



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TCN - 02

Ref: PSER:SCT:NKP-C1974:TCN-02

Date: 08-07-2019

Sub	Tender Change Notice (TCN) - 02	
Job	<i>Civil and Architectural works including Leveling & Grading, underground facilities like drainage, sewerage, trenches, earthing mat / grounding etc. associated with complete Flue Gas Desulphurisation System (FGD) , Lime Stone (LSS) & Gypsum Handling (GSS) System pkg for 3 x 660 MW North Karanpura STPP, Jharkhand.</i>	
Ref	1.0	Tender no PSER:SCT:NKP-C1974:19.
	2.0	BHEL's NIT, vide reference no PSER:SCT:NKP-C1974:7609 Date: 28-06-2019
	3.0	BHEL's TCN-01 vide ref PSER:SCT:NKP-C1974:TCN-01 dated 02 -07-2019
	4.0	Other References, if any.

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

- 1) Revised TCC (Technical Conditions of Contract), Rev-1, with changes in CI 26.0, CI No 27.0 superseding TCC (Technical Conditions of Contract) Rev-0 issued earlier with NIT.
- 2) Revised 'No deviation certificate' as per enclosed Annexure-2. Bidder shall submit no deviation certificate as per enclosed format only.
- 3) All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,
for BHARAT HEAVY ELECTRICALS LTD

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 : (033) 2339-8000

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	<i>Civil and Architectural works including Leveling & Grading, underground facilities like drainage, sewerage, trenches, earthing mat / grounding etc. associated with complete Flue Gas Desulphurisation System (FGD) , Lime Stone (LSS) & Gypsum Handling (GSS) System pkg for 3 x 660 MW North Karanpura STPP, Jharkhand</i>	
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	3.0	BHEL's TCN-01, vide reference no PSER:SCT:NKP-C1974:TCN-01 Date: 02-07-19
	4.0	BHEL's TCN-02, vide reference no PSER:SCT:NKP-C1974:TCN-02 Date: 08-07-19
	5.0	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)

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This section of Technical Conditions of Contract (TCC) is applicable for service part of contract. The conditions mentioned inscribed hereunder shall be read along with other volumes of tender, i.e. general conditions of contract (GCC, Volume-IB), Volume-III etc and in case of any conflict or inconsistency, the provision of the TCC, "Volume- IF" shall prevail.

All the tender clauses are individually applicable for respective package unless specifically mentioned separately/differently, as applicable.

CLAUSE NO	DESCRIPTION
1.0	<p>PROJECT SYNOPSIS AND GENERAL INFORMATION</p> <p>Name of the Owner : NTPC Capacity : 3 x 660 MW Nearest Railway Station : Khalari Railway Station on Ranchi Garhwa section of Eastern Railways (40 km from Project site) Nearest Town : Tandwa in Chatra District Nearest commercial airport : Ranchi (150 km from Project site) The site is located near Tandwa town having latitude and longitude of about 23° 50' N to 23° 52' N and 84°59' E to 85° 2' E respectively.</p> <p>It is essential that the bidder visit site and acquaint with the conditions prevailing at site before submission of the bid. The information given hereunder is for general guidance and shall not be contractually binding on BHEL.</p>
2.0	<p>SITE VISIT</p> <p>The bidder must visit the actual site of North Karanpura STPP, Jharkhand, to acquire full knowledge and information about the conditions prevailing at site as well as, in and around the project site, together with the statutory, obligatory, mandatory requirements of various authorities before submission of the bid.</p>
3.0	<p>SCOPE OF WORK</p>
3.1.1	<p>Civil and Architectural works including Leveling & Grading, underground facilities like drainage, sewerage, trenches, earthing mat / grounding etc. associated with complete Flue Gas Desulphurisation System (FGD) , Lime Stone (LSS) & Gypsum Handling (GSS) System pkg for 3 x 660 MW North Karanpura STPP, Jharkhand.</p>
3.1.2	<p>Scope of Civil Works of FGD , LSS & GSS system shall include but not limited to the following:</p> <ul style="list-style-type: none"> • Absorber Tower Foundation anlong with Elevator Founndation and Truck Hopper, • FGD Control Room Building, MCC Building • Ball Mill Building & Lime Stone Building , Transfer Point (TP's), Conveyor Foundations & Tunnels • Gypsum Dewatering Building , Chrusher House (CR) , Gypsum Storage Shed • RC Pump & Oxidation Blower Foundation , Pent House • Misc. Tank Foundation , Transformer Foundations including fencing , Paving • Misc. Pump & Equipment Foundations • Duct Foundation • Pipe & Cable Trestles , Air & Water pipe line padestal • Limestone Storage Silo • Wet Ball Mill Foundation • Booster Fan Foundation • SO₂ Analyser Room • CW Treatment Building • ECW Pump House • Road - Drains / Paving & Misc. Sumps , Parking area etc. • Plinth Protection, Paving & Underground Works, Laying of Underground Earthing Rod, Sewage Network, Storm Water Drainage System, Plumbing and Sanitary Works, Misc. Structures, etc.
3.2	<p>Mix design (M 15, M 20, M 25, M 30, M 35) for all concreting shall be carried out from customer approved listed institute specially for North Karanpura STPP Project , contractor has to ensure adding of approved brand product of admixture and minimizing of cement content in line with IS 456 as advised by BHEL time to time without any additional cost.</p> <p>Some of the design mixes are available at site. Vendor may adopt the existing design mixes if approved by customer or mix design may be carried out from listed approved laboratory for North</p>

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	Karanpura STPP Project.
3.3	Contractor shall provide temporary barricade all round the working area to avoid any untoward incident.
3.4	The work to be performed under this specification consists of providing all labour, materials, consumables, equipment, 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.
3.5	The scope shall also include setting up by the bidder a testing laboratory (one AC lab size 4.5mtr x 6mtr and 1 non AC lab 4.5 mtr x 4.5 mtr.) in the field to carry out all relevant tests. Detail of laboratory equipments as per Annexure-A is to be arranged by the contractor within quoted rate. For conducting day to day test, One Qualified quality Manager and One engineer to be deployed as necessary.
3.6	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.
3.7	All works under this specification, unless specified otherwise, shall conform to the latest revision and / or replacement of the following or any other Indian Standard Specifications and Codes of Practice. In case any particular aspect of work is not covered specifically by Indian Standard Specification, any other standard practice as may be specified by the Engineer shall be followed.
3.8	The Contractor is to carry out the work as per the drawings issued to him and / or Contractor's drawings which are approved by the Engineer and / or the Engineer's instructions. Drawing showing enough details for the construction as per the specification shall be furnished to the contractor in a phased manner as far as possible.
3.9	The contractor shall comply with all state and central laws, various labour laws, statutory rules and regulations, etc.
3.10	The payment of wages act, minimum wages act, workman compensation act, Employers Liability act, Industrial Dispute Act, Employees Provident Fund Scheme, Employees State Insurance, Contract Labour (Regulation and abolition) Act and other acts, rules & regulation for labour as may be enacted by the Government during the tenure of the contract and having force or jurisdiction at site. The contractor shall give to the local government body police and other relevant authorities all such notices as may be required by law.
3.11	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.
3.12	Contractor's engineer & supervisors shall be adequately qualified and also inclined to do a quality job.
3.13	BHEL will not provide any T&P / instruments / consumables to the party. The work under the scope of the contractor will be deemed to be completed, in all respects, only when so certified by BHEL.
3.14	SPLITTING BHEL reserves the right to split the work and award any part of the work to any agency without assigning any reasons whatsoever.
4.0	DEVIATIONS / CLARIFICATIONS
4.1	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.
4.2	Bidders will have to submit "no deviation certificate" as per enclosed format. bidders may please note that, in case of any deviation taken by the bidder from the tender terms, bids are likely to be rejected. Bidders are also required to fill all annexures of tender.
5.0	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. No separate claim in this regard shall be admitted by BHEL. No separate payments for dewatering of subsoil, surface water or catchments water, if required, at any time during execution of the work including monsoon period shall be considered by BHEL.
6.0	LAND

