following methods.		
16.5.1.1	Turn-of-nut method		
	When the turn-of-nut method is used to provide the bolt tension, there shall first be enough bolts brought to a "snug tight" condition to ensure that the parts of the joint are brought into good contact with each other. "snug tight" is defined as the tightness attained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. Following this initial operation, bolts shall be placed in any remaining holes in the connection and brought to snug tightness. All bolts in the joint shall then be tightened additionally by the applicable amount of nut rotation specified in Table-1 with tightening progressing systematically from the most rigid part of the joint to its free edges. During this operation there shall be no rotation of the part not turned by the wrench.		
	TABLE – I		
	Bolts length not exceeding 8 x dia. or 200 mm	Bolt length exceeding 8xdia or 200 mm	Remarks
	1/2 turn	2/3 turn	Nut rotation is relative to bolt regardless of the element (nut or bolt) being turned. Tolerance on rotation - 30
17.0	TEST CERTIFICATES		
17.1	Necessary test certificates of all materials supplied by contractor are to be produced to BHEL prior to use of those materials.		
17.2	Arrangement of testing at Site to be kept for cement (Initial & Final setting Time & compressive strength)		
18.0	PROJECT MANAGEMENT/ CONSTRUCTION MANAGEMENT		
	To meet the need of construction management at site, contractor shall provide the following services within quoted / accepted rates.		
18.1	PLANNING & MONITORING		
18.1.1	The bidder shall prepare detail construction schedule (L-3) as per completion dates given in this document. 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), ecogniz, 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.		
18.1.2	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 PRIMAVERA/ MS PROJECTS, so that the same is compatible with BHEL's project management software.		
18.1.3	The bidder will have to Supply & install of 2 No. PC (multimedia PC work station		

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 18 OF 49

	<p>Pentium- Core-i5-650, 3.2 GHZ or above, 1 TB HDD, 8 GB RAM, 100 /1000 MBPS LAN card) of HP / HCL / COMPAQ / LENEVO or equivalent make with window 10 or higher, 64 bit (with roll back to 32 bit O/S and required software like MS Office 2016 or higher, AutoCAD 2014 or higher, ADOBE PDF CREATOR with 1 no. Multifunction (scanner / copy / print) & 2 No. A4 Colour laser printer as per instruction of BHEL for exclusive use of BHEL. These computers / printer / Multifunction shall remain Vendors property and they will be allowed to take out the same after closing of contract. 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.</p> <p>The contractor shall also provide 1 (One) Number computer operators and 2 (Two) numbers service staff for miscellaneous service for BHEL's use at site / Kolkata for reconciliation, progress review & day-to-day planning purpose, documentation etc.</p> <p>These facilities are to be provided within 30 days from the date of start of work till completion of scheduled contract period.</p> <p>If BHEL do not availed the service of computer / printer / personnel as per requirement, BHEL shall have the right to deduct the amount as per following rates on prorata basis, from contractor's RA bill or any other dues.</p>
18.1.3.1	@ Rs 20,000 (Twenty thousand) / month for each computer operator or at actual (rate +30%) if BHEL arranges this facility, whichever is lower.
18.1.3.2	@ Rs 12,000 (Twelve thousand) / month for each computer with printer or at actual (rate +30%) if BHEL arranges this facility, whichever is lower.
18.1.3.3	@ Rs 16,000 (Sixteen thousand) / month for each service staff or at actual (rate +30%) if BHEL arranges this facility, whichever is lower.
18.1.3.4	In the event of the contract period getting extended beyond the stipulated time for reasons not attributable to the bidder and if the services services of computer operator(Skilled) & Service staff(uns skilled) are being used by BHEL then successful bidder shall be reimbursed by minimum wages with statutory benefits +15% minimum.
18.1.4	The contractor's site office must have facilities of communications like E-mail, and telephone / mobile phones within a month from LOI.
18.2	PROGRESS REPORTING
18.2.1	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.
18.2.2	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.
18.2.3	The daily work force reports shall clearly indicate the work force deployed, category-wise specifying also the activities in which they are engaged.
18.2.4	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.

18.2.5	Periodic progress reviews on the entire activities of execution in respect of
--------	---

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 19 OF 49

	supply and works in scope of bidder will be held once in a month at Kolkata / 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.	
18.2.6	During construction contractor shall take an average twenty colour digital photograph / slides (indicating date) each month (not less than four per week) of the works during progress. In case of failure in providing such photograph in each month, an amount of Rs. 10,000/- per month shall be deducted from contractor's RA bill.	
18.2.7	Successful bidder has to provide for electronic/ computerized storing and reproduction / printing / plotting of various data, log sheets, protocols, measurements etc. These may be stored in CD (as per requirement) and handed over to BHEL as per requirement.	
18.3	SITE ORGANIZATION	
18.3.1	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 construction manager for site operations with sufficient level of authority to take site decisions. The vendor 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 the schedule without any commercial implication to BHEL. The organization chart is to be submitted within 10 days from the date of LOI.	
18.3.2	Following (minimum) engineering manpower with power plant construction background to be deployed at site by the successful vendor for their day to day supervision etc.	
18.3.2.1	Qualified safety officers with assistants (exclusive for safety supervision for project jobs).	Officer – One nos. Assistant - Two nos.
18.3.2.2	Site supervising engineer and supervisors for Civil work.	Two Enigneers Four Supervisors
18.3.2.3	Engineer & Supervisors for quality inspection.	One Engineer. Three Supervisor.
18.3.3	Deputation of above man-power shall be jointly decided at site in line with construction schedule.	
18.3.4	Engineer/ supervisor for other functions like store & purchase, material management, planning, finance, administration etc are to be provided as per site requirement and not considered above.	
18.3.5	In the event of non deputation of engineer / supervisor by the bidder as per above agreed schedule, BHEL shall reserve the right to deduct Rs 70,000 per man-month for engineer, Rs 50,000 per man-month for the supervisor/ safety officer from RA bills. Further induction of manpower will be decided at site as per requirement without any financial implication.	
18.3.6	BHEL reserves the right to reject or approve the list of personnel proposed by the contractor. The persons whose bio-data have been approved by BHEL will have to be posted at site and deviation in this regard will not be permitted unless specific & reasonable justification is made.	
18.3.7	In addition to above, a well experienced qualified engineer to be designated, as 'Project Manager', shall be deployed by the contractor. Such engineer shall have adequate exposure on the job and shall remain fully involved in all planning activities, guidance etc to contractor's own team during the complete execution period of contract.	
18.3.8	The contractor should also submit to BHEL for approval a list of T&Ps along with	

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 20 OF 49

	their fitness certificates. The tools & tackles shall not be removed from site without written permission of BHEL.
18.3.9	The contractor should also submit network programs for the erection of various items. These networks shall show the customer / BHEL hold points (CHP), which have to be cleared by customer/ BHEL, or their authorized representatives before further erection can take place. These programs for the erection would clearly identify responsibilities of the contractor and customer/ 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.
18.4	CONSTRUCTION MANAGEMENT
18.4.1	Based on the approved program, the contractor shall submit a program of construction for 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 monthly 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 NTPC / BHEL to tie up detailed resources mobilization plan over the period of the contract matching with the performance targets.
18.4.2	The program would be jointly finalized by the site in-charge of the contractor with BHEL / NTPC's project coordinator as well as the site-planning representative. The erection program will also identify sequential events matching financial turnover.
18.5	Following Safety Equipments and Safety Personal Protective Equipments shall be provided by successful bidder to BHEL/Customer within quoted rate without any additional financial implication to BHEL.
18.5.1	<ol style="list-style-type: none"> 1. Safety Net (Double Layer Type)- 10 Mtrx 10 Mts size-25 Nos. 2. Rope Grab Fall Arrester with karbiner-30 Nos. 3. Fall arrester rope (30 Mtr. each length)-10 Nos. 4. Horizontal Life Line (40 Mtr. each length)-20 Nos. 5. Ladders (6 Mtr. each length)-34 Nos. 6. Industrial Safety Helmet (IS: 2925-1984 Marked)-100 Nos. 7. Industrial Safety Shoes (IS: 15298-2002 Marked)-100 Nos. 8. Full Body Safety Harness (IS: 3521)-30 Nos
18.6	Specification of Safety Equipments and Safety Personal Protective Equipments referred above shall be as per Annexure-II
18.7	Safety Equipments and Safety Personal Protective Equipments shall be handed over to BHEL/Customer within 45 days from the date of start of work.
18.8	If successful bidder fails to deliver the Safety Equipments and Safety Personal Protective Equipments within stipulated time then BHEL have right to source the same through alternate modality on risk and cost of the successful bidder.
19.0	TOOLS & PLANTS (TO BE PROVIDED BY CONTRACTOR)
19.1	Tentative list of T&P to be deployed by contractor for successful completion of work is detailed below.
19.2	It may be noted that the list is not exhaustive and is only for general 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 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&P. Quoted rate shall be inclusive of such requirements. However, contractor shall submit deployment plan of all T&P along with tender bid.
19.3	In the event of any failure on the part of the contractor, 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, BHEL will be at liberty to arrange the same at the risk & cost of contractor including transportation cost of same from any of BHEL site/ other agency & charges as applicable shall be

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 21 OF 49

	deducted from contractor's RA bill. Decision of BHEL in this regard will be final & binding on contractor.	
19.4	All the tools and plants required for satisfactory completion of the work have to be arranged by the contractor. The contractor is required to arrange the following tentative Major T&Ps and other T&Ps for the satisfactory completion of the work	
A	Structural works	
	Major T&P items	Mobilisation time (from the date of written intimation by BHEL to start the work)
A1	1 Nos. 150 T capacity crawler crane for erection.	As per BHEL requirement at site.
A2	1 Nos. 135 T capacity crawler crane for erection.	As per BHEL requirement at site.
A3	1 Nos. 75 T capacity crawler crane	As per BHEL requirement at site.

