

Volume – IA

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Civil, Structure and Architecture Works of BTG Island-II consists of Boiler, ESP, Duct Foundation, Mill & Bunker Building including Bunker & its supporting structure, Mill Foundation, Fan Foundations, ESP Control Building, Switchyard, Compressor House Building, Sub-store Building, Fire Protection & Detention System (Within Terminal Point), Fire Fighting Pipe Pedestal/ Trenches (Within Terminal Point), Mill Reject Silo Foundation & Trenches, Pipe/ Cable Rack (Within Terminal Point), Area Paving (Within Terminal Point), Plant Roads & Drains (Within Terminal Point), ETP/STP (Within Terminal Point), etc.

At

1x800 MW Ultra Super Critical Unit No. 7 On
Ash Dyke Area at Ukai TPS

BHARAT HEAVY ELECTRICALS LIMITED



TECHNICAL CONDITIONS OF CONTRACT (TCC)

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Chapter - I: PROJECT INFORMATION

Sl. No.	Description	Details
1	Project Title	1x800 MW Ultra Super Critical Unit No. 7 On Ash Dyke Area at Ukai TPS
2	Customer	Gujarat State Electricity Corporation Limited (GSECL)
3	Location	The project is located in Tapi district of Gujarat state in India. The geographical location of UTPS is at Latitude of 21°12'36.5" North and Longitude of 73° 33'26.3" East.
4	Nearest Airport	The nearest Airport is Surat, which is about 93 Km from the site.
5	Nearest Railway Station	The nearest Railway Station is Ukai - Songadh, which is about 10 Km from the site.
6	Access by Road/Major Cities	<p>The project site is connected with Pakka Road of State Highway (SH-174) of approx. 8 Km with National Highway (NH-53) Hazira-Paradip port (Surat-Kolkata).</p> <p>Nearest major city is Surat which is approx. 100 Km from the site.</p>
7	Temperature	The annual daily max temperature is 45 °C and annual daily minimum temperature is 5 °C
8	Seismic Zone	Zone-III as per IS-1893:2002
9	Wind Speed	44 m/s as per IS: 875 – Part 3:1987
10	Average Rainfall	1500mm (During June - Sep)

1.0	INSTRUCTIONS TO BIDDERS
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Chapter - I: PROJECT INFORMATION

1.1	The Bidder shall visit project site and acquire full knowledge and information about conditions prevailing at site and in & around the plant premises, together with site conditions, transportation routes, various distances, all the statutory, obligatory, mandatory requirements of various authorities and all information that may be necessary for preparing the bid and entering into the Contract. All costs for and associated with site visits shall be borne by the bidder.																
1.2	Other contractors would be working in this area and their structures are to be protected. The material brought and stacked for construction should not make hindrance to other contractors.																
1.3	The information given herein is for general guidance and shall not be contractually binding on BHEL/Owner. All relevant site data /information as may be necessary shall have to be obtained /collected by the Bidder.																
1.4	The contractor, in the event of this work awarded to him, shall establish an office at site and keep posted an authorized, responsible officer with valid Power of Attorney for the purpose of the contract. Any order or instructions of the 'Engineer' or his duly authorized representative, communicated to the contractor's representative at site office will be deemed to have been communicated to the contractor at his legal address.																
1.5	No claim will be entertained by BHEL on ground of lack of knowledge and the contractor's rates shall be deemed to have taken this into account.																
1.6	Bidders may fix up their site visit in consultation with below mentioned contact person: <table><tr><td>Name:</td><td>Mr. Ajay Singh</td><td>Mohd. Shoaib Mansoori</td></tr><tr><td>Designation:</td><td>GM/Project Director</td><td>Sr. Manager/Civil</td></tr><tr><td>Location:</td><td>Ukai Project Site</td><td>Ukai Project Site</td></tr><tr><td>Email:</td><td>ajaysingh@bhel.in</td><td>msmciv@bhel.in</td></tr><tr><td>Ph. No.</td><td>9650590899</td><td>9099073910</td></tr></table>		Name:	Mr. Ajay Singh	Mohd. Shoaib Mansoori	Designation:	GM/Project Director	Sr. Manager/Civil	Location:	Ukai Project Site	Ukai Project Site	Email:	ajaysingh@bhel.in	msmciv@bhel.in	Ph. No.	9650590899	9099073910
Name:	Mr. Ajay Singh	Mohd. Shoaib Mansoori															
Designation:	GM/Project Director	Sr. Manager/Civil															
Location:	Ukai Project Site	Ukai Project Site															
Email:	ajaysingh@bhel.in	msmciv@bhel.in															
Ph. No.	9650590899	9099073910															

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Chapter – II: SCOPE OF WORKS

2.0	SCOPE OF WORKS:
2.1	Civil, Structure and Architecture Works of BTG Island-II consists of Boiler, ESP, Duct Foundation, Mill & Bunker Building including Bunker & its supporting structure, Mill Foundation, Fan Foundations, ESP Control Building, Switchyard, Compressor House Building, Sub-store Building, Fire Protection & Detention System (Within Terminal Point), Fire Fighting Pipe Pedestal/ Trenches (Within Terminal Point), Mill Reject Silo Foundation & Trenches, Pipe/ Cable Rack (Within Terminal Point), Area Paving (Within Terminal Point), Plant Roads & Drains (Within Terminal Point), ETP/STP (Within Terminal Point), etc. excluding supply of cement, reinforcement steel and structural steel which shall be issued by BHEL free of cost (unless other-wise specified in the BOQ Cum Rate Schedule).
2.1.1	Scope of Consortium Partner (if applicable): Fabrication, Erection and Other Works Related to structural steel (Series 2300 of BOQ Cum Rate Schedule)
2.2	Tentative list of buildings/structures identified for the scope of work of this tender is indicated below. <ol style="list-style-type: none"> 1. Mill & Bunker Building including bunker and its supporting structures 2. Mill Foundations 3. Boiler Foundation 4. Boiler Elevator Pit & Machine Room for Boiler Elevator 5. ESP Foundation 6. Duct Foundations in Main Plant Area 7. ESP Control Room Building 8. Fan (PA, FD, ID & SA) Foundations 9. Compressor House Building 10. Sub Store Building 11. Civil works pertaining to STP/ETP in Main Plant Area. 12. Road works in Main Plant Area. 13. Storm Water Drains including Pipe / Box Culverts in Main Plant Area. 14. Area Paving and Miscellaneous Foundations in Main Plant Area Including Heavy Duty Passages, Sump, Pits, Roads, Drains, Culverts, Cable Slits, including Rail/ Road/ Drain Crossing of Pipes/ Cables, Pull Pit, Trench, Pedestals etc. 15. Mill Reject Silo Foundations and Trenches 16. Pipe/Cable Racks including pedestals in Main Plant Area. 17. Cable Trench, Precast Cover, etc. in Main plant Area. 18. Civil Works for Outdoor Transformer Foundations, Fire Barrier Wall, Sump, Pit, Oil Retention Pit, Fencing & Gates, etc. in Main Plant Area. 19. Miscellaneous Switch Gear/ MCC and Control Room Buildings in Main Plant Area. 20. Civil works for construction of 400kV GIS Switchyard <ol style="list-style-type: none"> (i) GIS and Control Room Building. (ii) Auxiliary Power and Ventilation Building. (iii) 400kV Tower Foundations (iv) 400kV Equipment Foundations