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6.1	The contractor has to plan and use the existing land inside the Project Premise considering the use of land by other Civil / Mechanical / Electrical contractors and the storage of plant machineries and materials. The existing land shall be shared by all erections agencies. Land will be allocated with certain time frame and to the extent available / considered necessary, and will be reviewed by BHEL depending upon the area availability.
6.2	Land for labour colony near Project Premise may be provided free of cost if the same is available from owner / customer. 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. On shortage of land availability from customer vendor should arrange the accommodation of Labour in his own cost. Approach of Labour colony to be maintained by vendor at all season throughout the year.
6.3	The Contractor shall have total responsibility for all equipment and materials in his custody stores, loose, semi-assembled and / or erected by him at Site. The Contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages and loss. All materials of the Contractor shall enter and leave the Employer Site only with the written permission of the Employer in the prescribed manner.
6.4	The contractor will be responsible for handing back all lands, as handed over to him by BHEL / NTPC.
6.5	Area within project premises for batching plant, office, storage area etc. for construction purpose shall be provided as per availability free of cost as per approval of customer. On the shortage of land inside project area vendor will arrange the land / stores / pre-cast factory in his own cost .
7.0	WATER
7.1	BHEL will not provide construction water at given work premises. Contractor will arrange water by installing boring / purchase from out side of project area at his own cost..
7.2	Further necessary drinking water system shall be done by the bidder at his own cost.
7.3	Contractor should arrange on their own, drinking water in their labour colony.
7.4	BHEL shall not be responsible for any inconvenience or delay caused due to any interruption of water supply and the contractor shall claim no compensation for delay in work for such interruption. Contractor may make standby arrangement for water for which no separate payment shall be made by BHEL.
7.5	Contractor will have to arrange for storage of water to meet the day-to-day requirement. Bidder will ensure adequate supply of construction water to meet the requirement of water during major concreting.
7.6	The availability of water (construction as well as drinking) in North Karanpura project may be limited. Contractor shall ensure that no water wastage. In this regard the contractor shall take all necessary measure towards preservation waste of water.
8.0	ELECTRICITY
8.1	CONSTRUCTION POWER & GENERAL ILLUMINATION NETWORK: BHEL Shall Provide Construction Power free of charge at 415V level at two points (within 500 M from his work place), bidder has to make his own distribution arrangement to draw electricity. GENERAL: If any other voltage level (other than normally available) is required, the same shall be arranged by the contractor from power supply as above. Contractor will have to provide at his own cost necessary calibrated energy meters (tamper proof, suitably housed in a weather proof box with lock & key arrangement) at point of power supply along with calibration certificate from authorized / accredited agency for working out the power consumption. In case of recalibration required for any reason the necessary charges including replacement by calibrated meters is to be borne by the contractor. Supply of electricity shall be governed by Indian Electricity Act and Installation Rules and other Rules and Regulation as applicable. The contractor shall ensure usage of electricity in an efficient manner and the same may be audited by BHEL time to time. In case of any major deviation from normally accepted norms is observed, BHEL will reserve the right to impose penalty as deemed fit for such cases.
8.2	The bidder shall have to provide earth leakage circuit breaker at each point wherever human operated electrical drives / T&Ps are deployed.
8.3	The power supply will be from the available grid. BHEL shall not be responsible for any inconvenience or delay caused due to any interruption of power supply / variation in voltage level and no compensation for delay in work can be claimed by the contractor due to such non-supply on the grounds of idle labour, machinery or any other grounds.
8.4	Bidder will have to arrange sufficient illumination at their own work areas.
8.5	The contractor should ensure that the work in critical areas is not held up in the event of power breakdown. In the event of breakdown in the electric supply, if the progress of work is hampered, it will be the

	responsibility of the contractor to step up the progress of work after restoration of electric supply so that overall progress of work is not affected.
8.6	The contractor shall have to make arrangement at their own cost for illumination that will be required in the working area for execution of the work & safety of workmen.
8.7	The contractor shall have to make arrangement at their own cost for illumination etc in labor colony. However there may be provision of Chargeable Power for labor colony for which contractor has to install meters and necessary accessories.
9.0	CONSUMABLE
9.1	All consumables, like gas, electrodes, chemicals, lubricants etc. required for the scope of work, shall be arranged by the contractor at his cost from approved brand / make unless otherwise specifically mentioned in the contract. All consumables to be used for the job shall have to be approved by NTPC / BHEL prior to use.
9.2	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.
10.0	TEST CERTIFICATES
	Necessary test certificates of all materials supplied by contractor are to be produced to BHEL prior to use of those materials.
11.0	IMTE
	The contractor shall ensure deployment of reliable and calibrated instrument, measuring, and test Equipment (IMTE). The IMTE shall have test calibration certificate from authorized / Govt approved agencies. The contractor shall also keep provision of alternate engagement for such IMTE so that the work does not suffer when a particular IMTE is sent for calibration. Re-testing / re-calibration shall also be arranged by the contractor at their own cost at regular interval during the period of use as advised by BHEL.
12.0	QUALITY CONTROL & QUALITY ASSURANCE
12.1	Contractor's Manager, Engineers and supervisors shall be adequately qualified and also inclined to do a quality job. The quality assurance Engineer shall co-ordinate all aspects of quality control, inspection, implementation of quality assurance procedures laid down in Quality Plan and technical specification by BHEL. He shall fill up quality assurance log sheets / formats and submit to BHEL for joint inspection and acceptance. The contractor shall fill up, maintain & preserve the quality records in computerized media. NTPC / BHEL's authorized representative shall be given free access at all time to such quality related records etc. for inspection, review etc.
12.2	QUALITY ASSURANCE PROGRAMME / OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT MANAGEMENT
12.2.1	BHEL, Power Sector (ER) is ISO 9002 certified company. Quality of work to customer's satisfaction and system requirements are the essence of ISO 9002 certification. BHEL, PSER has also obtained HSE certification (ISO 14001 & OHSAS 18001). Contractor will organize / plan / perform, all their activities to meet with these standards.
12.2.2	The contractor shall adopt suitable quality assurance program to control activities as necessary. Such program shall be outlined by the contractor and shall be finally accepted by the BHEL/Owner. A quality assurance program of the contractor shall generally cover the following.
12.2.2.1	His organization structure & qualification data of key personnel for the management and implementation of the proposed quality assurance program.
12.2.2.2	System for site erection control including process controls and fabrication and assembly controls.
12.2.2.3	Control of non-conforming items and system for corrective actions.
12.2.2.4	Inspection and test procedure for all site related works.
12.2.2.5	Calibration and testing of measuring and testing equipment (IMTEs) at appropriate intervals.
12.2.2.6	System for quality audit.
12.2.2.7	System for indication and appraisal of inspection status.
12.2.2.8	System for maintenance of records.
12.2.3	Contractor will comply with HSE (Health, Safety & Environment) requirements of BHEL. All applicable OCPs (Operational Control Procedures) will be followed by contractor as per BHEL instructions. This will be done as part of normal scope of work. Applicable OCPs will be made available to the contractor during work execution at site. Contractor will follow these, within quoted rates. Suitable measures will be taken by contractor for waste management and environment related laws / legislation as a part of normal construction activities.
12.2.4	The Contractor shall provide necessary first-aid facilities for all his employees, representatives and workmen working at the Site. Enough number of Contractor's personnel shall be trained in administering