A4	1 Nos. 45 T capacity Tyre mounted crane	As per BHEL requirement at site.
A5	Other T&Ps	Mobilisation time (from the date of written intimation by BHEL to start the work)
A5.1	4 nos. hydra (10/ 12 T cap)	As per BHEL requirement at site.
A5.3	Magnetic base drill machine	As per BHEL requirement at site.
A5.6	20 nos. welding rectifier	As per BHEL requirement at site.
A5.7	1 no. trailor – 15T	As per BHEL requirement at site.
A5.8	3 nos. power driven torque control (Digital) machine for HSFG bolt (Capacity up to 30 dia HSFG bolt tightening)	As per BHEL requirement at site.
A5.9	2 nos. manual torque control m/c. for HSFG Bolt (Capacity up to 30 dia HSFG bolt tightening)	As per BHEL requirement at site.
A5.10	Bolt Tension Calibrator for M20 to M30 bolt	As per BHEL requirement at site.
A5.11	Sufficient quantity of steel ladders for approach up to the top of each erected column to be required during erection of columns.	As per BHEL requirement at site.
A5.12	Power winch – 3T - 3 no's for structural erection	As per BHEL requirement at site.
A5.13	Power winch – 5T - 3 no's for structural erection	As per BHEL requirement at site.
A5.14	1 no ultra-sonography testing machine with printing facility for structural work.	As per BHEL requirement at site.
A5.15	1 nos. Painting equipment sets complete with compressor, hopper, screen, blasting hose pipe, nozzle airless/conventional spray (within CGI temporary cover shed)	As per BHEL requirement at site.
A5.16	Baking oven for electrodes	As per BHEL requirement at site.
A5.17	Portable oven	As per BHEL requirement at site.
A5.18	1 no. Plate Bending Machine	As per BHEL requirement at site.
B	Civil Work	Mobilisation time (from the

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 22 OF 49

		date of written intimation by BHEL to start the work)
B1	Bored cast in situ hydraulic rig – 7 nos	02 nos within 15 days and balance as per BHEL requirement in site
B2	2 sets - Kentledge arrangement (Concrete blocks with structural arrangement) with high capacity hydraulic jack, dial gauges for vertical load test of pile.	Within 30 days
B3	02 nos Jack Hammer	As per BHEL requirement at site.
B4	1 no. Concrete core Cutting machine for drilling in concrete upto 300 mm dia alongwith diamond bits	As per BHEL requirement at site.
B5	Ground Penetration Radar (GPR)- 01 SET	As per BHEL requirement at site.

B6	2 No. hydraulic excavator/Poclaim	1 no. within 15 days and balance in a progressive manner depending up on the requirement.
B7	1 no. automatic concrete batching plant with printing facility (30 Cum/Hr) – and DG backup. With minimum 2 Nos of silo (100MT each)	1 nos to be commissioned within within 45 days.
B8	1 no. Mobile batching plant (5/6 CUM per hr capacity)	As per BHEL requirement at site.
B9	2 Nos Truck mounted concrete mixer cum pump along with placing boom minimum 36m high Concrete boom placer (36m)	1 No within 120 days and balance as per BHEL requirement at site
B10	2 nos. concrete pump (60 cum/ hr min capacity & lift 90M)	1 No within 90 days and balance as per BHEL requirement at site
B11	4 nos. transit mixer (5/6 M3 capacity) with standby 1 no.	2 nos within 15 days. Balance progressively as per site requirement.
B12	Other T&Ps	Mobilisation time (from the date of written intimation by BHEL to start the work)
B12.1	3 No. JCB	2 no. within 15 days and balance as per site requirement.
B12.2	6 nos. Tryper/dumper (Min 10 cum each)	2 nos. Within 15 days.. Balance as per site requirement.
B12.3	2 nos. diesel Mixer machine of 0.5 cum capacity	As per BHEL requirement at site.
B12.4	3 nos. self-priming dewatering pump 5 HP (diesel)	2 nos. Within 15 days.. Balance as per site requirement
B12.5	3 nos. self-priming dewatering pump 5 HP (electric)	1 no. Within 15 days.. Balance as per site requirement
B12.6	02 nos 10 HP Submersible Mono-Block Electric Pump (KOS-1040+ of Kirloskar or equivalent).	As per BHEL requirement at site.
B12.7	01 no Dozer.	As per BHEL requirement at site.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 23 OF 49

B12.8	4 nos. curing pump – 1.5 /2 HP (pump for curing at heights)	1 no. Within 30 days.. Balance as per site requirement
B12.9	6 nos. reinforcement bending machine	2 nos. within 15 days and balance progressively as per requirement
B12.10	1 no. Vibromax (earth compactor)	as per BHEL site requirement.
B12.11	02 nos Hand Earth Compactor	as per BHEL site requirement.
B12.12	10 nos. reinforcement cutting machine	2 nos. within 15 days, balance as per requirement
B12.13	Vacuum dewatered flooring machine – 2nos	As per BHEL requirement at site
B12.14	MS scaffolding pipe / ACROW PIPE	As per BHEL requirement at site

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 24 OF 49

B12.15	MS scaffolding pipe cup lock system /Doka D3 load bearing tower system.	As per BHEL requirement at site for various decks
B12.16	3 nos. power driven earth rammer (Roller Type 1/2 T)	As per BHEL requirement at site
B12.17	Civil Laboratory Equipments as per list attached in per relevant annexure of this TCC	Within 90 days.
B12.18	2 nos. building hoist	As per BHEL requirement at site
B12.19	2 no total station with adequate arrangement for Surveyors.	1 no. Within 15 days. and balance progressively as per requirement
B12.20	5 no's auto level & staff	2 nos. Within 15 days. And balance as per requirement.
B12.21	120 no's concrete cube moulds	30 nos with in 15 days and balance progressively as per requirement
B12.22	Adequate no. of small trucks 2T/5T for shifting of reinforcement/cement/shuttering etc. within site	As per BHEL requirement at site
B12.23	2 nos. drinking water tank – 5000 lit.	1 nos. Within 15 days. Balance as per site requirement.
B12.24	Curing tank as per site requirement	
B12.25	4 nos. mobile toilet blocks for labour use	1 no's within 15 days balance within 120 days.
B12.26	2 nos. truck mounted 125 KVA DG set	1 no. within 15 days and balance as per requirement at site.
B12.27	2 nos.water tanker with sprinkling arrangemen	As per Requirement
B12.28	Construction power cable	As per Requirement
B12.29	Construction water Pipeline	As per Requirement
B12.30	1 no. Concrete Paver machine	As per Requirement
B12.31	1 no. trailor for shifting of crawler mounted equipment's like Poclain, Dozer	As per site requirement
B12.32	Concrete vibrator with adequate needle (Minimum 20 nos diesel/power nos.)	6Nos (at least 3nos. diesel driven) within 90 Days. Balance as per site requirement.
B12.33	Sheet Pile (Z / U shape)	As per Requirement
B12.34	FARE FACE, INSULATED 12 / 19 mm thick Ply Shuttering Board	As per Requirement
B12.35	Portable fire extinguishers as below: Soda acid – 10 sets. Dry chemical powder – 10 sets CO2 – 10 sets. Water & sand bucket (4 buckets in one stand) – 10 sets. Fire hose with nozzle (50 M length) – 5 sets.	20% within 15 days and balance as per Requirement
B12.36	2 no. compression testing machine (200 T cap)	1 Nos. within 15 days and balance as per requirement.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 25 OF 49

19.5	T&P shown in the above-mentioned list and the mobilization schedule is tentative requirement considering parallel working. However, mobilization schedule modification as well as no. of T&Ps as mutually agreed at site for major T&Ps, have to be adhered to. Numbers/ time of requirement will be reviewed time to time at site and contractor will provide required T&P/ equipment's to ensure completion of entire work within schedule/target date of completion without any additional financial implication to BHEL. Vendor shall give advance
19.6	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.
19.7	In the event of contractor failing to arrange the required tools, plants, machineries, equipment, material or non-availability of the same owing to breakdown, BHEL will make alternative arrangement at the risk and cost of the contractor.
19.7.1	Case 1: BHEL provides its own Capital T&P. In case the BHEL provides any T&P which is owned by BHEL, hire charges (as per BHEL norms) will be recovered from the contractor as per the prevailing BHEL corporate hire charges. In case, the T&P is specifically listed in "T&Ps to be deployed by Contractor", "Hire charges applicable to outside agencies other than contractors working for BHEL" will apply. If not listed, "hire charges applicable to contractor working for BHEL" will apply. The hire charges of Capital tools & plants are exclusive of operating expenses e.g. operator, fuel & consumables and the same shall be arranged by the contractor at his cost.
19.7.2	Case 2 In all cases other than that specified in case 1 above, actual expenses incurred by BHEL along with applicable overheads will be back-charges to the contractor.
19.8	In the event of need of change of type of any of major T&Ps, approval shall be taken from BHEL Engineer in-charge prior to mobilization. The decision of Number of T&P required due to replacing the enlisted T&P as per above table, shall be taken after analyzing the production capacity and suitability of both the T&Ps.
20.0	INTEREST BEARING RECOVERABLE ADVANCE/ MOBILISATION ADVANCE Not applicable for this tender.
21.0	OVERRUN COMPENSATION (ORC) Not applicable for this tender.
22.0	REVISION ON ACCEPTED CONTRACT RATE Not applicable in this tender.
23.0	INSURANCE
23.1	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.
23.2	Contractor shall report to BHEL in writing any damages to equipment/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.
23.3	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.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 26 OF 49

	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.
23.4	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.
23.5	Other conditions of Insurance shall be as per relevant clause of GCC/SCC.
24.0	MATERIAL HANDLING (BHEL ISSUED MATERIAL)
24.1	Cement, Reinforcement Steel, and Mild Steel earthing rod as mentioned specifically in BOQ will be issued free of cost by BHEL for use in the work covered in this contract. Cement , Reinforcement Steel, and Mild Steel etc"consignments coming from outside will be directly handed over to vendor as per discretion of BHEL and vendor has to receive the same within 2 days of arrival of consignment.
24.2	All free issue Steel will be issued to the contractor from BHEL / customer's store within the plant premises, on weighment basis. Receipt from BHEL / customer's stores, handling / transportation to work site, unloading etc will be under the scope of work within his quoted rate. The contractor shall in no case be entitled for any compensation or damages on account of any delay in supply or non-supply thereof for all or any such material.