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	<p>(v) Bus Duct Foundation for GIS.</p> <p>(vi) Transformer Foundation including Associated Miscellaneous Foundations, Soak Pit, Oil Collection Pits, Rail-cum-Road, Fire Wall, etc.</p> <p>(vii) Cable Trench including sump-pit & precast cover works, etc.</p> <p>(viii) Drainage Works</p> <p>(ix) Road Works</p> <p>(x) Culvert/Pipe Crossing works for cable Trench/ Drains/ Road</p> <p>(xi) Fencing work.</p> <p>(xii) Antiweed and Graveling works</p> <p>(xiii) Dismantling of Fence etc.</p> <p>(xiv) Any other work required for completion of project.</p> <p>21. Construction of Labour Hutment including Leasing of Land for ~ 750 Workmen.</p> <p>22. Any Other Building/ Structures required for the completion of scope of work</p> <p>Site Fabrication & Erection works:</p> <ol style="list-style-type: none"> 1. Bunker Silo and its Supporting Structures like Ring Beam, Stub Columns, Plan Bracings etc. 2. Pipe and Cable Rack in Main Plant Area 3. Any other miscellaneous structure <p>Erection of Shop Fabricated Structures:</p> <ol style="list-style-type: none"> 1. Mill & Bunker Building 2. Any other miscellaneous structure <p>Important Note:</p> <p><i>The tentative list of building/ structures falling under scope of works of this tender is listed above, however, the same is not exhaustive. Any structure in addition to the listed above, which require to be constructed for completion of the package shall be the part of scope of work under this contract.</i></p>
2.3	BHEL at its discretion may include other area works limited to 15% of awarded contract value, which are not mentioned in above scope of works. Contractor shall execute such works as desired and as directed by BHEL Engineer. The item rates & contract conditions shall remain unchanged for such works.
2.4	The work under this contract shall be carried out as per BOQ Cum Rate Schedule and in compliance of tender conditions including technical specifications and approved drawings/ documents.
2.5	GENERAL
2.5.1	Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

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2.5.2	The drawings enclosed with this tender are intended to give the tenderer a general idea of the type and extent of work involved. The drawings are as such only indicative and not to be considered as the exact construction drawings. Works shall be carried out as per the approved drawings by BHEL.
2.5.3	Further this is to be noted that the drawings and the documents furnished along with this specification are the sole property of BHEL. It must not be used directly or indirectly in any way detrimental to the interest of the company.
2.5.4	Furnishing all labor, materials, supervision, construction plans, equipment, supplies, transport, to and fro the site, fuel, electricity, compressed air, water and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handing over the works in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provided by the engineer during the course of works.
2.5.5	Contractor is required to monitor the entry/ exit of its workforce/ labour. BHEL may provide labour attendance system (biometric based) for capturing the attendance details of all the labour on daily basis at fixed entry/ exit points. Contractor shall ensure that the labour enters/ exits the project location from the designated locations in order to map/ monitor the movement of the labour/ workers. Apart from the above, Contractor shall be responsible for monitoring labour movement and submitting daily labour reports in format specified by BHEL Site In charge.
2.5.6	The area of work shall be cleared of all vegetation, rubbish and other objectionable matter and materials removed shall be burnt or otherwise disposed of as directed by the BHEL Engineer-in-Charge. No separate payment for these operations shall be made. The cost of all these operations shall be deemed to have been included in the unit rates rendered for the different items under bill of quantities.
2.5.7	All the works areas shall be adequately flood lighted to the satisfaction of the Engineer-in-Charge when the work is in progress during the night shifts. Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, and contractor's material storage area etc. at his cost.
2.5.8	Drawings showing enough details for the construction as per the specification shall be furnished to the contractor in a phased manner as far as possible.
2.5.9	<p>All necessary arrangement for safety like Hard Barricading around deep structures with scaffolding pipes and providing of safety net on the slope of excavated area is in contractor's scope. Contractor shall comply with all safety requirements as per statutes, BHEL and Customer specifications as applicable for execution of works. Safety rules and guidelines of BHEL and Customer are provided elsewhere.</p> <p>The contractor shall also deploy PVC/MS barricading with fluorescent stickers mentioning agency's name in addition to the hard barricading with proper signages as instructed by BHEL.</p>

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Chapter – II: SCOPE OF WORKS

2.5.10	Customer may depute their representative for checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works at no extra cost to BHEL. Any defect in quality of work or deviations from drawings / specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL.
2.5.11	Giving all notices, paying all fees, taxes etc., in accordance with the general conditions of contract, that is required for all works including temporary works.
2.5.12	<p>Royalty & other fees:</p> <p>Royalty challan and statutory documents shall be submitted along with RA Bills for processing of Bills. In the event of non-availability of royalty/statutory documents along with RA Bill, BHEL site at its discretion may opt to withhold relevant amount from the running RA Bills and process the bill further to maintain proper cash flow and continuity of work.</p> <p>The Contractor shall pay and indemnify the Employer against any default in payment of Royalties or Seignorage Fee or Cess or other charges by the Contractor or the agency from which the Contractor purchases soil/earth, sand, stone/aggregates, metals, minerals or minor minerals.</p>
2.5.13	Carrying out topographic survey of the entire work area and establish levels and coordinates at suitable intervals from existing grid levels and coordinates furnished by the owner established bench marks, setting out the locations and levels of proposed structures, constructions and marking of reference pillars and other identification works etc. The contractor shall provide the owner/BHEL such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used.
2.5.14	Arranging for joint checking (with BHEL / BHEL's Customer / Consultant) of all site construction activities, Preparation of joint protocols for each & every activity and maintaining quality records for audit/inspection as per approved FQP by BHEL.
2.5.15	<p>Medical/First aid center/medicine purchased for emergency purpose, Doctor along with ambulance services with fuel and operator (round the clock) shall be arranged by BHEL for handling medical emergencies. Cost against these facilities shall be distributed/ shared among the contractors working in Project site proportionately based on contract value (Refer HSE Plan for Calculation).</p> <p>However, till the time BHEL is arranging first aid arrangements & ambulance as said above, the contractor to suitably arrange for necessary emergency/first aid facilities for their personnel.</p>
2.5.16	The complete works shall be carried out as per BOQ cum Rate schedule. If any work covered in the scope of contract cannot be executed using items available in BOQ, additional / extra items shall be made and rates for such items shall be worked out as per GCC clause 2.15.7. However, contractor shall be bound to execute all the works under the scope of the contract and decision whether an extra item is applicable or not, shall be taken by BHEL Engineer which will be binding on the contractor.