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	first aid.
12.2.5	It is imperative on the part of the contractor to join and effectively contribute in joint measures such as tree plantation, environment protection, contributing towards social upliftment, keeping good relation with local populace etc.
13.0	WORK & SAFETY REGULATIONS
13.1	REFER DOCUMENT NUMBER : HSEP: 14-ER Rev:00, Date : 25.04.19
	DOCUMENT TITLE: Health, Safety and Environment Plan for Site Operations by Subcontractors
14.0	PROJECT MANAGEMENT/ CONSTRUCTION MANAGEMENT
	To meet the need of construction management at site, contractor shall provide the following services within quoted/ accepted rates.
14.1	PLANNING & MONITORING
14.1.1	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), 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.
14.1.2	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.
14.1.3	<p>The bidder will have to supply & install of 2 Nos. PCs (multimedia PC work station Pentium- Core-i5 / i7, 3.2 GHZ or above, 1000 GB HDD, 8 GB RAM, 100 /1000 MBPS LAN card) of HP / HCL / COMPAQ/ ZENITH or equivalent make with window 10 or higher, 64 bit O/S and required software like MS Office 2010 or higher, AutoCAD 2014 or higher, PageMaker, ADOBE PDF CREATOR with 1 Nos. laser jet printer cum scanner compatible for A3 size printing (ink/ cartridge for which to be supplied as and when required), 1 nos. laser jet Colour printer compatible for A4 size Colour printing (ink / cartridge for which to be supplied as and when required), 1 no. Scanner compatible for A4 size (HP Scanjet Enterprise Flow 7500 or equivalent). All computer with power backup at places, as per instruction of BHEL for exclusive use of BHEL.</p> <p>These computers / printers shall remain contractor's property and they will be allowed to take out the same after closing of contract or during demobilization of T&P which is later. 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 2 (two) nos computer operators and 3 (three) numbers service staff for miscellaneous service for BHEL's use at site/ Kolkata for reconciliation, progress review & day-to-day planning purpose, documentation etc. These facilities are to be provided within 30 days from LOI date till closing of contract or demobilization of T & P which is later.</p> <p>If contractor fails to provide computer / printer / personnel as per requirement, for a continuous period of fifteen days or more, BHEL shall have the right to deduct the amount as per following rates on prorate basis, from contractor's RA bill or any other dues.</p>
14.1.3.1	@ Rs 25,000/- (Fifteen thousand)/ month for each computer operator or at actuals (rate +30%) if BHEL arranges this facility, whichever is lower.
14.1.3.2	@ Rs 15,000/- (Twelve thousand) / month for each service staff or at actuals (rate +30%) if BHEL arranges this facility, whichever is lower.
14.1.3.3	@ Rs 15,000/- (Fifteen thousand)/ month for each set of computer & printer or at actuals (rate +30%) if BHEL arranges this facility, whichever is lower.
14.1.4	The contractor's site office must have facilities of communications like Fax, E-mail, and telephone with STD facility within a month from LOI.
14.2	PROGRESS REPORTING
14.2.1	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 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.
14.2.2	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.	
14.2.3	The daily work force reports shall clearly indicate the work force deployed, category-wise specifying also the activities in which they are engaged.	
14.2.4	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.	
14.2.5	Periodic progress reviews on the entire activities of execution in respect of supply and works in scope of bidder will be held once in a month at Calcutta/site. These meetings will be attended by reasonably higher officials of the contractor and will be used as a forum for discussing all areas where progress needs to be speeded up. The contractor shall be further responsible for ensuring that suitable steps are taken to meet various targets decided upon such meetings.	
14.2.6	During construction contractor shall take an average forty colour digital photograph / slides each month (not less than nine per week) of the works during progress. In case of failure in providing such photograph in each month, an amount of Rs. 20,000/- per month shall be deducted from contractor's RA bill.	
14.2.7	Successful bidder has to provide for electronic/ computerized storing and re-production/ 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.	
14.3	SITE ORGANIZATION	
14.3.1	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.	
14.3.2	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.	
14.3.2.1	Qualified safety officers with assistants (exclusive for safety supervision for project jobs).	Officer – One Assistant- One(Civil)
14.3.2.2	Engineer & Supervisors for quality inspection.	One Engineer Two supervisors (Civil) for field assistance
14.3.2.3	Site supervising engineer and supervisors for civil works in all area.	One Manager , One Sr. Engineers , Two Engineer (Qualified) Three supervisors
14.3.2.4	Quality Engineer /Manager	One Manager (Quality) , One Engineer (QA) for Civil Laboratory & One QA Supervisor for Laboratory assistance.
14.3.2.5	Planning Engineer (exclusively for planning)	One Engineer
14.3.3	Deputation of above man-power shall be jointly decided at site in line with construction schedule.	
14.3.4	Engineer / supervisor for other functions like store & purchase, material management, fin, admn etc are to be provided as per site requirement and not considered above.	
14.3.5	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 60,000.00 per man-month for engineer, Rs 35,000.00 per man-month for the supervisor / safety officer and Rs. 40,000 per man-month for safety supervisor from RA bills. Further induction of manpower regarding site supervisor & site engineer will be decided at site as per requirement without any financial implication.	
14.3.6	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.	
14.3.7	In addition to above, a well experienced qualified engineer to be designated, as 'Project Co-coordinator', shall be deployed by the contractor. Such engineer shall have adequate exposure on the job and shall remain fully involved in all planning activities, guidance etc to contractor's own team during the complete execution period of contract.	
14.3.8	The contractor should also submit to BHEL for approval a list of T&Ps along with their fitness certificates. The tools & tackles shall not be removed from site without written permission of BHEL.	

14.3.9	The contractor should also submit network programs for the erection of various items. These networks shall show the NTPC / BHEL hold points, which have to be cleared by NTPC / BHEL, or their authorized representatives before further erection can take place. These programs for the erection would clearly identify responsibilities of the contractor and NTPC/ 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.
14.4	CONSTRUCTION MANAGEMENT
14.4.1	Based on the approved program, the contractor shall submit a program of construction / erection / commissioning for the implementation. These programs would be amplified showing start of erection and subsequent activities and shall form the basis for site execution and detail monitoring. The three 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.
14.4.2	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.
14.4.3	The contractor is liable to furnish all documentary evidences towards payment of Works Contract Tax as and when required by BHEL.
15.0	TEST CERTIFICATE FOR T&P
	All T&P, lifting tackles and pulling devices to be deployed by the contractor must bear valid / latest test certificates for their suitability, and the documents shall be preserved at site.
16.0	T&P TO BE PROVIDED BY BHEL
16.1	No T & P is envisaged to be issued by BHEL for this package
17.0	MATERIAL HANDLING (BHEL ISSUED MATERIAL)
17.1	Cement, reinforcement (TMT bar) earthing MS rod, structural steel (MS plate / ISMB / channel / angle / chequered plate / stainless steel plate / liner in case of site fabrication) only will be issued free of cost by BHEL for use in the work covered in this contract. All other materials required for proper completion of job shall be provided by contractor and quoted rates shall be inclusive of this.
17.2	Consignment of cement & steel will be directly issued to the contractor as received by BHEL, on weight basis from its supplier, as per delivery challan of supplier.
17.3	Handling of steel and cement of total project including its unloading will be in vendor's scope for which no separate payment will be given by BHEL.
17.4	It would be the responsibility of the contractor to keep in constant contact with BHEL / site to find out the delivery status, arrival of the consignments and arrange for escort to accompany the truck/ trailer for transportation of above materials by BHEL'S supplier, as necessary. The lorry, truck way bill for the consignment as shall be received by BHEL would be handed over to the contractor immediately for unloading of materials including all arrangement for necessary gate passes etc. All arrangement for necessary gate passes etc shall be the responsibility of contractor.
17.5	Payment of all demurrages that may result due to contractor's fault / delay would be the responsibility of the contractor. If BHEL have to make payment of demurrage together with freight, the amount so paid as demurrages for the reasons stated above, shall be recovered from the bills of the contractor. The decision of BHEL's engineer in this regard will be final and binding on the contractor. However the contractor has to clear all such charges, if any in this regard and complete the job without waiting for BHEL's decision.
17.6	It would be the responsibility of the contractor to sign on the delivery book acknowledgement slip of supplier / transport authorities etc.
17.7	Consignments coming on Sundays and holidays are also required to be handled/ unloaded by the contractor. Since the offices and stores will probably remain closed on such days, it will be the responsibility of the contractor to contact BHEL engineers at their residence and obtain instructions.
17.8	Since the consignments are expected to arrive during any time of the day or night, contractor shall have, his workmen round the clock at site as well as other places as required to unload the materials immediately on arrival.
17.9	Unloading of materials at the storage yard or at places designated by BHEL, stacking & restacking, shifting & reshifting, using contractor's own cranes, trailers and other equipments with the valid road permit for their operation, unloading and stacking etc shall be responsibility of the contractor under this contract. All materials/equipments shall be stacked, stored above ground level by use of concrete or wooden sleepers. No materials shall remain on ground at any time. All concrete sleepers required for stacking the materials shall be arranged by contractor (successful bidder of this package). All other material handling equipments like winches, d-shackles, slings of various sizes, max puller, pulley blocks,