24.3	Open land (Limited area free from encumbrance) shall be provided by BHEL on free of cost basis. Contractor shall maintain one centralized fenced store cum bar bending yard & storage yard (Area approx 7500 Sqm). Hard surfacing of this yard and all round drain shall be carried out by the contractor at his own cost within the quoted rate. Bidder shall make complete arrangement of necessary security personnel, to safeguard all such materials in his custody. Materials issued will be used only for construction of permanent work. The contractor shall take care of material issued by BHEL and shall protect the same from theft, damage and weathering.
24.4	Excessive rusting of steel must be avoided. In case, due to any cause attributable to the contractor, such rusting of steel occur rendering the same unusable, then such quantity of steel shall be recovered from the interim payment at the penal rate specified in the tender.
24.5	The contractor shall construct waterproof cement store (capacity minimum 100 MT) for storing and stacking of cement. CGI / Metal Sheet roofing (slope) with brick masonry wall, PCC flooring. Materials required for the same shall be provided by contractor at his own cost. Cement has to be kept over wooden raised platform. Stacking of cement is to be done as per IS codes with proper illumination and locking arrangements.
24.6	Clotting of cement must be avoided. In case, due to any cause attributable to the contractor, such clotting of cement occur rendering the same unusable, then such quantity of cement shall be disposed immediately from the plant premises by the vendor.
24.7	No material shall be issued to the contractor except as those indicated above i.e Reinforcement Steel and Mild Steel earthing rod. Contractor will have to make his own arrangement at his own cost for procurement of any other material as required for the works and of such quality as acceptable to BHEL.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 27 OF 49

24.8	The contractor shall maintain proper store account for all the BHEL issued materials and shall give copy of once in a months computerised reconciliation statement along with RA Bill for maintaining account for the BHEL issued material.
24.9	The contractor shall solely be responsible for the safety & quality of material after it is handed over and issued to contractor by BHEL.
24.10	Under any circumstances, BHEL issued materials shall not be taken out of the project site unless otherwise permitted by BHEL.
25.0	ISSUE OF MATERIALS The free issue steel those specifically mentioned in price schedule shall be issued to the successful bidder on the following basis.
25.1	ISSUE OF CEMENT
25.1.1	Cement as received from the manufacturer/ stockiest will be issued free of cost to the contractor. The cement shall be provided normally in bulkers and shall be unloaded in the silos (2 Nos cement silo of 100MT per 30CUM batching plant) to be installed by the bidder nearer to their batching plants. This is only minimum requirement and the No of cement silos shall be increased based on the site requirement. Unloading arrangements shall be provided by the bidder at his own cost including provision of necessary manpower support.
25.1.2	On advance request of the bidder, the cement shall be supplied in 50kg tamper proof sealed Bags for other than RCC works like masonry, flooring works etc. The theoretical weight of each bag of cement for issued purposes will be considered as 50 kg, the contractor shall be accountable for the cement issued to him on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement. The empty cement bags duly accounted for against issue shall be in the custody of the contractor and the same shall be disposed by the contractor as per statutory regulation prevailing in the project. Proper storage area/ shed shall be constructed by successful bidder at his own cost
25.1.3	The contractor shall submit to the Engineer-in-charge, a statement indicating estimated quantity of cement required during a quarter, at least two months in advance of the quarter. In addition, the contractor shall also furnish the estimated requirement of cement during a month by the third week of the previous month indicating his requirement.
25.1.4	Bidder is responsible for unloading the cement as soon as the arrival of cement, either in silo, if received in bulker or in the weather proof cement storage sheds, if received bags. Bagged cement shall be stored in a weatherproof shed having dense impervious bituminous or concrete floors which shall be kept swept clean at all times. The storage arrangements (to be made by the contractor at his own cost) shall be fully completed and approved by the owner (BHEL/NTPL) before any cement is delivered to site. The construction of cement storage sheds as per the requirement of BHEL, unloading of cement bags, stacking properly in the storage sheds, removal of the sheds after the completion of the work is in the scope of bidder within the quoted price.
25.1.5	Bidder is responsible for sampling and testing of cement as per Indian Standard/Specification/approved quality plan in the testing laboratory established by the bidder.
25.1.6	Bidder is responsible for carrying out design mix as per IS 456/10262 Latest revision and specification, using the cement provided by BHEL and submit the design mix proportions for the approval of BHEL/NTPL. The design/trial mix shall be carried out time to time on change of brand/type of cement supplied by BHEL and suitable adjustments on the quantity of ingredients (fine aggregates, coarse aggregates, admixture) of the concrete to get the required workability and durability, shall be the responsibility of the bidder without any extra cost to BHEL.
25.2	ISSUE OF STEEL
25.2.1	The steel shall be issued to the contractor on the following basis

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 28 OF 49

	(a) Structural Steel: Weighment basis (Unit – MT) (b) Reinforcement Steel and Earthing rod (MS round). : Weighment basis (Unit – MT)
25.2.2	All the steel (structural, reinforcement, earthing MS rod,) issued by the BHEL shall be properly accounted for. The total quantity of steel required for the work will be calculated from the approved Bar Bending schedule, fabrication drawings, approved laps, chairs and lugs. The measurement for payment as well as for accounting shall be based on the sectional weights as indicated in the following IS specifications. No rolling tolerances shall be accepted in any case for issue, return of materials, reconciliation and payment purposes. IS: 808 (Latest revision): Beams, Channels and Angles IS: 1730 (Latest revision) Plates, Sheets and Strips/Flats IS: 1732 (Latest revision) Rounds including deformed high yield strength bars. IS:1786 (Latest revision) Reinforcement steel
25.2.3	In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding.
25.2.4	The steel issued to the contractor shall be mainly in standard length and sections as received from the supplier. However, the contractor shall be bound to accept the steel in length as available in the project stores no claims for extra payment because of issue of non-standard length will be entertained.
25.2.5	The contractor shall satisfy himself of the quality and quantity of the materials at the time of taking delivery from BHEL stores. No claims whatsoever will be entertained by BHEL because of quality or quantity after the materials are taken by the contractor from BHEL stores.
25.2.6	The contractor shall submit to the Engineer-in-charge, a statement indicating estimated quantity of steel required during a quarter, at least two months in advance of the quarter. In addition, the contractor shall also furnish the estimated requirement of steel during a month by the third week of the previous month indicating his requirement

25.2.7	Bidder to note that steel materials required for foundation bolts, embedded items, etc. other than those supplied by BHEL, etc shall be supplied by the bidder. However, Bidder shall use the scrap materials (if issued by BHEL) for their use in the permanent works as embedment/inserts etc. after necessary store issue formalities and shall be accounted for monthly reconciliation.
25.2.8	You have to note that steel required for your enabling job like store/ site office etc shall be arranged at your own cost.
26.0	RECONCILIATION OF BHEL ISSUED MATERIAL
26.1	SURPLUS & SCRAP MATERIAL
	In addition to unused and untampered material, following shall also be considered as surplus for reconciliation purpose of BHEL issued material:
26.1.1	All pipes measuring 2 M and above in length shall be treated as serviceable materials provided, they are in good and acceptable condition.
26.1.2	All TMT measuring 3 M and above in length shall be treated as serviceable materials provided, they are in good and acceptable condition.
26.1.3	All structural steel of length above 2m except MS plate shall be considered as serviceable materials provided the material is in good and acceptable condition.
26.1.4	MS plates having both sides greater than 1 meter or if any side is less than 1m but greater than 0.5m and the total area is equal or greater than 2 sq. m. shall be considered as serviceable.
26.1.5	In case of cement, only sealed cement bags remaining un-used and in perfectly good condition as mentioned elsewhere in the contract shall be considered as surplus
26.1.6	All used pipes, reinforcement and structural steel of dimensions less than those specified above against each of the item shall be treated as scrap for reconciliation purpose.
26.2	RETURN OF MATERIALS