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2.5.17	Any activity which is necessarily required for satisfactory execution of any item of BOQ in line with technical specifications shall be deemed to be included in BOQ item even if it is not described in the item description and no extra payment shall be made against such activity.
2.5.18	Contractor shall take up housekeeping activity on regular basis to keep the site clear of rubbish/ debris.
2.5.19	All necessary inputs with respect to all the changes carried out during the execution, for preparation of 'As built Drawings' to be submitted by Contractor to BHEL for submitting the 'As Built drawings' to BHEL's customer.
2.5.20	The necessary precautionary measures shall be adopted by the contractor to prevent water logging in the area, while carrying out the site works. Dewatering as required in the project area shall be done by the contractor.
2.5.21	<p>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 surface water or catchments water, if required, at any time during execution of the work including monsoon period shall be considered by BHEL.</p> <p>Dewatering required for control of sub-soil water for construction of various foundations for the package shall be paid under relevant item(s) available in the BOQ cum rate schedule. Dewatering shall be planned and continued till backfilling is completed. For discharge of sub-soil water/ rain water, a suitable piping system with pumping arrangement shall be provided by the contractor with prior approval of BHEL/ Customer as per instruction of BHEL Engineer in-charge. Contractor has to deploy dewatering diesel driven pumps/ DG sets of suitable capacity to take care of any exigencies in case of power disruption to the electrical driven dewatering pumps.</p>
2.5.22	<p>Documentation and Reporting:</p> <p>The Contractor shall maintain accurate records of material supplies, including delivery challans, invoices, and stock registers. These records shall be submitted to BHEL on monthly basis maintaining proper format of records in consultation with BHEL site.</p>
2.5.23	<p>Quantity Assessment of Supply Items:</p> <p>Supply of BOI material shall be based on assessment of the project status/requirement and shall be done only after written clearance of BHEL's Engineer-In-Charge. The supply quantities shall be calculated based on available drawings and work fronts.</p> <p>Contractor shall be the custodian of the BOI supplied items. In case, contractor fails to execute/install/fix/etc. the BOI items for recorded reasons, the contractor shall be liable to handover the materials in good usable condition to BHEL Stores. Further, if the contractor denies to/doesn't handover the materials on the instruction of BHEL-In Charge, payment made against such supplies shall be recovered from the contractor. The decision of Engineer-In-Charge Shall be final and Binding to the contractor.</p>
2.5.24	Reconciliation of Supply:

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	The final quantities of BOI materials supplied shall be reconciled upon the final execution of the total scope of work. The measurement against supply portion shall be reconciled after final execution of total work and the actual executed quantities as per BOQ items shall be considered for final measurement for recording in measurement book.
2.5.25	The contractor has to intimate, share at least two months in advance regarding any quantity variation in BOQ items for review by BHEL.
2.6	Tentative Technical Staff Requirement:
2.6.1	<p><u>A – Civil Works</u></p> <ul style="list-style-type: none"> • Project-In-Charge – 01 Head with minimum 15 Years' experience in Industrial Construction Projects Preferably in Power Plant Civil & Architectural Works etc. • Asst. Project Managers – 01 Heads with minimum 12 Years' Industrial Construction Projects Preferably in Power Plant Civil & Architectural Works etc. • Experienced Civil Engineers – 05 Heads (Civil - dedicated for TG, Power House, Transformer and switch yard, BTG and Chimney, CWPB, Pipe/Cable racks, etc.) • Experienced Foreman / Supervisors – 06 Heads (2 Nos. for round the clock concreting activities, 2 Nos. for centralized bar bending, 2 Nos. for centralized formwork fabrication, etc.) • Planning & Billing Engineers – 03 Heads (01 No. experienced head with 02 Nos. engineer) (considering civil and structural works, preparation of BOM, maintaining DPRs, BOI procurement plan and overall execution plan vis-a vis financial plan and material requirements) • Stores, Gate Pass – 02 Heads • Accounts & Administration – 02 Heads • Quality Control Engineer of minimum 5 years of experience – 03 Heads (01 No with 8-10 years and & 02 Heads (01 No. civil and 01 No. structural) with min 5 years of experience) for contractor's scope of work at site. • Safety Engineer – As per HSE Plan • Surveyor – 02 head capable to handle total station • Operator, Licensed Electrician, Mechanic - Minimum 2 Nos • Security Guards (Round the Clock) – As per requirement. <p><u>B – Erection of Shop Fabricated Structure and Site Fabrication & Erection works:</u></p> <ul style="list-style-type: none"> • Asst. Project Managers – 01 Head with 12 Years' experience in Industrial Building & Power Plant Civil / Structural Works • Experienced Structural Fabrication Engineers – 02 heads • Experienced Structural Erection Engineers – 02 heads • Experienced Foreman / Supervisors – 06 heads • Safety Engineer – As per HSE Plan

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C – Tentative Breakup of Manpower Requirement for Civil & Structural Works:	
Experienced Carpenters & Helpers	Approx. 100 Nos.
Experienced Mason, Bar Benders & Helpers	Approx. 200 Nos.
Experienced Erection Manpower including Fabricator, Rigger, Fitter & Helpers.	Approx. 100 Nos.
Other manpower like Painters, Supervisors, Operators, Helpers, etc.	Approx. 100 Nos.
Total	Approx. 500 Nos.
<p><u>Note: -</u></p> <p>Manpower requirement shown in the above-mentioned list is peak period suggestive requirement only. Deployment of manpower shall be progressive to meet the project schedule. However, manpower mobilization schedule as mutually agreed in Monthly Progress Review(F-14) at site, shall be decided(increased/decreased) based on front availability, drawing availability and erectable target completion to meet project milestones without additional financial implication to BHEL.</p>	
2.6.2	Deputation of above man-power shall be jointly decided at site in line with construction Schedule.
2.6.3	Engineer/ supervisor for other functions like store & purchase, material management, planning, finance, administration etc. are also to be provided as per site requirement.
2.6.4	BHEL reserves the right to reject or approve the list of personnel proposed by the contractor. The persons whose bio-data have been approved by BHEL will have to be posted at site and deviation in this regard will not be permitted unless specific & reasonable justification is made.
2.6.5	In addition to above, a well experienced qualified engineer to be designated, as 'Project Co-coordinator', shall be deployed by the contractor. Such engineer shall have adequate exposure on the job and shall remain fully involved in all planning activities, guidance etc. to contractor's own team during the complete execution period of contract.
2.7	Laptop Infrastructure with Operator for exclusive use of BHEL:
2.7.1	The contractor will have to provide Three (03) No. of Laptops (X-86 Architecture Based, 64-Bit Supported, Microprocessor with minimum 8 cores, On-board Graphics feature compatible with supplied OS, Minimum 8 GB RAM 2666 MHZ SDRAM upgradeable to 16 GB, 512 GB SSD M.2 Hard Drive or higher, 13"-14" (both included) high definition anti-glare LED back lit Screen, OEM USB Optical Travel Mouse, Integrated High definition audio with integrated speakers and volume control