	jacks, trucks, tailors etc required for such material handling of steel, cements etc shall be arranged by contractor within quoted / accepted rates.
17.10	It will be the responsibility of the contractor to submit computerized account of all such consignments of materials received by them, daily to BHEL.
17.11	BHEL reserve the right to recover from the contractor any loss arising out of damage/ theft or any other causes of the materials issued to him at any point.
17.12	<p>Open land (very limited space) for storage shall be provided by BHEL on free of cost basis. You shall maintain one centralized fenced store cum bar bending yard. Hard surfacing of this yard and all round drain shall be carried out by you at your own cost within the accepted rate.</p> <p>Batching plant area shall be provided within plant premises on availability and you shall make use of the area for installation and operation of the Batching Plant at your own cost.</p> <p>You shall make complete arrangement of necessary security personnel, to safeguard all such materials in your custody. Materials issued will be used only for construction of permanent work. You shall take care of material issued by BHEL and shall protect the same from theft, damage and weathering.</p> <p>Barbed wire fencing of the steel storage yard, batching plant area, reinforcement bending yard area etc. are to be done by the contractor at his own cost. Contractor shall also remove grass, bushes, trees etc. wherever required off the land provided to him and shall make proper continuous up-keepment of the open yard/ land by removing grass, bushes trees etc and same is included under the scope of his work & no extra payment shall be made to the contractor in this regard.</p>
17.13	The contractor shall construct waterproof cement store (capacity minimum 700 MT) for storing and stacking of cement, CGI / asbestos 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.
17.14	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.
17.15	Clotting of cement and excessive rusting of steel must be avoided. In case, due to any cause attributable to the contractor, such clotting of and / or rusting of steel occur rendering the same unusable, then such quantity of cement / steel shall be recovered from the interim payment at the penal rate specified in the tender.
17.16	No material shall be issued to the contractor except as those indicated above, i.e. cement and steel unless otherwise expressly provided for in the contract. 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.
17.17	The contractor shall maintain proper store account for all the BHEL issued materials and shall give three copies of monthly computerised reconciliation statement of such account to the BHEL.
17.18	Contractor shall carry out in complete association with BHEL, material management functions and execution like day to day update of materials, issued to contractor, accounting for surplus/ scrap material returned etc. These functions shall also be carried out through computerised system utilizing suitable software. Contractor shall provide experienced software personnel to associate on dedicated basis for efficient discharge of the same.
17.19	The contractor shall solely be responsible for the safety & quality of material after it is handed over and issued to contractor by BHEL.
17.20	BHEL issued materials shall not under any circumstances be taken out of the project site unless otherwise permitted by BHEL.
17.21	All the necessary lifting tackles, cranes, hydra, tools & plants including tractors, trailers, trucks, pulley blocks, jacks, winches, wire ropes etc, of suitable capacities and other equipments incidental to carry out this work shall have to be arranged by the contractor at his cost. BHEL engineer reserves the right to inspect lifting tackles and equipment before allowing their use. Such approval however shall not relieve the responsibility of the contractor to ensure safe handling of equipment taking the precautions to avoid any accident and damage to other equipment and personnel.
17.22	No separate rate will be applicable for the above job. The contractor will quote the rate for the items inclusive of all charges for the above job.
17.23	Bidder's scope of handling of steel under the scope of this tender includes stacking/ storing of materials over concrete sleepers. Bidder scope shall include provision of concrete sleepers for this purpose and no separate payment against the same will be made by BHEL. After completion of the job bidder shall take

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	back the sleepers. Bidder's quoted rate/ price shall be in consideration to this.
18.0	ISSUE OF MATERIALS
18.1	ISSUE OF CEMENT
18.1.1	Cement as received from the manufacturer/ stockiest will be issued free of cost to the contractor. The theoretical weight or 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.
18.1.2	The empty cement bags duly accounted for against issue shall be the property of the bidder and the same shall be disposed by the bidder as per statutory regulation prevailing in the project.
18.2	ISSUE OF STEEL
18.2.1	The steel shall be issued to the contractor free of cost on the following basis.
18.2.1.1	If required for Civil Work , Structural steel (MS plate, angle, channel, ISMB, Stainless steel plate / Liner, chequered plate in case of site fabrication) – Weighment basis (unit – MT) .
18.2.1.2	Reinforcement steel (TMT) and earthing rod (MS round) – Weighment basis (unit – MT).
18.2.2	All the steel (structural steel, reinforcement, earthing MS rod) issued by BHEL shall be properly accounted for. The total quantity of steel required for the work will be calculated from the approved Bar Bending schedule, fabrication drawings, approved laps, chairs and lugs. The measurement for payment as well as for accounting shall be based on the sectional weights as indicated in the following IS specifications. IS: 808-1989 - Beams, channels and angles IS: 1730-1961 - Plates Reinforcements - Fe-500 confirming to IS: 1786. or grade-1 of IS:432 (part-I)
18.2.3	In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding.
18.2.4	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.
18.2.5	In case MS flats as required in the fabrication of structures are not available, you shall cut such width out of the available MS plates to make flats at no extra cost till such material is available and procured by BHEL.
18.3	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 contractor from BHEL stores.
18.4	Quarterly requirement of steel and cement must be positively submitted by the contractor at the last month of the previous quarter, However, the contractor shall submit to the engineer, a statement indicating estimated quantity of cement and steel required at least two months in advance . In addition, the contractor shall also furnish the estimated requirement of cement and steel during a month by the third week of the previous month indicating his requirement.
18.5	Bidders to ensure that no lamination materials are taken over by them from BHEL. Fabrication wastage, if any due to above, shall not be compensated by BHEL.
18.6	Bidder to note that all fasteners like MS / HT / HSFG bolts / nuts, lock nuts, washers etc shall be supplied by the contractor as per applicable item of Price Schedule.
18.7	Bidder to note that cement and steel required for his enabling job like store/ site office etc shall be arranged at his own cost. All TG staging material shall be arranged by contractor at his own cost. Bidder shall do the design for its structure immediately after receipt of TG deck drawing and obtain approval from BHEL.
19.0	RETURN OF MATERIALS
19.1	RETURN OF CEMENT
19.1.1	Sealed cement bags remaining unused and in perfectly good condition at the time of completion or termination of the contract shall be returned promptly, (within 15 days from assessment) if BHEL / engineer is satisfied of the physical condition of the cement. Return of such cement to the project stores / place as identified within the project area by engineer / BHEL will not be entitled to handling and incidental charges. Surplus sealed and good conditioned cement bags will be taken back on weighment basis.
19.2	RETURN OF STEEL INCLUDING SCRAP
19.2.1	All surplus steel and all wastage materials will be taken back on weighment basis.
19.2.2	Surplus, unused and un-tampered steel shall be sorted section-wise and returned separately for a place directed by BHEL / engineer within the project area. Return of such materials will not be entitled to any

	handling and incidental charges.	
19.2.3	All wastage / scrap (including wastage, unusable scrap) shall be returned to the stores on weightment basis and a receipt obtained for material accounting purposes. Return of such material will not be entitled to any additional cost due to handling and transportation and incidental charge.	
19.2.4	Scrap for reinforcement steel and structural steel shall be returned separately	
20.0	CEMENT AND STEEL CONSUMPTION AND WASTAGE	
20.1	CEMENT CONSUMPTION	
20.1.1	The theoretical consumption of cement shall be based on the following.	
20.1.1.1	For design mix concrete as per approved design mix.	
20.1.1.2	For nominal mix concrete work, as per minimum cement as specified or as approved by Engineer-in-charge.	
20.1.2	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 Delhi schedule of Rates of CPWD-DSR- 2018 unless otherwise specified in the specifications or the drawing of contract or mutually agreed by Engineer-in-charge and contractor.	
20.1.3	Actual consumption = Issue – Surplus / unused quantity of cement returned in good condition by contractor to store. (No sweep cement will be taken back by BHEL).	
20.2	CEMENT WASTAGE	
20.2.1	Allowable wastage – One and half (+1.5%) of theoretical consumption of cement unless specified otherwise in the technical specification.	
20.2.2	For any material issued by BHEL to the contractor free of cost, and which is not accounted for by the contractor to BHEL, then recovery for such material shall be affected at penal rates.	
20.2.3	Sl no	Basis of issue & penal recovery
	C-1	Theoretical consumption (without considering any wastage or loss).
	C-2	Actual consumption being Limited to plus 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).
20.3	REINFORCEMENT STEEL & EARTHING MS ROUND CONSUMPTION	
20.3.1	The theoretical consumption of various diameters of reinforcement and earthing MS round 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.	
20.3.2	Actual consumption = Issue – Surplus.	
20.3.3	Surplus = Un-tampered and unused quantity of steel returned by the contractor to BHEL store along-with relevant documents. However, cutpieces of length greater than or equal to 6.0 m in good condition as per judgement of the engineer will also be treated as surplus steel.	
20.3.4	Wastage = Actual consumption – Theoretical consumption.	
20.4	REINFORCEMENT STEEL & EARTHING MS ROUND WASTAGE	
20.4.1	Allowable wastage – Three Percent (+3%) of the theoretical consumption shall be considered as allowable wastage.	
20.4.2	Wastage and scrap shall be as per actual weightment basis.	
20.4.3	Sl no	Basis of issue & penal recovery
	R-1	Theoretical consumption (without considering wastage and scrap or loss)
	R-2a	Wastage limited to plus three percent (+3%) of aforesaid theoretical consumption (R-1) towards allowable wastage and return to BHEL Store.
	R-2b	Wastage limited to plus three percent (+3%) of aforesaid theoretical consumption (R-1) towards allowable wastage but not returned to BHEL Store.
	R-3	Wastage beyond three percent (+3%) of the theoretical consumption above (R-1).
20.5	STRUCTURAL STEEL CONSUMPTION	