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 29 OF 49

26.2.1	CEMENT	
26.2.1.1	RETURN OF CEMENT	
	Sealed cement bags remaining unused and in perfectly good condition at the time of completion or termination of the contract shall be returned promptly, (within 15 days from assessment) if BHEL/ Engineer-in-charge is satisfied of the physical condition of the cement. Return of such cement to the project stores/ place as identified within the project area by Engineer-in-charge/ BHEL will not be entitled to handling and incidental charges. Surplus sealed and good conditioned cement bags will be taken back on weighment basis.	
26.2.1.2	CEMENT CONSUMPTION AND WASTAGE	
26.2.1.2.1	<p>The theoretical consumption of cement shall be based on the following.</p> <p>i. For design mix concrete as per approved design mix.</p> <p>ii. For nominal mix concrete work, as per minimum cement as specified or as approved by Engineer-in-charge.</p> <p>For item of works, where volume mix is permitted in writing by the BHEL, for masonry works, plaster other miscellaneous items, the cement consumption shall be governed by the “Statement of Cement Consumption” attached to the Delhi schedule of Rates of CPWD-DSR- LATEST REVISION unless otherwise specified in the specifications or the drawing of contract or mutually agreed by Engineer-in-charge and contractor.</p> <p>i) Actual consumption = Issue – Surplus quantity of cement returned in good condition by contractor to store. (No sweep cement will be taken back by BHEL).</p> <p>ii) Wastage = Actual consumption – Theoretical consumption</p>	
26.2.1.2.2	CEMENT WASTAGE	
	<p>Allowable wastage: One and half percent (+1.5%) of theoretical consumption of cement unless specified otherwise in the technical specification.</p> <p>For any material issued by BHEL to the contractor free of cost, and which is not accounted by the contractor to BHEL, then recovery for such material shall be effected at penal rates.</p>	
	Sl No	Cement consumption
	C-1	Theoretical consumption (without considering any wastage or loss).
	C-2	Actual consumption being Limited to one and half percent (+1.5%) of aforesaid theoretical consumption towards allowable wastage
	C-3	Actual consumption beyond one and half percent (+1.5%) of above (C-1).
		Basis of issue & penal recovery
		Free
		Free
		Penal rate
26.2.2	STEELS	
26.2.2.1	RETURN OF STEELS	
26.2.2.1.1	All surplus steel and all wastage materials will be taken back on weighment basis.	
26.2.2.1.2	Surplus, steel shall be sorted section-wise and returned separately as directed by BHEL/Engineer-in-charge within the project area. Return of such materials will not be entitled to any handling and incidental charges.	
26.2.2.1.3	All wastage / scrap (including melting scrap, wastage, un usable scrap) shall be promptly returned to the stores and a receipt obtained for material accounting	

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 30 OF 49

	purposes. Return of such material will not be entitled to any transportation and incidental charge.	
26.2.2.2	STEEL CONSUMPTION AND WASTAGE	
26.2.2.2.1	CONSUMPTION	
A	REINFORCEMENT AND EARTHING ROD MS ROUND STEEL CONSUMPTION.	
	The theoretical consumption of various sections and/or diameter of reinforcement and earthing rod steel shall be based on approved construction drawing and bar bending schedule. Weight shall be calculated considering the sectional weights as per Indian standards. No extra cost shall be payable to the contractor for any deviation in weights for the different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances. i) Actual consumption = Issue – Surplus. Surplus as mentioned in 26.1 above. ii) Wastage = Actual consumption – Theoretical consumption.	
B	STRUCTURAL STEEL, (ROLLED SECTION, PLATES ETC.) CONSUMPTION	
	The theoretical consumption of various sections shall be based on approved drawings. Weights shall be calculated considering the sectional weights as per Indian standard. No extra shall payable to the contractor for any deviation in weights for the two different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances. i) Actual consumption = Issue – Surplus. Surplus as mentioned in 26.1 above. ii) Wastage = Actual consumption – Theoretical consumption	
26.2.2.2.2	WASTAGE	
A	REINFORCEMENT AND EARTHING ROD MS ROUND STEEL	
	Allowable wastage: - 3% (Three percent) of the theoretical consumption shall be considered. Wastage shall be considered as cut pieces and scrap material, measured as per actual weighment basis. Invisible wastage (max limit to 0.5%), if any, shall be considered to be included in the specified 3 % allowable wastage.	
	S.No	CONSUMPTION OF STRUCTURAL STEEL (ROLLED SECTION, PLATES)
	BASIS OF ISSUE	
	S-1	Theoretical consumption (without considering any wastage, scrap or loss) as per spec. & drg.
	S-2	Free
	S-3	Wastage limited to plus Three percent (+3%) of the aforesaid theoretical consumption (S-1) towards allowable wastage including invisible wastages (invisible wastages limited to 0.5% of theoretical consumptions)
	S-4	Free
	S-5	Wastage beyond three Percent (3%) of the aforesaid theoretical consumption (S-1)
	S-6	Penal rate
B	STRUCTURAL STEEL, (ROLLED SECTION, PLATES ETC.) WASTAGE.	
	Allowable wastage: - 4% (FOUR percent) of the theoretical consumption shall be considered. Wastage shall be considered as cut pieces and scrap material, measured as per actual weighment basis. Invisible wastage (max limit to 0.5%), if any, shall be considered to be included in the specified 4 % allowable wastage.	
	S.No	CONSUMPTION OF STRUCTURAL STEEL
	BASIS OF ISSUE	

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 31 OF 49

		(ROLLED SECTION, PLATES)	
	S-1	Theoretical consumption (without considering any wastage, scrap or loss) as per spec. & drg.	Free
	S-2	Wastage limited to plus Four percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage including invisible wastages (invisible wastages limited to 0.5% of theoretical consumptions)	Free
	S-3	Wastage beyond Four Percent (4%) of the aforesaid theoretical consumption (S-1)	Penal rate
27.0	Deleted		
28.0	RECONCILIATION OF BHEL ISSUED MATERIALS (FREE OF COST)		
28.1	You shall submit a reconciliation statement of steel issued to you, once in a month. The same may be submitted alongwith RA bill.		
28.2	You shall properly account for the material issued to you as specified herein to the satisfaction of BHEL certifying that the balance material are available with your custody at site.		
28.3	If it is noticed by BHEL that the wastage is high and calls recovery at the penal rate, then BHEL will proceed for recovery for the excess wastage as per penal recovery rates as specified from RA bill.		
28.4	The approved drawings/ bar bending schedules are to be considered for the purpose of reconciliation of materials.		
28.5	Reconciliation of steel shall be done on total issue & consumption basis.		
29.0	RECOVERY OF MATERIAL		
29.1	If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA bill at the penal rate stipulated below.		
29.2	PENAL RATE OF MATERIALS		
	ITEM		PENAL RATE (Rs)
29.2.1	REINFORCEMENT STEEL (Cold rolled steel, high strength, deformed bar or mild steel round bars including earthing rod MS round)		65,000 per MT
29.2.2	STRUCTURAL STEEL MATERIALS. (MS plates, MS flats, rolled steel joists, channels, and angles, MS pipes, Chequered Plates, etc in sizes and lengths as available)		65,000 per MT
29.2.3	CEMENT (OPC/ PPC/PSC)		65,00 per MT
30.0	CONSTRUCTION OF TEMPORARY OFFICE, STORES ETC		
	The contractor shall arrange at his own cost cleaning of area allotted, construction of his temporary office, stores, cement godown etc. and also the watch and ward of all the above. Materials required for the same shall be provided by contractor at his own cost.		
31.0	CIVIL LABORATORY AT SITE		
	Contractor shall establish and maintain civil laboratory with necessary equipment (as per Annexure-A) for conducting relevant site tests, as required. However, list of lab equipments mentioned at Annexure-A is indicative. Contractor shall also have to refer TECHNICAL SPECIFICATIONS, SECTION-VI, PART-B, SUB SECTION-V-QD1(QA CIVIL WORKS) in this regard.		
32.0	CONSTRUCTION SCHEDULE		

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 32 OF 49

32.1	Entire work shall be carried out in accordance with the construction schedule given below, within the stipulated completion period. Within 30 days of LOI, the contractor shall discuss with Engineer-in-charge & furnish the (L-3) construction schedule indicating all milestones on the basis of major activities and get it approved from Engineer-in-charge.	
32.2	Construction Schedule of FGD system package for Kahalgaon STPS Stage I (4 X 210 MW) and Common Systems	
32.2.1	Schedule for major construction activities covered under the scope of work is as below.	
	Major activity description	Completion schedule from the date of start of work as certified by Engineer-in-charge at site.
32.2.1.1	Completion of test piles including testing of piles and submission of report	02 months
32.2.1.2	Civil Works including piling for Absorber	06 months
32.2.1.3	Civil works including piling of Booster Fan foundation	07 months
32.2.1.4	RC Pump and Oxidation blower equipment foundation	09 months
32.2.1.5	Lime stone handling system Foundations including Crusher House transfer point	15 months
32.2.1.6	Gypsum shed	15 months
32.2.1.7	RC Pump and Oxidation blower Building	13 months
32.2.1.8	Civil works including piling of FGD Control Room Building	15 months
32.2.1.9	Pipe cable rack, duct foundation & Foundation for Misc tanks including piling	16 months
32.2.1.10	All Balance Civil, Structural & Architectural Work including Roads, Drains and Pavings	18 months
32.2.3	The schedule given above is for Unit 1 and 2 & common facilities of Stage-I covered under the scope. The activity specific for Unit 3 & 4 shall be phased at interval of three (03) months.	
32.4	The contractor shall plan his work in such a manner so as to meet the overall project schedule, in consultation with BHEL / customer Engineer-in-charge.	
32.5	PROVISION OF PENALTY IN CASE OF SLIPPAGE OF INTERMEDIATE MILESTONES:	
32.5.1	In case of slippage of Two Major Intermediate Milestones, mentioned as M1 & M2 hereunder, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to F-14.	
	Milestones	Civil work of following Activity
	M1	Civil Works including piling for Absorber
	M2	Civil works including piling of FGD Control Room Building
	The schedule given above is for Unit 1 and 2 & common facilities of Stage-I covered under the scope. The activity specific for Unit 3 & 4 shall be phased at interval of three (03) months.	
32.6	Contractor shall submit daily work program based on above construction schedule.	
33.0	COMPLETION PERIOD	
33.1	The entire work under this scope shall be successfully completed in all respect within 21 (Twenty-One months) from the date of start of work as certified by	