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	<p>(Hardware/Software). Single audio jack (single pin) for connecting ear phones and mic, Built-In HD Webcam with Built-In Microphone, integrated 100/1000 Mbps port, Integrated Wi-Fi 6, supporting industry standard IEEE 802.11ax + Bluetooth 5.0 or higher, Minimum 2xUSB 3.1 Ports, 1xType C, Stereo headphone/ microphone combo jack,1xHDMI Port. 1xRJ – 45, Minimum 3-cell battery capable of providing 6 hours or more backup in standard business environment, ACPI Compliant, OEM AC Adaptor suitable for 230V supply, should come pre-installed with Windows 11 Professional Edition or latest version with 64bit latest service pack, OEM carry bag to be supplied with OS Certification from Microsoft and required software like MS Office 2010 Professional, AutoCAD 2011, ADOBE PDF CREATOR (version 8.0).</p> <p>All software/hardware component supplied with the laptops/computer shall be properly licensed.</p>
2.7.2	The contractor will have to provide Three (03) Nos. of laser jet printers compatible for A4 and A3 size printing with power backup as per instruction of BHEL.
2.7.3	These laptops and printers shall remain contractor's property/ownership for all legal/technical purposes. However, contractor will be allowed to take out the same after completion of the site works. These laptops & printers shall remain at BHEL offices during the contract period/ extended period (if any).
2.7.4	These laptops and printers are to be provided within 15 days from the written intimation of BHEL site till completion of scheduled contract period (i.e 26 contractual months). If contractor fails to provide laptop/ printer as per requirement, for a continuous period of fifteen days or more, BHEL shall have the right to procure the same and deduct the expenses plus 5% overheads from contractor's RA bill or any other dues.
2.7.5	<p>Computer / Laptop Operator:</p> <p>Contractor shall also provide the Three (03) Nos. of Operator for miscellaneous service for BHEL's use at site for construction detail drawings, reconciliation, progress review & day-to-day planning purpose, documentation, etc.</p> <p>Approval or Rejection of the candidate shall be sole discretion of BHEL and shall be binding on the Contractor.</p> <p>These facilities are to be provided within 15 days from the written intimation of BHEL site till completion of scheduled contract period (i.e 26 contractual months).</p> <p>In case contractor fails to provide computer/ printer Operator as per requirement in the aforesaid mandatory period (i.e 26 contractual months), for a continuous period of fifteen days or more, BHEL shall have the right to deduct @ Rs 30,000/- (Thirty thousand) per month or part thereof on pro-rata basis, from successful contractor's RA bill or any other dues with 5% overheads.</p> <p>In case BHEL intends to extend the services of computer / Laptop operator beyond the aforesaid mandatory period (i.e. 26 contractual months), the contractor shall extend the service to BHEL, for which BHEL will reimburse @ Rs 30,000/- (Thirty thousand) per month.</p>
2.8	Field Quality Assurance:

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2.8.1	The contractor shall be responsible for day-to-day quality checks for civil, structural and architectural works including concrete and other building materials in line with approved Field Quality Plan (FQP) and Manufacturing Quality Plan (MQP) during the progress of work. All quality records and log sheets shall be maintained as per the requirement of BHEL/CUSTOMER and as per FQP/MQP approved by BHEL/CUSTOMER.
2.8.2	<p>Setting Up of Laboratory Works: BHEL shall set up centralised civil quality laboratory in the close vicinity of the work site wherein routine test shall be performed by the service provider for all civil contractors working for the project. <i>The civil lab building and the testing equipment shall be excluded from the contractor's scope.</i></p> <p>Sampling of all construction materials, cube casting for concrete (required number of cubes to be arranged by contractor), etc. shall be carried out by contractor, transported to the laboratory and handed over to the service provider of the centralized laboratory for routine testing and documentation.</p> <p>All field test like slump test (at batching plant/ field), soil test for compaction (MDD), test for road work, etc. shall be carried out by the contractor without any extra cost to BHEL.</p> <p>In case, third party testing related to the scope of work is required to be conducted for any reason whatsoever, shall be arranged/conducted by the contractor without any extra cost to BHEL.</p> <p>Contractor shall depute their representative QA/QC Engineer and Supporting Staff at site/lab during testing and documentation, etc. for satisfactory conductance of the routine test.</p> <p>In view of above scope matrix for the routine testing, contractor does not absolve from their responsibility for satisfactory performance of the work done as per terms and conditions of the contract.</p>
2.8.3	VOID
2.8.4	Design Mix:
2.8.4.1	Initially Mix Design for concreting shall be provide by BHEL, based on Mix Design Report Contractor shall conduct trial mixes. The approved design mix shall be followed by the bidder. However, in case any mix design is required to be carried out due to change in brand of cement/change in source of raw materials during any stage of the project, the same shall be in bidder's scope and to be carried out from NCCBM / IITs / NITs / other reputed laboratories approved by CUSTOMER/BHEL. Contractor has to ensure adding of high grade PCE based admixture to minimize the cement content in line with ASTM C 494 as advised by BHEL time to time without any additional cost.
2.8.4.2	<p>The following specifications of PCE-type high performance super plasticizer shall be considered for concrete works as per BOQ item:</p> <p>High performance super plasticizer PCE-based water reducing admixture of Type-G/F as per ASTM C-494 of approved make FOSROC/SIKA/BASF or Equivalent having minimum water reduction capability of 30%.</p>

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	<p>The performance compliance of the Super-plasticizer should be ensured based on the following tests:</p> <ol style="list-style-type: none"> Marsh cone test for optimum dosage of admixture with specific brand of cement. Slump retention test of concrete. Water reduction capability test by doing trial mix. Rheological properties of fresh concrete on trial mix.
2.8.4.3	All other tests related to MDD for backfilling, road sub-base, etc, slump, cube for concrete and mortar, water, etc have to be carried out by the contractor from above mentioned laboratories as advised by BHEL/Customer without any extra cost to BHEL.
2.8.4.4	In case ambient temperature is greater than 32 Degree Celsius, Placement temperature should be controlled with necessary temperature correction of concrete by introducing Chiller Plant along with Batching Plant or by adopting ice concrete. If ice is used, the ice water source test report shall be provided for review and approval of BHEL/Customer prior to use.
2.8.4.5	Before commencement of work, Contractor has to satisfy/ ensure the design mix proportions through conducting trial mix. Contractor shall not be absolved from the responsibility of quality of concrete works as per relevant specification, standard and to ensure satisfactory performance as per terms and conditions of contract. Any issue raised regarding design mix after successful completion of trial mix shall not be entertained and contractor shall not be entitled for any cost or damages.
2.9	HIERARCHY:
2.9.1	<p>In case of any conflict/ deviations amongst various documents, the order of precedence shall be as follows:</p> <ol style="list-style-type: none"> Items Description in BOQ Cum Rate Schedule Technical Conditions of Contract (TCC) Technical Specifications for Customer (Section-C) BHEL's Standard Specification (Section-D) IS Standard

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: FACILITIES IN THE SCOPE OF CONTRACTOR/BHEL (SCOPE MATRIX)

Sl. No.	Description	Scope		Remarks
		BHEL	Bidder	
3.1	Establishment:			
3.1.1	For Construction Purpose:			
a.	Open space for office (as per availability within project premises)	Yes		Location will be finalized after joint survey with owner
b.	Open space for storage (as per availability within project premises)	Yes		Location will be finalized after joint survey with owner
c.	Construction of contractor's office, canteen and storage building including supply of materials and other services		Yes	
d.	Contractor's all office equipment, office / store / canteen consumables		Yes	
e.	Canteen facilities for the contractor's staff, supervisors and engineers etc.		Yes	
f.	Firefighting equipment like buckets, extinguishers etc.		Yes	
g.	Fencing of storage area, office, canteen etc. of the bidder		Yes	
h.	Development of land provided for office, storage, fabrication yard, etc.		Yes	
3.1.2	For living purpose of the contractor:			
a.	Open space for labour colony		Yes	Refer Clause 3.10 of TCC
b.	Labour Colony with internal roads, sanitation, complying with statutory requirements		Yes	Refer Clause 3.10 of TCC
3.2	Electricity:			
3.2.1	Electricity for construction purposes			Refer Clause 3.12 of TCC for details
a.	Single point source	Yes		Free of cost at one point near the site (within 03 months from award of work). Further distribution and Metering are in scope of bidder.