20.5.1	The theoretical consumption of various sections shall be based on approved drawings. Weights shall be calculated considering the sectional weights as per Indian standard as mentioned in relevant clause. No extra shall be 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.	
20.5.2	Actual consumption = Issue – Surplus.	
20.5.3	Surplus = Untempered, unused, uncut quantity of steel returned by the contractor to BHEL store.	
20.5.4	Wastage = Actual consumption – Theoretical consumption.	
20.6	STRUCTURAL STEEL WASTAGE	
20.6.1	Allowable wastage = 4 % (four percent) of the theoretical consumption shall be considered. Wastage is further classified as cut pieces and scrap measured as per actual weightment basis. Invisible wastage (loss of materials due to gas cutting, straightening of edges etc) shall be limited to 0.5 % (zero point five percent) of theoretical consumption and shall be considered for reconciliation purposes only. But this invisible wastage shall be considered to be included in allowable wastage (i.e. four percent). However, cutpieces of length greater than or equal to 6.0 m for Rolled Section in good condition and 2.25 sqm (min 1.5 m x1.5m size) for structural plate as per judgement of the engineer will also be treated as surplus steel.	
20.6.2	SI no	Basis of issue & penal recovery
	S-1	Theoretical consumption (without considering any wastage, scrap or loss) as per specification & drg.
	S-2a	Wastage limited to plus four percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage and return to BHEL Store.
	S-2b	Wastage limited to plus four percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage but not returned to BHEL Store.
	S-3	Wastage beyond four percent (4%) of the aforesaid theoretical consumption (S-1).
20.7	All wastage reinforcement, MS round (for earthing), structural steel shall be returned to BHEL.	
21.0	RECONCILIATION OF BHEL ISSUED MATERIALS	
21.1	The contractor shall submit a reconciliation statement of cement and steel issued to him once in two months. The same may be submitted along with each RA bill.	
21.2	At the time of submission of bills, the contractor shall properly account for the material issued to him as specified herein to the satisfaction of BHEL certifying that the balance materials are available with contractor's custody at site.	
21.3	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.	
21.4	The approved drawings/ bar bending schedules are to be considered for the purpose of reconciliation of materials.	
22.0	RECOVERY OF MATERIAL	
22.1	If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA bill at the penal rate stipulated below.	
22.2	PENAL RATE OF MATERIALS	
	Item	Penal rate (Rs)
22.2.1	Cement (OPC/ PPC/ PSC).	9,000/- per MT.
22.2.2	Reinforcement steel and earthing rod etc.	75,000/- per MT.
22.2.3	Stainless steel plate / Liner	6,00,000/- per MT
22.2.4	Structural steel materials	80,000/- per MT.
23.0	CONSTRUCTION OF TEMPORARY OFFICE, STORES ETC	
23.1	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.	
24.0	TOOLS & PLANTS (TO BE PROVIDED BY CONTRACTOR)	
24.1	Tentative list of T&P to be deployed by contractor for successful completion of work is detailed below.	
24.2	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 to maintain work progress for timely completion of total work as per contract. In case of project requirement, some activities may have to pre-pon. In such cases the contractor may have to deploy additional T&P. Quoted rate shall be inclusive of such emerging	

	requirements. However, contractor shall submit deployment plan of all T&P along with tender bid.	
24.3	In the event of any failure on the part of the contractor to deploy T & P to sustain desired work progress, BHEL may at his discretion also terminate the contract on this ground and take out any or whole amount of the contract from the scope of the contractor. In the event of failure of contractor to deploy necessary and sufficient T&P/ IMTEs to maintain work progress, BHEL will 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 deducted from contractor's RA bill. Decision of BHEL in this regard will be final & binding on contractor.	
24.4	Following Major T&Ps to be arranged by contractor within the time as indicated For	
	Major T&P items	Broad Mobilizing time from date of start of work
24.4.1 A	2 No. hydraulic excavator / Poclain (one no. with rock breaker attachment)	1st – at the day start of work 2nd – As per site requirement within 30 days from start of work till 06 months.
24.4.1 B	1 No. JCB / Pay Loader with Normal & small size () bucket	at the day start of work
24.4.2	1 no. dozer.	Within 30 days.
24.4.3	8 nos. dumper	4 nos. at the day start of Work. Balance As per site requirement
24.4.4	1 no total station with adequate arrangement for Surveyors.	Within 25 days.
24.4.5	1 nos auto level & staff	Within 25 days.
24.4.6	2 nos. reinforcement bending machine	Within 30 days.
24.4.7	2 nos. reinforcement cutting machine	Within 30 days.
24.4.9	1 no. vibromax (earth compacter)	Within 45 days.
24.4.10	1 no. automatic concrete batching plant with printing facility Output 30 cum/ hr) – to be commissioned at site including material feeding equipment like JCB, Loader or Scraber.	To be commissioned Within 50 days from start of work including material feeding equipment .
24.4.11	4 nos. transit mixer (5 / 6 Cum capacity)	1st 2 no. within 40 days. Balance 2 nos. within 70 days.
24.4.12	1 nos. concrete pump (20 cum/ hr min capacity)	1st - Within 40 days
24.4.13	1 no. Truck mounted concrete mixer cum pump alongwith placing boom minimum 36 m	Within 120 days.
24.4.14	1 nos. hydra (10/ 12 T cap)	as per site requirement
24.4.15	3 nos. welding rectifier	As per site requirement.
24.4.16	1 no. trailor – -suitable capacity	As per site requirement.
24.4.17	2 No. jack hammers / pavement breakers.	As per site requirement
24.4.18	Paint Thikness on concrete / plasterd surface measuring instrument	As per site requirement
24.4.19	1 no. Concrete cutting power tools (DD2E of HILTI/BOSCH make)	As per site requirement
24.4.20	1 no. Concrete core Cutting machine for drilling in concrete upto 300 mm dia alongwith diamond bits	As per site requirement.
24.4.21	2 nos. self priming dewatering pump 5 HP (diesel/ electric)	Within 30 days.
24.4.22	2 Nos. 10 HP submersible mono-block electric pump (KOS-1040+ of Kirloskar or equivalent),	Within 60 days.
24.4.23	1 nos. self priming dewatering pump 2 HP (diesel/ electric)	Within 30 days.
24.4.24	2 nos. curing pump – 1.5 /2 HP (pump for curing at heights)	Within 30 days.
24.4.25	50 nos concrete cube moulds	Within 35 days.
24.4.26	Plate Compactor for earth compaction	Within 120 days.
24.4.27	Concrete Cutter for Road Pavement	As per site requirement.
24.4.28	1 No. Mechanical Paver with sensor for PQC	As per site requirement.
24.4.29	1 No. Mechanical Paver for DLC	As per site requirement.
24.4.30	Civil laboratory equipments as per list attached in ANNEX `A` with temporary building one AC lab size 4.5mtrx6mtr and 1 non AC lab 4.5 mtrx4.5 mtr	Within 50 days.
24.4.31	2 nos. electric winch with building hoist	As per requirement
24.4.32	Two nos drinking water tank – 1000 lit. (PVC – SINTEX or approved equivalent)	Within 30 days.
24.4.33	1 nos truck mounted water tank (minimum 3000 lit) capacity	Within 30 days.