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 33 OF 49

	Construction Manager, BHEL.
33.2	Contractor shall mobilise resources to start the work within 15 days from date of intimation by BHEL.
33.3	However, actual date of start of work shall be reckoned based on certification of Construction manager,
34.0	LIQUIDATED DAMAGE/ PENALTY
34.1	Penalty for Intermediate Milestones
34.1.1	M1 and M2 shall be intermediate Milestones for this work. Refer Clause No. 32.5 above for M-1 & M-2.
34.1.2	In case of slippage of these identified Intermediate Milestones, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to Form 14.
34.1.3	Incase delay in achieving M1 milestone is solely attributable to the contractor, 0.5% per week of executable contract value* limited to Maximum 2% of executable contract value will be withheld.
34.1.4	Incase delay in achieving M2 milestone is solely attributable to the contractor, 0.5% per week of executable contract value* limited to maximum 3% of executable contract value will be withheld.
34.1.5	Amount already withheld, if any, against slippage of M1 milestone, shall be released only if there is no delay attributable to contractor in achievement of M2 milestone.
34.1.6	Amount required to be withheld on account of slippage of identified intermediate milestone(s) shall be withheld out of respective milestone payment and balance amount (if any) shall be withheld @10% of RA Bill amount from subsequent RA bills.
34.1.7	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 intermediate milestones shall be adjusted against LD or released as the case may be.
34.1.8	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 in to recovery.
	Note: *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.
34.2	LIQUIDATED DAMAGE/ PENALTY FOR OVERALL DELAY
34.2.1	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.
35.0	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 BHEL/ customer. Decision of BHEL in this regard shall be final and binding on the contractor.
36.0	GUARANTEE
36.1	Even though the work will be carried out under supervision of BHEL, the contractor will be responsible for the quality of workmanship, quality of materials/ items and design for which the contractor is responsible.
36.2	The contractor shall guarantee the work executed under the scope of the contract for a period of 12 (twelve) months from the date of start of guarantee period as certified by the Engineer-in-charge (ie on completion of total work under scope and taking over by BHEL) and shall rectify free of cost all defects

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 34 OF 49

	due to faulty supply or work done. In case the contractor fails to repair/ replace the defective works within the time specified by the Engineer-in-charge, BHEL may proceed to undertake the repairs/ replace such defective works at contractor's risk and cost without prejudice to any other rights and recover the same from security deposit/ other dues.
37.0	PRICE VARIATION CLAUSE
	Applicable as per GCC.
38.0	EXTRA/ ADDITIONAL ITEMS OF WORK
	As per GCC.
39.0	SECURITY DEPOSIT, PERFORMANCE BOND & FINAL BILL
39.1	Security deposit shall be applicable as per relevant clause of GCC (Volume-IB).
39.2	Performance bond is not applicable for the tender.
39.3	RELEASE OF SECURITY DEPOSIT AND FINAL BILL
	In addition to other provisions of tender regarding release of Security deposit and final bill, following provisions shall also be governing to this tender.
39.3.1	In case of submission of security deposit in the form of BG (Fully or partly), further extension beyond date of acceptance of final bill will not be enforced if the following is fulfilled.
39.3.1.1	Contractor discharges their responsibility in r/o of submission of final bill alongwith absolute 'No Demand Certificate' and other documents as detailed below to the satisfaction of BHEL
39.3.1.2	Joint protocol of set of documents as submitted as detailed in below is certified by site & contractor's representative.
39.3.1.3	There is no negative value of the final bill (after release of SD BG) as per site certification.
39.3.1.4	Contractor has returned the property belonging to BHEL as per site certification.
39.3.1.5	Contractor has submitted joint protocol against 'Delay analysis', if applicable for delayed execution of job.
39.3.2	List of documents to be submitted & jointly protocolled indicating acceptance of final bill by BHEL.
39.3.2.1	Final bill.
39.3.2.2	Measurement for final bill signed, jointly signed by BHEL & contractor's representative.
39.3.2.3	Statement having cumulative joint measurement for the contract, jointly signed by BHEL & contractor's representative.
39.3.2.4	Claim by contractor for refund of security deposit.
39.3.2.5	Jointly signed material reconciliation statement.
39.3.2.6	Statement of payment received from BHEL – Bill wise (Including RA/ PVC/ ORC/ rate revision/ extra work).
39.3.2.7	No claim certificate by contractor.
39.3.2.8	Clearance certificates wherever applicable, viz clearance certificates from customer, various statutory authorities, like Labour Department, PF Authorities, Commercial Department, etc.
39.3.2.9	Notarized Indemnity Bond as per prescribed format.
40.0	TAXES, DUTIES ETC
40.1	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.
40.2	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.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 35 OF 49

40.3	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.
40.4	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.
40.5	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.
40.6	TDS under GST shall be deducted at applicable rates on gross invoice value from the running bills (RA bills).
40.7.1	You may collect TCS under section 206C(1H) of Income Tax Act, 1961 if applicable.
40.7.2	In case, you collect TCS under section 206C(1H) of Income Tax Act, 1961, following compliance is required.
40.7.2.1	TAN and PAN of vendor should appear in all invoices/claims. Copy of TAN /TCS registration is to be submitted.
40.7.2.2	Amount of TCS and Assessable value on which TCS has been calculated should be specified clearly in the invoice.
40.7.2.3	You shall be required to submit certificate of TCS in Form no. 27D within 15 days from the due date for furnishing the statement of tax collected at the source.
40.7.3	In case, you do not collect TCS under section 206C(1H) of Income Tax Act, 1961, following declaration is to be submitted alongwith each invoice: - "I/We hereby declare that I/We are not required to collect TCS under section 206C(1H) of Income Tax Act, 1961, on this bill.
40.7.4	In event of failure to comply with the provisions of the Act, or proper certificate not issued, or if tax collected but not remitted to the Government, or for any other reason and thereby causing loss to BHEL, the same shall be recoverable from the vendor with applicable interest.
40.7.5	You shall comply with all statutory amendment/notifications in this respect.
40.8	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 – Refer attached GSTN code table of BHEL. Name - BHARAT HEAVY ELECTRICALS LIMITED Address - Shall be intimated later. Specific details of BHEL GSTN, Name and Address as stated above, have been specified elsewhere in the tender.
40.9	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. and Email address – Shall be intimated later. Specific details of above shall be intimated to successful bidder by BHEL at appropriate juncture.
40.10	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.
40.11	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.

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 36 OF 49

40.12	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.
40.13	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.
40.14	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.
40.15	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 arranged by successful bidder and BHEL will not supply any Road Permit/ Way Bill for this purpose.
40.16	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.
40.17	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.
41 .0	TERMS OF PAYMENT
41.1	RETENTION AMOUNT Clause no 2.22 of GCC modified as under
41.1.1	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.
41.1.2	Refund of Retention Amount shall be as follows:
41.1.2.1	50% of retention amount along with Final Bill
41.1.2.2	<p>The balance 50% of retention amount shall 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.</p> <p>This portion of the retention amount can be released on commencement of the Guarantee period upon submission equivalent Bank Guarantee or after expiry of Guarantee period, as the case may be, subject to approval of final bill.</p> <p>Submission of bank guarantee towards retention is separate and other bank guarantee(s) cannot be utilized for this purpose.</p>

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 37 OF 49

41.2	INTERIM PAYMENT
41.2.1	For all items of work as per Volume-III A, Price Schedule, interim payment shall be limited to 95 % of the gross value of interim bill on item rate basis. 5% of gross value of each RA bill shall be retained from each RA bill as 'retention Amount' as described in clause no 41.1 above. All admissible recovery / adjustments etc. shall be made from the interim payable amount.
41.2.2	Out of this 95 %, 1.5 % of gross bill amount shall be paid in the following manner on certification by Engineer-in-charge 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.
41.2.2.1	0.7 % shall be paid on compliance of house keeping of vendor's working area and store/ office areas.
41.2.2.2	0.3 % shall be paid on compliance of general illumination of vendor's working area and stores, office area.
41.2.2.3	0.2 % shall be paid on compliance of applicable OHSAS requirement as per guidelines of BHEL/ PSER and as specified in the tender.
41.2.2.4	0.3 % shall be paid on compliance of applicable safety requirement as per guidelines of BHEL/ PSER and as specified in the tender.
41.2.3	Contractor's RA bill, complete & correct in all respects, certified by BHEL Engineer-in-charge, shall be paid after 45 days of receipt of bill with all supporting documents.
41.2.4	BHEL site at its discretion may further split up the above percentages of break up and effect payment to suit the site condition, cash flow requirement, according to the progress of work.
41.2.5	The contractor shall submit his running bill, once in a month at the end of each month. The RA bill complete in all respect, accompanied by Engineer-in-charge certified measurement sheets, jointly signed, will be paid after 45 days of submission of bill, subject to completeness and correctness. Income Tax at the prevailing rates on gross value of work done & applicable surcharge shall be deducted from contractor's bill, unless exempted by Income Tax Authority.
41.2.6	Applicable GST, which can be claimed at any point, shall be released to you upon compliance of following:
41.2.6.1	You declaring such Invoice in your GSTR-1
41.2.6.2	Receipt of Goods / services and Tax Invoice by BHEL
41.2.6.3	Confirmation of payment of GST thereon by you on GSTN Portal
41.2.7	Above is subject to receipt of goods / service and tax invoice thereof along with you declaring invoice in your return and paying GST within timeline prescribed for availing ITC by BHEL.
42.0	CONTRACT PRICE
42.1	The bidder shall quote their price/rates strictly in accordance with prescribed price/rate schedule -Volume-III (SCH-1).
42.2	The quantities of the various items mentioned in the respective Price schedules, Volume-III are approximate, based on very preliminary information and may vary to any extent or to 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 in the total value of the work executed under any part of this contract including extra items, if any, but excluding any price variation, remains within +/- 15 % (plus/minus fifteen percent) of the awarded price (as per LOI / WO).
42.3	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.
42.4	Compensation due to variation of final executed value in excess of the limits defined in clause above, shall be as follows:

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 38 OF 49

42.4.1	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.
42.4.2	In case the finally executed contract value increases above the upper limit of Contract Value due to quantity variation specified above, there will be no revision in the rates within the contract period.
43.0	METHOD OF MEASUREMENT
43.1	Mode of measurement shall be as per relevant clauses of technical specification/amendment of technical specification of this tender. In case the same is not available the relevant IS 1200 in conjunction of IS code 3385 shall be adopted. In case the same is also not available, the standard procedure adopted in CPWD shall be adopted. In case the same is also not available in CPWD, the measurement of the work done will be based on the mutual agreement between BHEL and contractor. In all the above cases, the interpretation of BHEL will be final and binding to the contractor.
44.0	OTHER TERMS
44.1	While bidder's scope includes 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.
44.2	Customer Specific qualifying requirement for bidder's approval
44.2.1	Following are the customer specific requirement for bidder's approval
44.2.1.1	Bidder should have been in past executed civil and structural works of 195 MW or higher capacity coal/lignite based power plant including earth work in filling involving mechanical compaction and cutting in hard rock, foundations, Bulk material handling plant involving underground storage hopper and underground tunnels.
44.2.1.2	In case bidder is not meeting above requirement then bidder should have executed such works in the past and annual rate of execution in reference work in such works should not be less than eighty(80%) of asking rate of such works for which the tender is being floated.
44.2.2	Bidder to consider the above requirement also apart from PQR before submitting the bid. In case of customer's requirement, bidder may have to submit the document in support of the above for submission of the same to customer for approval.
44.3	Contractor's Labour Information Management System (CLIMS):
44.3.1	The Contractor has to necessarily get itself registered in the Contractor's Labour Information Management System (CLIMS), which will be installed by the NTPC.
44.3.2	The entry and exit of all contract labour to the plant premises will be through Gate Access Control System of above 'Contractor's Labour Information Management System'
44.3.3	It will be the responsibility of the Contractor to ensure timely exit of all labours from the plant premises after completion of job of that day.
44.3.4	The contractor has to abide with all the statutory compliance applicable to its workers and employees and update the details of the same in the above System.
44.4	Contractor Performance Feedback and Evaluation System
44.4.1	Customer(NTPC) has in place an established 'Contractor Performance and Feedback System' against which the Contractor's performance during the execution of Contract shall be evaluated on a continuous basis at regular intervals on the following seven parameters:

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 39 OF 49

	I. Engineering & Quality Assurance Capability II. Finance III. Supply IV. Construction/ Installation V. Field Quality VI. Safety VII. Claims & Disputes
44.4.2	The score-based feedback formats based on which Contractor's performance shall be evaluated is enclosed at Annexure-III to TCC. In case the performance of the Contractor is found unsatisfactory, the Contractor shall be considered ineligible for participating in future tenders of customer for three years.
44.5	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:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 40 OF 49

ANNEXURE - A
LIST OF EQUIPMENTS FOR CIVIL SITE LABORATORY

SL NO	NAME OF TEST	NAME OF EQUIPMENT	SIZE OF EQUIPMENT	REF
CONCRETE TESTING EQUIPMENT				
1	Concrete Compressive test	Digital Compressive Testing Machine with 2000 KN capacity.	2000KN capacity	IS 2505
2	Concrete Cube casting	Concrete Cube Mould	150x150x150mm, minimum 60 Nos.	IS 10086
3	Workability of concrete	Slump cone	Standard, atleast 04 nos	IS 456
4	Initial & final setting time, Consistency of cement	Vicat Apparatus with desk pot	Standard	IS 5513
5	Cement mortar cube casting	Mortor Cube mould	70.6 x 70.6 x 70.6 mm, minimum 09 sets desired.	IS 10086
SOIL TESTING EQUIPMENT (LEVELLING & GRADING)				
1	Core Cutter test	core cutter apparatus	Rammer, 6 nos of std core cutter mould, dolly	IS 2720
2	Proctor density test	Std proctor Compaction apparatus	Standard	IS 2720
3	Moisture Content	Rapid moisture meter	Standard, atleast 04 nos	IS 2720
PROCESS CONTROL ACCESSORIES				
1	Hot air oven	Temperature range 50° C to 300° C	600x600x600mm (min.size)	
2	Electronic balance	2 nos	600g x 0.01g, 5g	
3	Physical balance	10 kg capacity	Weights 20 gm to 10 kg	
	Mechanical Weighing Machine	100 Kg Capacity		
4	Thermometer	Temperature range 0° C to 150° C	Digital (4 nos)	
5	Measuring jars	2 nos set of each size	100ml, 200ml, 500ml & 1000 ml	
6	Gauging trowlers	2 nos	100mm & 200 mm with wooden handle	
7	Spatula	2 nos	100mm & 200 mm with long blade wooden handle	
8	Stainless steel scoop	2 nos	2 kg and 5 kg	
9	Digital pH meter	02 nos	0.01 mm least count,	
10	GI tray	02 nos	600x450x50mm, 450x300x40mm,	
11	Digital paint thickness meter for masanory / concrete painting measurement	02 nos	150 micron range	
12	Digital elcometer for paint thickness	02 nos		
13	Mud Balance	02 nos	Range of 0.8 to 2.5	
14	Dial gauge	08 Nos.	0.01 mm least count,	
15	Hydraulic Jack with Calibrated Pressure Gauge	04 Nos.	2 Nos. 800 MT Capacity & 2 Nos. 600 MT Capacity	
16	Slurry Sampler	02 sets		
17	Marsh Funnel and Cup	02 sets		

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 41 OF 49

18	DP Test Kit	10 nos.		
19	Vernier 300 mm & 600 mm set	2 nos each		
20	Radiography film viewer	2 nos		
21	Radiographic facilities	As per requirement	Agency should deploy BARC approved agency	
22	Radiography film viewer	As per requirement		
23	Flakiness and elongation index test gauges	2 nos each		
24	Atterberg Limits set-up (Liquid Limit and Plastic Limit) and Shrinkage Limit Apparatus with mercury	1 set each		
25	Impact testing machine	01 Set		
26	Pycnometer	02 Set		
27	Crushing value apparatus	01 Set		
28	Los angeles Abrasion Testing Machine	01 Set		
29	Free swell Index Apparatus	01 Set		
30	Bitumen Extractor Machine	01 Set		

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 42 OF 49

ANNEXURE-I

NOTE :

LIST OF TENTATIVELY APPROVED SUPPLIERS / DESIGNERS IS PROVIDED HEREUNDER. HOWEVER, IN CASE THE BIDDER PROPOSES TO PROCURE ITEMS FROM OTHER SUPPLIERS, SPECIFIC APPROVAL SHALL BE REQUIRED TO BE TAKEN FROM BHEL / NTPC AS PER APPROVED QP. FURTHER BIDDER MAY NOTE THAT LIST CONSISTS OF ONLY TENTATIVELY APPROVED VENDORS. SPECIFIC APPROVAL MUST BE TAKEN FROM BHEL / NTPC PRIOR TO EXECUTION AT SITE.