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Sl. No.	Description	Scope		Remarks
		BHEL	Bidder	
b.	Further distribution for the work to be done which include supply of materials and execution		Yes	At contractor's own cost
c.	Distribution of Electricity for the office, stores, canteen, of the contractor which include supply of materials and execution		Yes	At contractor's own cost
d.	Supply, installation and connection of energy meter including operation and maintenance		Yes	At contractor's own cost. Calibration certificate to be provided.
e.	Duties and deposits including statutory clearances for the above		Yes	At contractor's own cost
f.	Demobilization of all the facilities after completion of works		Yes	At contractor's own cost
3.2.2	Electricity for living accommodation for the contractor's staff, engineers, supervisors, labour Hutment etc.			Contractor has to make his own arrangements
a.	Single point source		Yes	At contractor's own cost
b.	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	At contractor's own cost
c.	Payment/Duties and deposits including statutory clearances if applicable		Yes	At contractor's own cost
3.3	Water Supply:			
3.3.1	For construction purposes:			
a.	Making the water available at single point	Yes		Free of cost at one point near the site (within 03 months from award of work). Further distribution and Metering are in scope of bidder. Refer Clause 3.13 of TCC for details.
b.	Further distribution as per the requirement of work including supply of materials and execution		Yes	At contractor's own cost

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Sl. No.	Description	Scope		Remarks
		BHEL	Bidder	
3.3.2	Water supply for contractor's office, stores, canteen etc.			Contractor has to make his own arrangement at his own cost.
a.	Making the water available at single point		Yes	At contractor's own cost
b.	Further distribution as per the requirement of work including supply of materials and execution		Yes	At contractor's own cost
3.3.3	Water supply for Living Purpose			Contractor has to make his own arrangement at his own cost.
a.	Making the water available at single point		Yes	At contractor's own cost
b.	Further distribution as per the requirement of work including supply of materials and execution		Yes	At contractor's own cost
3.4	Lighting			
a.	For construction work (supply of all the necessary materials) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	At contractor's own cost
b.	For construction work (execution of the lighting work/ arrangements) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	At contractor's own cost
c.	Providing the necessary consumables like bulbs, switches, etc. during the course of project work		Yes	At contractor's own cost
d.	Lighting for the living purposes of the contractor at the colony / quarters		Yes	At contractor's own cost
3.5	Communication facilities for site operations of the bidder			
a.	Téléphone, Fax, Internet, Intranet, E-mail, etc.		Yes	At contractor's own cost

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Chapter – III: FACILITIES IN THE SCOPE OF CONTRACTOR/BHEL (SCOPE MATRIX)

Sl. No.	Description	Scope		Remarks
		BHEL	Bidder	
3.6	Demobilization of all the above facilities		Yes	At contractor's own cost
3.7	Transportation			
a.	For site personnel of the bidder		Yes	
b.	For bidder's equipment and consumables (T&P, Consumables etc.)		Yes	
3.8	Fabrication & Erection Facilities			
3.8.1	Engineering works for construction:			
a.	Providing the erection/constructions drawings for all the scope/equipment covered under the scope of this tender	Yes		
b.	Drawings for construction methods	Yes	Yes	In consultation with BHEL
c.	As-built drawings where ever deviations observed and executed and also based on the decisions taken at site		Yes	Changes are to be marked in drawing & handover to BHEL on completion of work.
d.	Preparation of site execution schedules and other input requirements as per Form-14.	Yes	Yes	In consultation with BHEL
e.	Review of performance and revision of site execution schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
f.	Weekly construction / erection schedules based on Sl. No. d		Yes	In consultation with BHEL
g.	Daily work plan based on Sl. No. d		Yes	In consultation with BHEL
h.	Periodic visit of the senior official of the contractor to site to review the progress so that works is completed as per schedule. It is suggested this review by the senior official of the contractor should be done once in every two months.		Yes	
3.9	Land/Open Space:			

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3.9.1	<p>Availability of land is very limited and the contractor has to plan and use the existing land 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 erection agencies. BHEL shall provide free of charge limited open space for office, storage shed, batching plant and laydown area as and where made available by Customer.</p> <p>It is the responsibility of the contractor to construct office, sheds, fabrication yard, establish batching plant, levelling and grading of the land, roads and drains (internal, approach), make necessary drainage arrangements, provide all utilities and dismantle and clear the site after completion of work or as and when required, as a part of his scope of work.</p> <p>It is contractor's responsibility to provide watch and ward, security (including fencing/ boundary wall) for their equipment, material, stores etc. kept inside the land allotted for the scope of work under this tender.</p>
3.9.2	<p>Contractor shall maintain one centralized store cum bar bending yard at his own cost. Hard surfacing of this yard and all around drains shall be carried out by the contractor at his own cost within the quoted rate. The construction of cement storage sheds for unloading of cement bags, stacking properly in the storage sheds shall be carried out by the contractor at his own cost within the quoted rate.</p>
3.10	<p>Labour and Staff Colony:</p> <p>Following are in the contractor's scope of work for labour & staff colony:</p>
3.10.1	<p>Labour colony comprising of 06 labour shed/sets for approx. 750 workers are to be developed by contractor. Out of 06 labour sheds, 04 labour sheds will be for the exclusive use of the contractor and remaining 02 labour sheds shall be at the disposal of BHEL for allotment to various other agencies working at site from time to time. The contractor shall be the owner for the 04 labour sheds assigned for exclusive use of the contractor. However, for the 02 labour sheds handed over to BHEL, the ownership shall not lie with the contractor.</p> <p>Land for labour colony shall be arranged by Contractor (payable under BOQ schedule) and lease of total land shall be kept valid till the contract period or as decided by BHEL. If required, tripartite lease agreement shall be made including BHEL and decision of BHEL in this regard shall be binding to the contractor.</p> <p>All labour colony set-up is to be developed as per attached layout drawing (Design Shall be in the scope of Contractor) and in compliance of statutory requirements. All common areas in the Labour colony shall be developed by the contractor initially. All materials including Cement & Steel required for the labour sheds shall be in contractor's scope.</p> <p>The following shall be applicable for construction of labour sheds:</p> <ol style="list-style-type: none"> All civil & architectural works, electrification works including lighting and fans, switches, sockets, etc., plumbing, sanitary, bed with mattress, finishing, etc. for labour sheds shall be in the scope of the contractor The bed shall be metal type of min size 6 feet by 3 feet with mattress (min 3-inch-thick) Windows shall be of metal make, openable window with 6 mm thick toughened glass.

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- d) Roof shall be of metallic color coated profiled sheet (min 0.45mm thick) with proper under deck insulation & false ceiling (bottom of false ceiling shall be min 3m from floor level).
- e) The wall panel shall be Aerocon panel of min. 50mm thick.
- f) Doors shall be of metal door frame with solid core flush door shutter with all necessary fittings.