	with sprinkler arrangement.	
24.4.34	1 No. 125KVA Electric Generator at batching plant and 1 No. 65 KVA Electric Generator site	125KVA EG within 30 days and 65 KVA within 90 Days
24.4.35	8 Nos. Concrete vibrator with adequate needle (2 Nos. diesel driven +6 Nos. electric driven)	2 Nos (at least 1no diesel driven) within 30 Days. Balance diesel / electric driven by 60 to 75 days
24.4.36	Portable fire extinguishers as below: Soda acid – 3 sets. Dry chemical powder – 3 sets CO2 – 2 sets. Water & sand bucket (4 buckets in one stand) – 2 sets. Fire hose with nozzle (50 M length) – 2 sets. Fire – Jacket ELCB Test kit – 1 No. Earth Resistance Test Kit – 1 set	Within 50 30 days
24.4.37	Air Compressor	As per requirement
24.5	T&P shown in the above mentioned list are tentative based on planned progress requirement. Actual Mobilisation schedule, based on front availability, drawings and material availability at site is to be reviewed and mutually agreed with BHEL site periodically from time to time for mobilisation of major T&Ps, and the same have to be adhered to. No change will be permitted without written approval of BHEL site. Further requirement will be reviewed time to time at site and contractor will provide additional T&P / equipments to ensure completion of entire work within schedule time without any financial implication to BHEL. All other T&Ps shall be provided by the contractor without any extra cost to BHEL. Vendor will give advance intimation & certification regarding capacity etc prior to dispatch of heavy equipments.	
24.6	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.	
24.7	In the event of non mobilisation of any T&P by the successful bidder and as a result progress of work suffered, BHEL reserves the right to deduct suitable amount from the dues of the bidder, with assigning reasons thereof at the following rates	
	Major T&P items	Recovery rates
24.7.1	2 No. hydraulic excavator / Poclain (one no. with rock breaker attachment)	Rs. 25000/- per week or part thereof
24.7.2	1 No. JCB / Pay Loader with Normal & small size () bucket	Rs. 15000/- per week or part thereof
24.7.3	1 no. dozer.	Rs. 15000/- per week or part thereof
24.7.4	8 nos. dumper	Rs. 10000/- per week or part thereof
24.7.5	1 no total station with adequate arrangement for Surveyors.	Rs. 1000/- per week or part thereof
24.7.6	1 no. auto level & staff	Rs. 1000/- per week or part thereof
24.7.7	2 nos. reinforcement bending machine	Rs. 2500/- per week or part thereof
24.7.8	2 nos. reinforcement cutting machine	Rs. 2500/- per week or part thereof
24.7.9	1 no. vibromax (earth compacter)	Rs. 15000/- per week or part thereof
24.7.10	1 no. automatic concrete batching plant with printing facility (Output 30 cum/ hr)	Rs. 50000/- per week or part thereof
24.7.11	4 nos. transit mixer (5 / 6 Cum capacity)	Rs. 10000/- per week or part thereof
24.7.12	1 nos. concrete pump (20 cum/ hr min capacity)	Rs. 20000/- per week or part thereof
24.7.13	1 no. Truck mounted concrete mixer cum pump alongwith placing boom minimum 36 m	Rs. 30000/- per week or part thereof
24.7.14	1 nos. hydra (10/ 12 T cap)	Rs. 25000/- per week or part thereof
24.7.15	Civil laboratory equipments as per list attached in ANNEX `A` with temporary building one AC lab size 4.5mtrx6mtr and 1 non AC lab 4.5 mtrx4.5 mtr	Rs. 5000/- per week or part thereof
24.7.16	Any other instrument	As per discretion of the engineer
25.0	CIVIL LABORATORY	
	Contractor shall establish and maintain civil laboratory with necessary equipment (as per Annexure-A) for conducting relevant tests at site, as required. Also the Laboratory shall be well equipped as desired by customer as per BHEL-NTPC contract requirement.	

26.0	CONSTRUCTION SCHEDULE	
26.1	The bidder shall strictly adhere to the time schedule furnished below and mobilise resources accordingly so as to complete the entire scope of the work under this contract within the stipulated time of 14 months for each unit from date of start of work of respective unit, as per intimation of BHEL (to be issued by Project Manager, BHEL or Construction Manager, BHEL).	
26.2	Intermediate Mile stone Schedule	
	Sl	Milestone
	26.2.1	Civil Works for Absorber
	26.2.2	Foundation for Misc tanks
	26.2.3	Foundation for Wet Limestone Ball Mill
	26.2.4	Ball mill Building/Limestone grinding house
	26.2.5	Roads,Drains and Pavings
	26.2.6	FGD Control Room Building
	26.2.7	Lime Stone Storage Silo
	26.2.8	All Civil Work
	The above schedule is for Unit 1. Unit 2 & Unit 3 will have phase difference of 4 month respectively	
26.3	Contractor shall establish mix design for all concreting either by taking trial mix at site or from a reputed institution (As per BHEL's approval). Contractor shall ensure adding of admixture and minimizing of cement content in line with IS:456.	
26.4	The contractor shall plan his work in such a manner so as to meet the overall project schedule, in consultation with BHEL / NTPC engineer.	
26.5	Contractor shall submit daily work program based on above construction schedule. Defferement of above schedule is not acceptable. Contractor will adhere to schedule and resource planning to be augmented to ensure completion as per schedule.	
26.6	Periodic progress reviews on the entire activities of execution in respect of supply & works in scope of contractor 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.	
26.7	Above schedule is indicative. The contractor shall plan his work in such a manner so as to meet the overall project schedule, in consultation with BHEL/NTPC Engineer.	
26.8	Contractor shall submit daily work program based on above construction schedule.	
27.0	COMPLETION PERIOD	
27.1	The entire work under this scope shall be successfully completed in all respect within 22 (Twenty Two) months from the date of start of work as certified by Construction Manager, BHEL.	
27.2	Contractor shall mobilise resources to start the work within 15 days from date of intimation of BHEL.	
27.3	However, actual date of start of work shall be reckoned based on certification of Construction manager,	
28.0	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/ NTPC. The decision of BHEL in this regard shall be final and binding on the contractor.	
29.0	EXTENSION OF TIME FOR COMPLETION	
29.1	If the completion of work as detailed in the scope of work gets delayed beyond the contract/ completion period, the contractor shall request for an extension of the contract and BHEL at its discretion may extend the contract.	
29.2	Based on the reviews jointly signed, the works balance at the end of original contract period less the backlog attributable to the contractor shall be quantified, and the number of months of 'Time extension' required for completion of the same shall be jointly worked out. Within this period of 'Time extension', the contractor is bound to complete the portion of backlog attributable to the contractor. Any further 'Time extension' or 'Time extensions' at the end of the previous extension shall be worked out similarly.	
29.3	However, if any 'Time extension' is granted to the contractor to facilitate continuation of work and completion of contract, due to backlog attributable to the contractor alone, then it shall be without prejudice to the rights of BHEL to impose penalty/ LD for the delays attributable to the contractor, in addition to any other actions BHEL may wish to take at the risk and cost of contractor.	
29.4	A joint programme shall be drawn for the balance amount of work to be completed during the period of 'Time Extension', along with matching resources to be deployed by the contractor as per specified format. Review of the programme and record of shortfall shall be done.	
29.5	During the period of 'Time extension', contractor shall maintain their resources as per mutually agreed	

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	program.
29.6	At the end of total work completion as certified by BHEL engineer, and upon analysis of the total delay, the portion of time extensions attributable to (i) Contractor, (ii) Force majeure conditions, and (iii) BHEL, shall be worked out and shall be considered to be exhausted in the same order. The total period of time extensions shall be the sum of (i), (ii) and (iii) above and shall be equal to period between the scheduled date of completion and the actual date of completion of contract. LD shall be imposed/ levied for the portion of time extensions attributable to contractor and recoverable from the dues payable to the contractor.
30.0	MOBILIZATION ADVANCE/ INTEREST BEARING RECOVERABLE ADVANCE
	Not applicable for this tender.
31.0	SECURITY DEPOSIT & PERFORMANCE BOND
31.1	Security deposit shall be applicable as per relevant clause of GCC (Volume-IB).
31.2	Performance bond is not applicable for the tender.
32.0	REVISION ON ACCEPTED CONTRACT RATE
32.1	Not applicable in this tender.
33.0	LIQUIDATED DAMAGES/PENALTY
33.1	Intermediate Milestone & Overall completion of work for U#1
33.1.1	In case delay in achieving the Milestone as mentioned in Clause 26.2.1 above, is solely attributable to the contractor, 0.5% per week of executable contract value, limited to maximum 1% of executable contract value, will be withheld.
33.1.2	In case delay in achieving the Milestone as mentioned in Clause 26.2.6 above, is solely attributable to the contractor, 0.5% per week of executable contract value, limited to maximum 1% of executable contract value, will be withheld.
33.1.3	Amount already withheld, if any against slippage of clause 26.2.1 & 26.2.6 above, shall be released only if there is no delay attributable to contractor in achievement of Milestone as mentioned in clause 26.2.8 above.
33.1.4	If the completion of work is delayed beyond the completion period referred above due to reasons attributable to the contractor, they shall pay to BHEL as penalty a sum @ 0.5% of contract prices per week of delay or part thereof subject to a maximum of 3.5%(including the amount of LD withheld against delay of intermediate milestone at 26.2.1 & 26.2.6 as per clause no 33.1.1 & 33.1.2 respectively) delay of the total contract value.
33.1.5	Amount to be withheld on account of slippage of identified intermediate milestone(s) shall be withheld out of respective milestone payment and balance amount (if any) shall be withheld @10% of RA Bill amount from subsequent RA bills.
33.2	Intermediate Milestone & Overall completion of work for U#2
33.2.1	In case delay in achieving the Milestone as mentioned in Clause 26.2.1 above, is solely attributable to the contractor, 0.5% per week of executable contract value, limited to maximum 1% of executable contract value, will be withheld.
33.2.2	In case delay in achieving the Milestone as mentioned in Clause 26.2.6 above, is solely attributable to the contractor, 0.5% per week of executable contract value, limited to maximum 1% of executable contract value, will be withheld.
33.2.3	Amount already withheld, if any against slippage of clause 26.2.1 & 26.2.6 above, shall be released only if there is no delay attributable to contractor in achievement of Milestone as mentioned in clause 26.2.8 above.
33.2.4	If the completion of work is delayed beyond the completion period referred above due to reasons attributable to the contractor, they shall pay to BHEL as penalty a sum @ 0.5% of contract prices per week of delay or part thereof subject to a maximum of 3.5%(including the amount of LD withheld against delay of intermediate milestone at 26.2.1 & 26.2.6 as per clause no 33.2.1 & 33.2.2 respectively) delay of the total contract value.
33.2.5	Amount to be withheld on account of slippage of identified intermediate milestone(s) shall be withheld out of respective milestone payment and balance amount (if any) shall be withheld @10% of RA Bill amount from subsequent RA bills.
33.3	Intermediate Milestone & Overall completion of work for U#3
33.3.1	In case delay in achieving the Milestone as mentioned in Clause 26.2.1 above, is solely attributable to the contractor, 0.5% per week of executable contract value, limited to maximum 1% of executable contract value, will be withheld.
33.3.2	In case delay in achieving the Milestone as mentioned in Clause 26.2.6 above, is solely attributable to the contractor, 0.5% per week of executable contract value, limited to maximum 1% of executable contract value, will be withheld.