SL. NO.	ITEM	PROPOSED SUB SUPPLIER	PLACE OF MANUFACTURING	REMARKS
1	CONSTRUCTION CHEMICALS - ADMIXTURES, PLASTISIZERS, RETARDERS WATER PROOFING COMPOUNDS GROUTS	SIKA INDIA LTO	-	
		CICO TECHONOLOGIES LTD	-	
		FOSROC CHEMICALS (I) PVT LTD	-	
		BASF	-	
2.	FALSE CEILING- GLASS REINFORCED GYPSUM SYSTEM, MINERAL FIBRE BOARD SYSTEM,PREPAINTED COIL COATED STEEL SYSTEM	SAINT GOBAIN	NEW DELHI	
		HUNTER DOUGLOUS	MUMBAI	
		TIGER STEEL	PUNE/MUMBAI	
		INTERARCH	NOIDA	
		LLOYD INSULATION	-	
		MG INDUSTRIES	FARIDABAD	
3	PAINT AND PAINTING SYSTEM	ARM STRONG	NEW DELHI	
		BERGER	-	
		SHALIMAR PAINTS	-	
		JENSON AND NICHOLSON	-	
		KANSAI NEROLAC	-	
		AKZO NOBEL	-	
4	COLOUR COATED SHEET (FOR COIL)	ASIAN PAINTS	-	
		UNION STEEL	KOREA	
		DONGBU STEEL	KOREA	
		BHUSHAN STEEL AND STRIPS LTD.	RAIGAD	
		ESSAR STEEL LTD	PUNE	
		NATIONAL STEEL AND AGRO	DHAR	
		JSW STEEL COATED PRODUCTS LTD	KAMLESHWAR	Formerly JSW ISPAT Steel Ltd
		BHUSHAN STEEL LTD.	SAHIBABAD	
		JSW LTD	THANE	
		TATA BLUESCOPE STEEL LTD	JAMSHEDPUR	*AL-ZN COIL FOR CLADDING

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 43 OF 49

5	PROFILERS FOR DECKING SHEETS	UNIMET PROFILES LIMITED	DHARUHERA	
		MULTICOLOUR STEEL INDIA LIMITED	GURGAON	
		ISOLLOYD	SOLAN	
		NATIONAL STEEL AND AGRO	DHAR	
		ERA BUILD SYS	RUDRAPUR	
		TATA BLUE SCOPE	PUNE	HINJEWARI WORKS
		TATA BLUE SCOPE	BHIWADI	
		PENNAR INDUSTRIES	HYDERABAD	
		ALFA STEEL BUILDING SOLUTIONS	HOSUR	
6	PROFILERS FOR CLADDING SHEETS	MULTICOLOUR STEEL INDIA LIMITED	GURGAON	
		UNIMET PROFILES LIMITED	DHARUHERA-HARYANA	
		ERA BUILD SYS	RUDRAPUR	
		TATA BLUE SCOPE	PUNE	HINJEWARI WORKS
		TATA BLUE SCOPE	BHIWADI	
		PENNAR INDUSTRIES	HYDERABAD	
		ALFA STEEL BUILDING SOLUTIONS	HOSUR	
		ISOLLOYD	SOLAN	
		NATIONAL STEEL AND AGRO	DHAR	
7	ELECTROFORGED GRATING	INDIANA GRATING	PUNE	
		PREMIER POWER PRODUCTS (CALCUTTA) PVT LTD	HOWRAH	
		GREATWELD	PUNE	
		BHOLA RAM STEELS	PATNA	
		KANADE ANAND UDYOG	THANE	
		PINAX STEEL INDUSTRIES	PATNA	
8	GI PIPES	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	

TENDER NO – PSER:SCT:KGN-C2105:21			(TCN-05)
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 44 OF 49	

9	PVC WATER STOP	DURON POLYVINYL PVT. LTD	GURGAON	
		KANTA RUBBER	HYDERABAD	
		MARUTI RUBBER	NOIDA	
		JYOTI POLYVINYL	VADODARA	
		DEEP-JYOTI RUBBER PVT LTD	NOIDA	
10	BITUMEN ASPHALT	ALL GOVERNMENT REFINARIES	–	
11	PLASTIC, PVC PIPES	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	
12	BITUMEN IMPREGNATED FIBER BOARD JOINT FILLER, BITUMEN SEALING COMPOUND	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	
13	ALUMINUM COMPOSITE CLADDING	INDOMAX	ROORKEE	
		ALSTONE	DEHRADUN	
14	CERAMIC / VITRIFIED TILES	KAJARIA	-	
		SOMANY		
		SPARTEK INDIA	-	
		NITCO	-	
		ORIENT BELL	-	
		MARBITO		
		RESTILE	-	
		JOHNSON	.	
15.	ACID / ALKALI RESISTANCE TILES, AR BRICKS, ARCEMENT (POTASSIUM SILICATE BASED CEMENT MORTAR, PHENOLIC BASED RESIN CEMENT) AR BITUMASTIC	CARBORANDUM UNIVERSAL	CHENNAI	
		PELICAN	BHIWADI	
		CAMBRIAN	ALWAR	
		KERATECH	VADODARA	
		CHAMPION CERAMICS	CHAMPA	
		SUNSHINE CERAMICS	CHAMPA	
		MAHAKOSHAL POTTRIES	KATNI	
		PERFECT ACID WARE	JABALPUR	
		BABA BAIDNATH REFRACTORIES	PURULIA	

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 45 OF 49

16.	FIRE PROOF DOORS	NAVAIR INTERNATIONAL LTD.	NEW DELHI	
		SHAKTI MET DOOR	HYDERABAD	
		SUPER STEEL	DELHI	FOR SINGLE LEAF ONLY
		SIGNUM FIRE PROTECTION	NAGPUR	
		RADIANT SAFE DOORS	AHMEDABAD	
17	PARTICLE BOARDS, PLYWOOD, MDF	NOVAPAN	-	
		ECOBORD	-	
		BHUTAN BOARD	-	
		KITPLY	-	
		CENTURY	-	
		GREEN PLY	-	
		DUROPLY	-	
		MERINO	-	\
18	ALUMINUM SECTIONS	HINDALCO	-	
		INDALCO		
		BALCO (VEDANTA)	-	
		NALCO	-	
		J1NDAL	-	
19	HIGH SOLID CONTENT LIQUID APPLIED URETHANE BASED ELASTOMERIC MEMBRANE FOR WATER PROOFING	STP	-	
		IWL INDIA LTD	-	
		LLOYDS	-	
		CICO TECHONOLOGIES LTD		
		MK PETRO	-	
20	SANITARY ITEMS	PARRYWARE	-	
		HINDWARE	-	
		SEABIRD		
		ORIENT		
		HINDUSTAN		
		CERA		
21	CP BRASS TAP AND OTHER SANITARY FITTINGS	GEM	-	
		PARKO	-	
		JAQUAR	-	
		MARC	-	
22	POLYTHENE WATER STORAGE TANKS	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	
23	NEOPRENE BELLOW STRAPS	CORI	CHENNAI	
		RESISTOFLEX	NOIDA	
		DWREN	KOLKATA	

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 46 OF 49

24	RCC PIPES	BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	
25	POLYCARBONATE SHEETS	GE PLASTIC (SABIC)	-	
		BAYER (MAKROLON)	-	
26	ELECTRICALLY OPERATED HOIST (5T/2T)	CONSOLIDATED HOIST	SATARA	
		HERCULES HOIST	RA1GARH	
		GRIP ENGG	FARIDABAD	
		EDDY CRANE	PUNE	
		ARMSHEL	BANGLORE	
		CENTURY CRANE	PALWAL	
		ELECTROTHERAPY	HOWRAH	
		TRACTEL TRIFFER	PALWAL	
		ALFA CRANES	ALWAR	
		REVA HOIST	FARIDABAD	
27	STOP LOG GATES, TRASH RACK AND LIFTING BEAM	GENERAL MECHANICAL WORKS	BARODA	
		TRIVENI	NOIDA	
		MACMET	KOLKATA	
		PRADEEP STRUCTURES	HOWRAH	
		RED FAG	HYDERABAD	
		BSBK ENGG	NOIDA	
28	PTFE BEARING ELASTOMERIC BEARING	ALL CURRENT MORTH/RDSO APPROVED VENDORS		
29	FABRIC EXPANSION COMPENSATOR	KELD ELLENTOFT INDIA LTD	CHENNAI	
		EAGLE BURGMANN KE PRIVATE LTD	CHENNAI	
30	MINERAL WOOL FOR THERMAL INSULATION -	ROCKWOOL INDIA LTD.	HYDERABAD	Subject to. carrying out K-value test at CBRI Roorkee / NTPC approved lab.
		ROCKWOOL INDUSTRIES	BHILA1	
		LAP INUS	MALANPUR (MP)	
		M1NWOOL	RAJANANDGAON	
		LLOYD INSULATION	BHILAI	
		U.P. TWIGA	BULENDSHAHAR	
31	GEOTEXTILE	GARWARE WALL ROPES Ltd	PUNE	
		TENCATE GEOSYNTHETICS ASIA	MALAYSIA	NON WOVEN

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 47 OF 49

32	GEOMEMBRANE (HDPE LINER)	D P WIRES PVT. LTD	RATLAM	
33	CI PIPES	BIS APPROVED SOURCES HAVING VALID BIS LICENCE		
34	COAL TAR ANTICORROSIVE COATING	RUSTECH	KOLKATA	
		PORWAL INDUSTRIES	RAIPUR	
		MP TAR	BHILAI	
		STP UNITED	JAMSHEDPUR	
35	ELASTOMERIC POLYURETHANE COATING	CIPY	PUNE	
		AMCHEM	NOIDA	
		E. WOOD. (APPLICATOR: PSL HOLDING, INDIA)	UK	
		CICO TECHONOLOGIES LTD	GURGAON	
36	HIGH PERFORMANCE MOISTURE COMPATIBLE CORROSION RESISTANT COATING SYSTEM	CECRI LICENSED SOURCES		
37	MS PIPES (IS:3589, WELDED PIPES)	BIS APPROVED SOURCES HAVING VALID BIS LICENCE		
38	PVC COATED CHAIN LINK FENCING & REINFORCED BARBED TAPE	SAUDAGAR MAC MAMMANLAL PVT LTD		
		MECAFERRI		