For sheds handed over to BHEL, providing bed with mattress, wiring & fittings for electricity distribution, etc. shall be one-time requirement. Maintenance of the labour sheds allotted to BHEL and its working agencies shall be in the scope of allotted working agencies. In this case, the maintenance of only 08 Nos of shed shall be in the scope of Contractor. Contractor shall take written clearance from BHEL prior to construction of 04 Nos. of BHEL allotted labour sheds.

The contractor shall arrange the following for all the labour sheds:

- a) Arrangement and maintenance of electricity and distribution in Labour Colony for all sheds. Supply, installation and connection of transformers (as required), energy meter including operation and maintenance of all labour sheds.
- b) Arrangement & maintenance of Water facilities (Including RO facility) for common usage. Steel framed elevated PVC water tank (approx. @ 50 litre/per person per day) and its distribution network including connection to all sheds.
- c) Approach road to Labour colony and connecting internal roads to all labour sheds.
- d) Maintenance of common facilities/areas.
- e) Security of labour colony.

For monthly maintenance & repair of common areas, electricity, water, cleanliness, etc. Contractor shall submit details of expenditure with supporting documents to BHEL at site. The amount against such expenses shall be paid by the contractor every month and further distributed among all the agencies availing the facilities in Labour colony on prorata basis as per direction of BHEL.

One-time payment shall be done for each labour shed as per BOQ CUM RATE SCHEDULE. However, payment for civil & structural works for common facilities like water tank and its elevated structure, water storage tank, water pipeline works outside labour sheds & water treatment plant in the labour colony shall be paid in relevant BOQ item of Price Schedule. Any other works required for complete workmen habitation in labour colony shall be in the scope of bidder.

The following completion schedule for labour sheds shall be ensured:

Sl. No.	Activities	Completion Schedule from Date of Start of Work
1	First 03 Labour Shed/Set (01 No. for BHEL as per requirement)	3 rd Months
2	Next 03 Labour Shed/Set (01 No. for BHEL as per requirement)	6 th Months

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3.10.2	Contractor shall ensure establishment & maintenance of workmen/labour colony in line with BHEL layout drawings & Guidelines (As per Annexure A - Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites)
3.10.3	<p>One Medical Centre (24 x7 working), well finished & furnished, of approx. 150sqm shall be constructed by the contractor in the labour establishment area for the workmen with ambulance facility in line with BHEL layout drawings & Guidelines (As per Annexure A - Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites) shall be constructed at workmen establishment. Payment for Civil & Architectural works for the Medical Centre shall be paid in relevant BOQ item of Price Schedule.</p> <p>Payments for medical staffs such as doctors, nurse, ambulance services, consumables, medical beds/emergency medical equipment/first aid instruments/devices & running medicines has to be initially borne by the bidder. The cost incurred shall be shared/distributed among the availing agencies as decided by BHEL site.</p> <p><i>Medical equipment, instrument & furniture required for 'medical center' shall be as per Annexure-B of TCC.</i></p>
3.10.4	Development of contractor's temporary staff colony and labour colony having adequate no. of rest rooms along with toilets & fencing etc.
3.11	<p>Installation of necessary amenities- and temporary infrastructure for construction activities at Project site locations.</p> <p>Following are the minimum amenities to be provided by the contractor within the quoted price including removal/disposal of the same in environment friendly manner after its intended use/completion of scope of work:</p> <ol style="list-style-type: none"> Labour rest sheds near work spot. Canteen facility creation. Drinking water facility with suitable capacity water tanks near all work locations. Labour Bio toilets near work spot in sufficient nos. with regular cleaning & maintenance arrangement. Labour colony should have all hygienic condition, dining hall, toilets, proper sewerage system, good drinking water arrangements. Recreational facilities, etc.
3.12	Construction Power:
3.12.1	<p>Construction power (three phases, 415 V/ 440 V) will be provided free of cost at one point near the site at a distance of approx. 500M within 03 months from the date of start of work. Further distribution shall be arranged by the contractor at his own cost and services.</p> <p>However, contractor has to deploy DG Sets to meet power requirement in case of delay in availability of single source or any kind of power interruptions during the course of the project at no extra cost to BHEL.</p>

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	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 shall be responsible for fulfilment of all requirements including statutory requirements in this regard.
3.12.2	Sufficient power factor compensation equipment like capacitor shall be provided by contractor for reactive loads like welding machines etc. In case of any fine/penalty on account of low power factor, same shall be shared by contractor proportionately according to power consumption.
3.12.3	Contractor shall make necessary arrangements for onward distribution of construction power taking due care of surrounding construction activities like movement of cranes & vehicles, civil work, fabrication/construction/assembly/ erection etc. and safety of personnel. It may become necessary to relocate some of the installations to facilitate work by other agencies or by him.
3.12.4	Distribution of supply shall be done by the contractor using underground cables. The contractor shall be responsible to provide complete LT distribution with Fuse less system including the supply of all materials like cables, necessary isolators/LCB, Switch boards, industrial receptacles/sockets, pipes, etc. observing the safety rules laid down by electrical authority of the State / BHEL / their customer with appropriate statutory requirements. All cables being used for construction power shall be armored only. Buried cable shall be suitably identified by the route markers.
3.12.5	It shall be the responsibility of Contractor to provide, maintain the complete installation on the load side of the supply with due regard to the safety requirements at site. All cabling and installations shall comply with the appropriate statutory requirements in all respects. The installation and maintenance of this shall be done by licensed and experienced electrician.
3.12.6	The contractor shall also take the approval/ permission of statutory authorities for his DG set installation. The Contractor has to make his own arrangement for the same as required to carry out the job under the scope of work within the quoted rate. Nothing extra shall be paid on this account of DG set up and running for construction and office, maintenance etc.
3.12.7	Contractor himself shall be responsible for any loss or damage to their equipment as a result of variations in voltage or frequency or interruptions in power supply.
3.12.8	While reasonable efforts will be made to ensure continuous electric power supply, interruptions cannot be ruled out and no claim from the Contractor shall be entertained on this account such as idle labor, extension of time etc. The Contractor shall adjust his working shift accordingly and deploy additional manpower, if necessary, so as to achieve the target.
3.12.9	Contractor shall be well equipped with back-up power supply arrangement like DG set and diesel operated welding machine etc. to tackle situations arising due to failure of supplied power, so as to ensure continuity and completion of critical processes like Operation of Batching Plant, Concreting, etc. that are underway at the time of power failure or important activities planned in immediate future.