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33.3.3	Amount already withheld, if any against slippage of clause 26.2.1 & 26.2.6 above, shall be released only if there is no delay attributable to contractor in achievement of Milestone as mentioned in clause 26.2.8 above.
33.3.4	If the completion of work is delayed beyond the completion period referred above due to reasons attributable to the contractor, they shall pay to BHEL as penalty a sum @ 0.5% of contract prices per week of delay or part thereof subject to a maximum of 3%(including the amount of LD withheld against delay of intermediate milestone at 26.2.1 & 26.2.6 as per clause no 33.3.1 & 33.3.2 respectively) delay of the total contract value.
33.3.5	Amount to be withheld on account of slippage of identified intermediate milestone(s) shall be withheld out of respective milestone payment and balance amount (if any) shall be withheld @10% of RA Bill amount from subsequent RA bills.
33.4	In case of termination of contract due to any reason attributable to contractor before completion of work, the amount already withheld against slippage of intermediate milestones shall not be released and be converted into recovery.
33.5	All other terms shall be as per the provision of GCC in this regard.
33.6	In case of LD recovery, the applicable GST shall also be recovered from the contractor.
34.0	CONTRACT PRICE
34.1	The bidder shall quote their rates strictly in accordance with prescribed Price schedule of Volume-III
34.2	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).
34.3	The unit rate quoted for various items of BOQ shall include all the stipulation mentioned in the tender documents and nothing extra over BOQ rates shall be payable.
35.0	TAXES AND DUTIES
35.1	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.
35.2	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.
35.3	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.
35.4	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.
35.5	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.
35.6	TDS under GST (if / as & when applicable later) shall be deducted at applicable rates on gross invoice value from the running bills (RA bills). However, as on date no TDS under GST is applicable.
35.7	Bidder shall note that GST Tax Invoice complying with GST Invoice Rules (Section 31 of GST Act & Rules referred thereunder) wherein the 'Bill To' details shall encompass following. BHEL GSTN – 20AAACB4146P5ZP. 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.
35.8	Successful bidder to intimate immediately on the day of removal of goods (in case of any supply of goods) to BHEL along with all relevant details and send a scanned copy of Tax Invoice to BHEL through following communication mode for enabling BHEL to meet its GST related compliances. Portal address. and Email address – Shall be intimated later. Specific details of above shall be intimated to successful bidder by BHEL at appropriate juncture.
35.9	In case of delay in submission of above mentioned documents on the date of despatch, BHEL may incur penalty / interest for not adhering to Invoicing Rules under GST Law. The same will be liable to be recovered from successful bidder, in case such delay is not attributable to BHEL.
35.10	In case of raising any Supplementary Tax Invoice (Debit / Credit Note), successful bidder shall issue the

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	same containing all the details as referred to in Section 34 read with Section 31 of GST Act & Rules referred there under.
35.11	Successful bidder shall comply with the Time Limit prescribed under the GST Law and rules thereof for raising of the Tax Invoice. If any supply of goods is applicable, successful bidder shall also ensure prompt delivery of goods after despatch.
35.12	Bidder shall note that in case GST credit is delayed / denied to BHEL due to delayed / non receipt of goods and / or Tax Invoice or expiry of the timeline prescribed in GST Law for availing such ITC, or any other reasons, not attributable to BHEL, GST amount shall be recoverable from successful bidder along with interest levied/ leviable on BHEL, as the case may be.
35.13	Successful bidder shall upload the invoices raised on BHEL in GSTR-1 within the prescribed time as given in the GST Act. Bidder shall note that in case of delay in declaring such invoice in your return and GST credit availed by BHEL is denied or reversed subsequently as per GST Law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from the successful bidder along with interest levied / leviable on BHEL.
35.14	Way Bill: Successful bidder to arrange for way bill / e-waybill for any transfer of goods for the execution of the contract. Successful bidder has to make their own arrangement at their cost for completing the formalities, if required, with Issuing Authorities, for bringing materials, plants & machinery at site for execution of the works under this contract, Road Permit / Way Bill, if required, shall be arranged by successful bidder and BHEL will not supply any Road Permit/ Way Bill for this purpose.
35.15	Any new taxes & duties, if imposed subsequent to due date of offer submission as per NIT & TCN, by statutory authority during contract period (including extension, if the same is not attributable to you), shall be reimbursed by BHEL on production of relevant supporting document to the satisfaction of BHEL. However, you shall obtain prior approval from BHEL before depositing new taxes and duties.
35.16	Benefits and / or abolition of all existing taxes must be passed on to BHEL against new taxes, if any, proposed to be introduced at a later date.
36.0	INTERIM PAYMENTS
36.1	For all items of works, as per the the Price schedule, Vol-III, billing shall be on item rate basis. However, Interim Payment shall be limited to 95% of gross bill amount.
36.2	All admissible recovered/ adjustments etc. shall be made from the interim payable amount.
36.3	Balance 5 % retained from each RA bill will be released on completion of guarantee period. However, this 5 % payment can be released against submission of bank guarantee valid for the guarantee period as stated above in Proforma / Format of performance bank guarantee, subject to receipt of certificate that all works are completed in all respects. Submission of bank guarantee towards retention is separate and other bank guarantee(s) cannot be utilized for this purpose. This retention bank guarantee will be refunded after guarantee period.
36.4	1.5 % of gross bill amount shall be paid in the following manner on certification by BHEL engineer after compliance of each of following activity in each month. In case of non-fulfilment of respective activity by vendor in each month, no payment shall be made by BHEL against corresponding activity and no claim of bidder at a later date, whatsoever, in this regard shall be entertained by BHEL.
36.4.1	0.7 % shall be paid on compliance of housekeeping of vendor's working area and store/ office areas.
36.4.2	0.3 % shall be paid on compliance of general illumination of vendor's working area and stores, office area.
36.4.3	0.2 % shall be paid on compliance of applicable OHSAS requirement as per guidelines of BHEL/ PSER and as specified in the tender.
36.4.4	0.3 % shall be paid on compliance of applicable safety requirement as per guidelines of BHEL/ PSER and as specified in the tender.
36.5	Contractor's RA bill, complete & correct in all respects, certified by BHEL engineer, shall be paid with in 45 days of receipt of bill with all supporting documents.
36.6	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.
36.7	Such payment as above shall be effected only on certification by BHEL against completion of each stage.
36.8	Applicable GST, which can be claimed at any point, shall be released to you upon compliance of following:
36.8.1	You declaring such Invoice in his GSTR-1
36.8.2	Receipt of Goods / services and Tax Invoice by BHEL
36.8.3	Confirmation of payment of GST thereon by you on GSTN Portal
37.0	PRICE VARIATION CLAUSE(PVC)
37.1	In case of extension of the contract for reasons not attributable to the contractor, PVC shall be applicable during the extended period (i.e. after expiry of the original contract period), PVC shall applicable as per