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 48 OF 49

ANNEXURE-II

TECHNICAL SPECIFICATION OF SAFETY EQUIPMENTS AND SAFETY PERSONAL PROTECTIVE EQUIPMENTS

Sl. NO	ITEM DESCRIPTION	SPECIFICATION
1	SAFETY NET DOUBLE LAYER TYPE	i. STANDARD SIZE OF SAFETY NET: 10 MTR. X 10 MTR. ii. THE SAFETY NET SHOULD COMPLY WITH IS 11057: 1984 (REAFFIRMED IN 2019). iii. THERE SHOULD BE TWO LAYERS IN SAFETY NET. AN OVERLAY NET IS TO BE PROVIDED WITH THE SAFETY NET FOR USE TO CATCH OBJECTS SUCH AS TOOLS AND DEBRIS. iv. NETS SHALL BE MADE UP OF ISI MARKED POLYPROPYLENE ROPE CONFORMING TO IS 5175: 1992 v. MESH SIZE : 100 MM X 100 MM MESH ROPE: 4 MM DIA. PP ROPE BORDER ROPE : 12 MM DIA. PP ROPE vi. OVERLAY NET : CONTAINMENT NET OF .75 MM DIA. TWIN, MESH SIZE 15-22 MM vii. TIE ROPE : 12 MM DIA. PP ROPE OF 2 METRES LENGTH AT EVERY 1.5 METRE INTERVAL viii. SAFETY NET SHOULD HAVE MAXIMUM DUTY HEIGHT OF 6 METRE.
2A	ROPE GRAB FALL ARRESTOR WITH KARBINER	i. GUIDED TYPE FALL ARRESTOR ii. MATERIAL: HIGH STRENGTH ALLOY STEEL iii. INBUILT GRAVITY LOCK TO AVOID INCORRECT USE. IN EVENT OF FALL QUICKLY GRIPS THE ROPE. DETACHABLE ROPE GRAB DEVICE. iv. WORKS ON 14MM DIAMETER POLYAMIDE ROPE v. STEEL KARABINER CONNECTOR vi. WEIGHT: 700GM-1KG (APPROX.) vii. SIMPLE OPENING / CLOSING AND AUTOMATIC LOCKING BY A DOUBLE SECURITY SYSTEM MUST viii. MUST CONFORM TO EN 353-2 CE ix. ABLE TO WITHSTAND 12KN FORCE x. CHEMICAL PROPERTIES: CORROSION RESISTANT xi. MECHANICAL PROPERTY: HIGH TENSILE STRESS
2B	FALL ARRESTOR ROPE	i. STANDARD SIZE OF FALL ARRESTOR ROPE: 30 MTR. ii. MATERIAL: POLYAMIDE ROPE (3 STAND TWISTED), DIAMETER: 14 MM iii. CHARACTER OF ROPE: STABLE FORM, WEAR-PROOF, SMOOTH, ROUND, GOOD FOR GRIP iv. CHEMICAL PROPERTIES: HEAT RESISTANT AND NON-FLAMMABLE v. MUST CONFORM TO ISO 1140: 2012
3	LIFELINE	i. STANDARD LENGTH: EACH OF 40 MTR. LENGTH ii. STANDARD SIZE: 8 MM STEEL WIRE ROPE + 2 MM PVC COATING iii. IT SHOULD BE MADE UP OF 8 MM DIAMETER GALVANIZED STEEL WIRE ROPE. ABOVE THE WIRE ROPE, THERE SHOULD BE 2 MM DIAMETER TRANSPARENT PVC COATING. iv. WIRE CONSTRUCTION: 7 X 19 (7 STRANDS EACH OF 19 MM DIAMETER)
4	LADDERS	i. IT SHOULD BE MADE UP OF METAL (IS 1977: 1996) ii. RUNG DIAMETER: 30 MM. iii. RUNGS/ STEPS: METAL iv. INDIVIDUAL LENGTH OF LADDER : 6 MTR. v. RUNG SPACING: 300 MM. vi. WIDTH OF LADDER: 350 MM.
5	INDUSTRIAL SAFETY	i. IT SHOULD MEET IS: 2925-1984 STANDARD & HAVE MARKING ON

TENDER NO – PSER:SCT:KGN-C2105:21 (TCN-05)		
VOLUME-IF-CML-R-01	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	PAGE 49 OF 49

	HELMET (IS: 2925-1984 MARKED)	THE HELMET ii. COLOUR: YELLOW
6	INDUSTRIAL SAFETY SHOES (IS: 15298-2002 MARKED)	i. IT SHOULD MEET IS: 15298-2002 STANDARD & HAVE MARKING ON THE SAFETY SHOE ii. COLOUR: BLACK iii. SIZE: 5-12
7	FULL BODY SAFETY HARNESS (IS: 3521)	vii. IT SHOULD HAVE: ONE DORSAL D-RING, ONE STERNAL D-RING, ONE VENTRAL D-RING, TWO LATERAL D-RING viii. IT SHOULD BE MULTIPURPOSE HARNESS, IDEAL FOR PROFESSIONAL USE FOR WORK AT HEIGHT AND RESCUE ix. IT SHOULD HAVE SHOCK ABSORBER FEATURE x. WEBBING MATERIAL: FRAY-PROOF DOPE-DYED POLYESTER WEBBING, STITCHING THREAD MATERIAL: HIGH TENACITY POLYAMIDE WITH COMPUTER-CONTROLLED STITCHING, BUCKLES: METAL QUICK BUCKLES OF HIGH STRENGTH ALLOY STEEL. IT SHOULD BE SHOT BLASTED AND SHOULD HAVE 8 MICRON THICK ZINC PLATING OVER IT. xi. WEBBING WIDTH: 44+-1 MM xii. LANYARD: 12 MM. POLYAMIDE LANYARD (1.8/2.0 MTR.) xiii. IT SHOULD HAVE ADJUSTMENT STRAPS AT SHOULDER, WAIST AND THIGHS xiv. IT SHOULD CONFORM TO IS 3521: 1999 STANDARDS xv. IT SHOULD WITHSTAND MAXIMUM WEIGHT OF 100 KG.

CIVIL, STRUCTURAL & ARCHITECTURAL WORKS (INCLUDING PILING WORKS) FOR FGD SYSTEM AREA OF 4 X 210 MW, STAGE-I & COMMON SYSTEM KAHALGAON STPP, BIHAR.					
TENERPSE: SCT: KGN-C2105:21 (TCN-05, ANNEXURE-A)					
Sl.No	Ref. of Tender document		Context	Bidder's Query	BHEL's Reply
1	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	Clause 19		To access the requirement of suitable cranes, Bidder requests the Employer to provide the maximum length, weight and height of erection. In case of required capacity of crane is greater than 150 MT, Bidder requests the employer to provide the crane on free of cost basis.	If the handling/erection can't be done with bidder's highest capacity of crane or in tendum operation by bidder's scope of crane then for such handling/erection work, BHEL shall issue higher capacity of crane on free of cost basis to the successful bidder.
2	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	Clause 26.2.2.2.2 A	Allowable wastage: - 4% (FOUR percent) of the theoretical consumption shall be considered. Wastage shall be considered as cut pieces and scrap material, measured as per actual weightment basis. Invisible wastage (max limit to 0.5%), if any, shall be considered to be included in the specified 4 % allowable wastage	As per Bidder's general experience in Reinforcement and earthing rod MS round steel wastage shall be 5% . Request you to kindly consider.	Kindly refer Revised Volume-IF-TCC-CML-Rev-01
3	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC	Clause 26.2.2.2.2 B	Allowable wastage: - 4% (FOUR percent) of the theoretical consumption shall be considered. Wastage shall be considered as cut pieces and scrap material, measured as per actual weightment basis. Invisible wastage (max limit to 0.5%), if any, shall be considered to be included in the specified 4 % allowable wastage	As per Bidder's general experience in construction field, Structural steel (Rolled section, plates etc) wastage shall be 5% . Request you to kindly consider.	Kindly refer Revised Volume-IF-TCC-CML-Rev-01
4	TECHNICAL CONDITIONS OF CONTRACT, SCOPE ETC VOLUME-IF-CML	Clause 26.2.2.2.2	WASTAGE For A} REINFORCEMENT AND EARTHING ROD MS ROUND STEEL & For B) STRUCTURAL STEEL, (ROLLED SECTION, PLATES ETC.) WASTAGE For S3 Wastage beyond three Percent (4%) of the aforesaid theoretical consumption (S-1)	Typing Error to be corrected as an Four Percent	Kindly refer Revised Volume-IF-TCC-CML-Rev-01

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	CIVIL, STRUCTURAL & ARCHITECTURAL WORKS (INCLUDING PILING WORKS) FOR FGD SYSTEM AREA OF 4 X 210 MW, STAGE-I & COMMON SYSTEM KAHALGAON STPP, BIHAR.	
Ref	1.0	Tender no. PSER:SCT:KGN-C2105:21.
	2.0	BHEL's NIT, vide reference no PSER:SCT:KGN-C2105:8609 Date: 27-04-2021
	3.0	BHEL's TCN-01, vide reference no PSER:SCT:KGN-C2105:TCN-01, dated 06-05-2021.
	4.0	BHEL's TCN-02, vide reference no PSER:SCT:KGN-C2105:TCN-02, dated 10-05-2021
	5.0	BHEL's TCN-03, vide reference no PSER:SCT:KGN-C2105:TCN-03, dated 13-05-2021
	6.0	BHEL's TCN-04, vide reference no PSER:SCT:KGN-C2105:TCN-04, dated 17-05-2021
	7.0	BHEL's TCN-05, vide reference no PSER:SCT:KGN-C2105:TCN-05, dated 28-05-2021
	8.0	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)

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

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

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211691, 23211798, 23211796