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3.12.10	The contractor will have to Procure & install General mobile illumination system during construction right from start of his work. This system will include temporary pole lighting, portable lighting towers with DG back up, within the quoted price. The illumination should be such that minimum illumination requirement as specified by Indian standards for general illumination is maintained.
3.12.11	Contractor is advised to maintain the calibrated energy measuring instruments and use their system as efficiently as possible to maintain the HT side input energy meter reading and LT side outgoing energy meter reading to sub-contractors as equal.
3.12.12	Contractor to arrange energy meter for office.
3.12.13	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.
3.12.14	Contractor has to make their own arrangements for electricity requirement for labour colony at his own cost within quoted price.
3.13	Construction Water:
3.13.1	Construction water will be provided free of cost at one point within the plant boundary tentatively within 03 Months from the date of start of work. Contractor has to make arrangement of further distribution of water at his own cost. However, contractor shall make alternate arrangement of construction water till the same is made available by BHEL.
3.13.2	The Contractor should make arrangements for storage of sufficient quantity of water required for work. The agency should also construct sumps (if required) of suitable size for storage of construction water as per their requirement for use in batching plant and construction purposes.
3.13.3	Contractor to satisfy himself that the water drawn by him is fit for construction / consumption and adequately treat such water at his cost when it is not found fit for the said purposes.
3.13.4	In case of non-availability of water, the contractor shall make his own arrangements of water suitable for construction purpose to have uninterrupted work. No separate payment shall be made for any contingency arrangement made by contractor.
3.14	RECORDS TO BE MAINTAINED AT SITE
3.13.5	Record of Quantity of free/Chargeable items issued by BHEL must be maintained during contract execution. Also, reconciliation statement to be prepared at regular intervals.
3.13.6	The below mentioned Records/ Log-books/ Registers applicable to be maintained. a) Hindrance Register

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	<ul style="list-style-type: none">b) Site Order Book.c) Test Check of measurements.d) Steel and Cement Supply and Consumption Daily Registere) Records of Test reports of Field tests.f) Records of manufacture's test certificates.g) Records of disposal of soil/ rock generated during and after the work completion.h) Records of disposal of scraps generated during and after the work completion.i) List of T&Ps and MMEs.
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4.0	Tools and Plants: Nos. of T&Ps to be deployed at site shall be decided w.r.t. monthly plan and review format (F-14) based on site requirement. Below given Nos. are tentative for planning purposes by the contractor.	
Sl. No.	Description of T&P	Tentative Requirement
A	T&Ps for Civil Works	
1.	Batching Plant (30 Cum/Hr.) with Sufficient Capacity of Silos.	02 Nos.
2.	Boom Placer (Min. 35m Long)	01 No.
3.	Concrete Pump (60 Cum/Hr. min capacity and sufficient lift)	01 No.
4.	Concrete Transit Mixer (min. 6 cum capacity)	06 Nos.
5.	Hydraulic Excavator /Poclain	04 Nos.
6.	Dumper/ Tipper (min. 16 cum capacity)	10 Nos.
7.	Dozer	01 No.
8.	Vibro Roller	01 No.
9.	Back Hoe Loader (JCB)	02 Nos.
10.	Concrete Vibrators with adequate needle (diesel/ electric)	10 Nos.
11.	Power driven earth rammer (Roller Type 1/2 T)	01 No.
12.	Earth Compactor- 3MT Capacity	As per requirement
13.	Tractor mounted grader/ loader	As per requirement
14.	Pick & carry crane (10/12 T cap) *Note- Hydra is not allowed at project site	01 No.
15.	Trailer 15 MT or required capacity	01 No.
16.	Small trucks 2T/5T for shifting of reinforcement/cement/ formwork etc. within site	As per requirement
17.	Trailer for shifting of crawler mounted equipment's like Poclain, Dozer, etc.	As per requirement

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18.	Tractor with Trailer	As per requirement
19.	Scaffolding Pipes, Clamps / Swivel Couplers (One/Two Way), Props, Jacks, Screw Heads, MS Pipes, Wooden Battens, Planks, Bullies, H Frames, Tie Rods with Nuts, Adjustable Achro Span (Considering Individual Areas)	As per requirement
20.	Reinforcement bending machine	04 Nos.
21.	Reinforcement cutting machine	04 Nos.
22.	Adequate dewatering system with requisite number and capacity of dewatering pumps	As per requirement
23.	Well point dewatering arrangement	As per requirement
24.	Self-priming Dewatering pump of capacity (Diesel/ Electric) From 2 HP to 15 HP	08 Nos.
25.	Submersible/ mono-block electric pump 20 HP	02 Nos.
26.	Curing pump 1.5/ 2 HP	05 Nos.
27.	Concrete cutting power tools (DD2E of HILTI/BOSCH make)	02 Nos.
28.	Concrete coring machine for drilling in concrete upto 150 mm dia. along with diamond bits	As per requirement
29.	Pneumatic breaker with jack hammer	As per requirement
30.	Compression testing machine (200 T cap)	01 No.
31.	Concrete cube moulds.	100 Nos.
32.	Total Station with adequate no. of Surveyors & support staff	02 Nos.
33.	Theodolite	As per requirement
34.	Auto level & staff	02 Nos.
35.	Truck mounted Water Tanker with sprinkler attachment	01 No.
36.	Truck mounted DG Set of 125 KVA Capacity	01 No.
37.	Construction Cable and Water Pipe Line	As per requirement
38.	Building Hoist	02 Nos.

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39.	Fully mechanized paver fitted with electronic sensors	01 No.
40.	Reinforcement scrap straightening machine	As per requirement
41.	Portable Welding machine	As per requirement
42.	Electric winch 5T capacity	02 Nos
43.	Movable tower crane	As per requirement
44.	Plate vibrators for slab concrete	01 Nos
B	T&Ps for Structural Fabrication & Erection works	
1.	150 MT Capacity Crawler Crane	01 No. (As & when required)
2.	75 MT Capacity Crawler Crane	01 No.
3.	75 MT Capacity Tyre mounted Crane	01 No.
4.	40/45 MT Capacity Tyre mounted Crane	01 No.
5.	Low bed trailer Low bed trailer with min 70-100 feet span_60 MT	Minimum 01No.
6.	Trailers with pulling unit_40 MT	Minimum 01 No.
7.	Trailers with pulling unit_20 MT	Minimum 01 No.
8.	Farana crane (Required Capacity) *Note- Hydra is not allowed at project site	03 Nos.
9.	Power/Hand winch	As per requirement
10.	Welding Machine	As per requirement
11.	Heating Oven	Minimum 03 Nos.
12.	Portable Oven	As per requirement
13.	Portable grinding machine of various sizes	As per requirement
14.	Calibrated Power driven bolt tightening machines	Minimum 05 Nos.
15.	Manual Torque tightening machine	Minimum 03 Nos.

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16.	Torque calibrator	As per requirement
17.	Bolt Tension Calibrator	As per requirement
18.	Impact wrench with socket (Pneumatic)	As per requirement
19.	3-phase distribution board with complete set up for drawl of construction power	As per requirement
20.	Power cable for drawl of construction power	As per requirement
21.	Self-drilling cum tapping machine for screws	As per requirement
22.	UT Testing Machine	As per requirement
23.	Radiography arrangement with radioactive isotope source	As per requirement
24.	Pug Cutting machines	As per requirement
25.	Plasma Cutting Machine	As per requirement
26.	Rolling Machine	As per requirement
27.	Chain pulley blocks	As per requirement
28.	Turn Buckles and Huck-Chuks	As per requirement
29.	Scaffolding materials with clamps for cladding fixing, etc works	As per requirement
30.	Hoisting and pulley devices/pulleys	As per requirement
31.	SPANNERS / EYE BOLTS (OF ALL SIZES)	As per requirement
32.	Wooden/Concrete sleeper 1.5-2.0 Mtr length	As per requirement
33.	Sufficient quantity of steel ladders for approach up to the top of each erected column to be required during erection of columns.	As per requirement
34.	Suspended working platform Size :7mX1mX0.5m, Rated load 800 kg to 1000 Kg (For Cladding Fixing Works)	As per requirement
35.	Theodolite of required accuracy	Minimum 01 No.
36.	Air compressor/blower (electric/diesel operated)	Minimum 01 No.
37.	Fill pump	As per requirement