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	relevant clause of GCC with base date as end date of original contract period i.e. contract completion date. However, the total amount of PVC shall be limited to 10% of executed contract value. Executed contract value for this purpose is exclusive of PVC, ORC, Extra works
37.2	For SUPPLY part of VOL-III PVC is Not applicable
38.0	OVER RUN CHARGES (ORC) Not applicable for this tender.
39.0	METHOD OF MEASUREMENT Mode of measurement shall be as per relevant clauses 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 (latest edition) 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.
40.0	EXTRA/ ADDITIONAL ITEMS OF WORK It shall be as per relevant clause of GCC.
41.0	INSURANCE
41.1	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.
41.2	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.
41.3	The contractor will take necessary precautions/ due care to protect the material at Project site, while in his custody from any damage/ loss till the same is handed over to BHEL/ customer at Project site. For lodging/ processing of insurance claim the contractor will submit necessary documents. BHEL will reserve the right to recover the loss from the contractor as detailed below in case the damage/loss is due to negligence/ carelessness on the part of the contractor. In case of theft of material under contractor's custody, the same shall be reported to police by the contractor immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL/ customer for taking up with insurance. However, this will not relieve the contractor of his contractual obligation for the materials in his custody.
41.4	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.
41.5	Other conditions of Insurance shall be as per relevant clause of GCC/SCC.
42.0	GUARANTEE Guarantee period shall be 12 months from the date start of guarantee period as per relevant clause of GCC. Commencement of guarantee period shall be from the date completion of work under the contract as certified by BHEL
43.0	IDLE CHARGES Not applicable for this contract.
44.0	DESIGN OFFICE AND FABRICATION DRAWING FOR STRUCTURAL STEEL WORKS
44.1	Structures which are not pre-fabricated, design drawings shall be issued to the contractor time to time by BHEL, contractor will prepare & submit the detail fabrication / shop drawing including tabulated form of bill of materials (BOM), joint calculations, for comments / approval of BHEL at the office of BHEL / PEM, Noida or BHEL / ISG Bangalore within 15 days of receipt. BHEL reserves the right to assess the capability of the agency to be deployed by contractor for preparation of such fabrication drawing, and prior approval from BHEL Engineering office at Noida, is required for appointment of such agency.
44.2	Since time is the essence of the contract, the contractor must indicate the location of their design office where from such detailed activities will be made operative.
44.3	Contractor shall submit progress report pertaining to fabrication drawing, section-wise cumulative bill of materials for which engineering drawing has been issued to them and status of fabrication drawing.
44.4	Bidder, at his own cost, shall supply electrodes required for fabrication, erection of structural steel as per

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	specification and approval of BHEL.
44.5	Above mentioned clauses pertaining to consumption and wastage of structural steel applies to those materials issued by BHEL for site fabrication.
45.0	OTHER TERMS
	All other term & conditions of this specification shall be governed by the pertinent provisions of GCC and other volumes of this tender, as applicable.

ANNEXURE- A
LIST OF EQUIPMENTS FOR CIVIL SITE LABORATORY

CONCRETE TESTING EQUIPMENT				
SL NO.	NAME OF TEST	NAME OF EQUIPMENT	SIZE OF EQUIPMENT	IS REF.
1	Initial & final setting time, Consistency of cement	Vicat Apparatus with desk pot	Standard	IS 5513
2	Shrinkage of cement, Auto Clave Test	Le Chatelier's apparatus Auto Clave Equipment	Standard	IS 5514
3	Abrasion value test	Los Angles Abrasion testing machine	Standard	IS 2386
4	Aggregate Impact value test	Aggregate Impact value testing machine with blow counter	Standard	IS 9377
5	Aggregate crushing value test	Crushing value apparatus	Standard	IS 2386
6	Flakiness index	Thickness gauge for measuring flakiness index	Standard	IS 2386
7	Elongation Index	Elongation guage	Standard	IS 2386
8	Bulk density, voids and bulking apparatus	Measuring cylinders	3, 5, 10 & 15 liters cylinders	
9	Concrete Compressive test	Digital Compressive Testing Machine with 2000 KN capacity.	2000KN capacity	IS 2505
10	Cement mortar cube casting	Mortor Cube mould	70.6 x 70.6 x 70.6 mm, minimum 06 sets desired.	IS 10086
11	Concrete Cube casting	Concrete Cube Mould	150x150x150mm, minimum 20 sets desired considering major concreting activity.	IS 10086
12	Workability of concrete	Slump cone	Standard, atleast 04 nos	IS 456
13	Specific gravity of aggregates	Pycnometer	Standard, atleast 02 nos	IS 383
14	Cement mortar cube vibrating	Motorised vibration machine for cement testing	Standard	IS 4031
15	Coarse aggregate Sieve analysis (Concrete & Road Works)	Sieve set	450mm dia GI Frames Size: 125 mm, 90 mm, 75 mm, 63 mm, 53 mm, 40 mm, 20 mm, 16 mm, 12.5 mm, 10 mm, 4.75 mm, Pan and cover	IS 383
16	Fine aggregate sieve analysis	Sieve set	200 mm dia Brass sieves; Size 4.75 mm, 2.36 mm, 1.18 mm 600 micron, 300 micron, 150 micron, 75 micron, 75 micron, Pan and cover	IS 383
17	Sieve Shaker	Motorised Sieve shaker	Mfg. Catalogue	
18	Silt content check	Sand silt content beaker	Standard	
19	Ultrasonic pulse velocity test	UPV apparatus for concrete test	Standard / To be arranged through customer approved Institute/agency for NKSTPP.	

Soil Testing Equipment (Levelling & Grading)				
1	Liquid limit test	Liquid limit apparatus	Standard	IS 2720
2	Core Cutter test	core cutter apparatus	Rammer, 6 nos of std core cutter mould, dolly	IS 2720
3	Proctor density test	Std proctor Compaction apparatus	Standard	IS 2720
4	Moisture Content	Rapid moisture meter	Standard, atleast 04 nos	IS 2720
5	Potable concrete mixure machine for Trial-Mix	Concrete Mixure machine	Standard	

Process Control Accessories				
1	Hot air oven	Temperature range 50° C to 300° C	600x600x600mm (min.size)	
2	Electronic balance	3 nos	600gx0.01g, 10g and 50 kg	
3	Physical balance	5 kg capacity	Weights upto 5 kg	
4	Thermometer	Temperature range 0° C to 150° C	Digital	
5	Poker Thermometer (Concrete Road)	Temperature range 0° C to 50° C & 150° C	02 nos each required	
6	Measuring jars	2 nos set of each size	100ml, 200ml, 500ml & 1000 ml	
7	Gauging trowlers	4 nos	100mm & 200 mm with wooden handle	
8	Spatula	2 nos each size	100mm & 200 mm with long blade wooden handle	
9	Stainless steel scoop	2 nos each	2 kg and 5 kg	
10	Vernier calipers	2 nos each	12" and 6" Sizes	
11	Digital pH meter	01 nos	.01 mm least count	
12	Digital micrometer	01 nos	0.01 mm least count	
13	Digital paint thickness meter for steel	02 nos	500 micron Range	
14	GI tray	02 nos each	600x450x50mm, 450x300x40mm, 300x250x40mm	
15	Electric mortar mixer	01 nos	0.25 CUM capacity	
16	Rebound hammer test	01 nos	Digital Rebound hammer	IS 13311
17	Screw Gauge	02 nos	0.1 mm-10mm, Least count 0.05	
18	Digital paint thickness meter for masanory/concrete painting measurement	02 nos	150 micron range	

ANNEXURE B

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 ARM STRONG	FARIDABAD NEW DELHI	
3	PAINT AND PAINTING SYSTEM	BERGER	-	
		SHALIMAR PAINTS	-	
		JENSON AND NICHOLSON	-	
		KANSAI NEROLAC	-	
		AKZO NOBEL	-	
		ASIAN PAINTS	-	
4	COLOUR COATED SHEET (FOR COIL)	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

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	-	

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	-	
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	

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	-	
		ECOBOARD	-	
		BHUTAN BOARD	-	
		KITPLY	-	
		CENTURY	-	
		GREEN PLY	-	
		DUROPLY	-	
18	ALUMINUM SECTIONS	MERINO	-	\
		HINDALCO	-	
		INDALCO		
		BALCO (VEDANTA)	-	
		NALCO	-	
19	HIGH SOLID CONTENT LIQUID APPLIED URETHANE BASED ELASTOMERIC MEMBRANE FOR WATER PROOFING	J1NDAL	-	
		STP	-	
		IWL INDIA LTD	-	
		LLOYDS	-	
		CICO TECHNOLOGIES LTD		
20	SANITARY ITEMS	MK PETRO	-	
		PARRYWARE	-	
		HINDWARE	-	
		SEABIRD		
		ORIENT		
		HINDUSTAN		
21	CP BRASS TAP AND OTHER SANITARY FITTINGS	CERA		
		GEM	-	
		PARKO	-	
		JAUAR	-	
22	POLYTHENE WATER STORAGE TANKS	MARC	-	
		BIS APPROVED SOURCES HAVING VALID BIS LICENCE	-	
23	NEOPRENE BELLOW STRAPS			
		CORI	CHENNAI	
		RESISTOFLEX	NOIDA	
		DWREN	KOLKATA	

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 ELLETOFT 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	BHILAI	
		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
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 UMITED	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		