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38.	Hydraulic Test pumps/ Hand pumps Along with Suitable/ different ranges of calibrated Pr. gauges	As per requirement
39.	Shot Blasting Cleaning set up with copper slag	As per requirement
40.	Stud Welding Machine	As per requirement

Sl. No.	List of suggestive safety Equipment /PPEs to be included in List of minimum T&P:	Remarks
1.	Safety Net (Conforming IS 11057:1984) Safety Net (Net Size: 10m x 5m, Mesh Size: 25 mm, Mesh Rope: 2mm double cord, Border/Tie Cord: 12mm diameter polypropylene rope (tested as per IS: 5175). Two meters length shall be provided at all four corners.	Min-30 Nos
2.	Fall Arrestor 'Rope grab fall arrester' & anchorage line. Anchorage Line: 14mm- 16 mm diameter, three strand twisted Polyamide rope. Rope Grab fall arrester: Openable & Guided type Fall Arrestor (on flexible line) conforming EN 353-2 & works on 14-16 mm diameter polyamide rope. Material: Nickel Chrome plated Steel Connector: Karbiner conforming to EN 362 (Minimum Strength 22 KN), material: Steel Retractable Fall arrestor Block (Range 6 Mtr to 15 Mtr)	Min. 15 nos. of Rope Grab Fall arrester' and Karbiner each. Min 10 nos. anchorage line, 30 metre long each, 05 nos. anchorage line, 40 metre long each Min 15 Nos
3.	Horizontal life line Stainless Steel Wire rope of 8mm diameter. Minimum six nos. of steel U-bolt clips are required for clamping each wire rope to a rigid support (03 nos. of U-bolt clips at each end).	Min 05 nos. of wire rope, each 40m long. Min 25 nos. of wire rope, each 25 metre long.
4.	Ladders on column The minimum design live load on metallic ladder shall be a single concentrated load of 100 kilo grams. All rungs shall have a minimum diameter of 16mm to 25 mm, and minimum clear length of rungs shall be 40.6 centimetres. The distance between rungs shall not exceed 30.5 centimetres. Each ladder shall have maximum height of 9.0 metre.	Cumulative length of ladders is 200 metres

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	The ladder shall have proper fastenings for attaching it to a column using positive means such as bolt, weld or other type of fasteners.	
5.	Height Rescue Kit and Confined space rescue kit	1 No each
6.	Lux Meter & Breathe Analyser	2 Nos each
7.	Multi Gas Meter	1 No
8.	ELCB & RCCB Tester	1 No
9.	Earth Resistance meter	1 No
10.	Scaffolding materials as per EN 74 for hard barricading	As per requirement
11.	Oxygen Meter	1 No
12.	Fire Blanket	As per requirement
13.	Fire resistant tarpaulins	As per requirement
14.	Safety Posters as per BHEL Guidelines	As per requirement and instruction of BHEL
15.	Fire Extinguishers: ABC – 6 Kg: 50 Nos, Co2 – 4.5 Kg: 20 Nos, Foam – 9 Kg: 5 Nos. Fire Bucket (set of ¾ buckets) with stand – 10 Nos	
16.	Rubber Mat as per IS 15652	Min 150 Sqm
17.	Electrical rubber gloves	As per requirement
18.	Water Sprinkling tanker for dust suppression	2 Nos.

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Chapter – IV: T&PS AND MMES TO BE DEPLOYED BY CONTRACTOR

4.2	Measuring and Monitoring Equipment (MMEs): To be finalized as per site requirement.
4.3	T&Ps shown in the above-mentioned list is suggestive requirement. However, mobilization schedule as mutually agreed at site for major T&Ps, have to be adhered to. Numbers/time of requirement will be reviewed from time to time at site and contractor will provide required T&Ps/equipment to ensure completion of entire work within schedule/ target date of completion without any additional financial implication to BHEL. Contractor will give advance intimation & certification regarding capacity etc. prior to dispatch of heavy equipment i.e. batching plant, boom placer, concrete pump, cranes etc. Also, on completion of the respective activity, demobilization of T&Ps in total or in part can be done with the due approval of BHEL Engineer-In-Charge. Retaining of the T&Ps during the contract period will be mutually agreed in line with construction requirement.
4.4	The contractor shall arrange crane operator, diesel, petrol and other consumables including electrical / water / air connections required for the tools and plants, equipment etc. Preventive and routine maintenance of T & P are also to be arranged by the contractor at his cost without any delay. Required number of experienced mechanics and helpers for routine maintenance of the above T&Ps shall be provided by the contractor within his quoted rate.
4.5	Contractor shall submit the T&P mobilization schedule indicating the quantity and duration of deployment on monthly basis for the entire contract period in mutual concurrence with BHEL Engineer at the time of commencement of work.
4.6	Other terms and conditions regarding T&Ps to be deployed by Contractor, shall be as per clause No. 4.2 of SCC

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Chapter – V: T&PS AND MMES TO BE PROVIDED BY BHEL

5.0	LIST OF T&P TO BE PROVIDED BY BHEL FREE OF HIRE CHARGES ON SHARING BASIS:			
5.1	SN	DESCRIPTION	QUANTITY	REMARKS
	1	CRAWLER/MOBILE CRANE OF CAPACITY 75 MT & 150 MT CRANE	Over and above quantity mentioned in Chapter – IV – (T&PS AND MMES TO BE DEPLOYED BY CONTRACTOR.)	BASED ON WORK REQUIREMENT
	2	CRAWLER/MOBILE CRANE OF CAPACITY OVER AND ABOVE 150 MT CRANE	As per requirement	BASED ON WORK REQUIREMENT
5.2	<p>Note for Sl. No. 5.1 above:</p> <ol style="list-style-type: none"> The contractor shall plan to execute the work by deploying cranes mentioned in Chapter-IV of TCC. However, BHEL at its discretion may provide additional cranes of capacity 75 MT and above to expedite the work. The decision of BHEL Site In-charge / Construction Manager in this regard shall be final. The cranes may be BHEL owned or may be obtained on hiring basis including operating and maintenance crew. Operator and O&M for BHEL owned crane will be provided by BHEL. Operator and O&M for hired crane will be provided by the hiring agency. Contractor shall provide the fuel for BHEL (Hired/owned) provided cranes for his use. Contractor shall provide necessary manpower assistance for initial and final assembly & dismantling and for subsequent operations of boom extension and reduction during execution of work. Contractor shall also make necessary arrangements like laying of special sleeper beds and steel plates (material shall be provided by BHEL) for movement and operation of the crane (including initial movement/marching of crane within the plant premises). 			
5.3	Cranes provided by BHEL will be on sharing basis with other agencies / contractors of BHEL. The allocation of cranes shall be the discretion of BHEL engineer, which shall be binding on the contractor. Cranes will be deployed at appropriate time and location within plant premises, as decided by BHEL for			

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – V: T&PS AND MMES TO BE PROVIDED BY BHEL

	suitable duration and intended purpose. Augmentation of BHEL T&P under special circumstances shall be discretion of BHEL.
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TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: TIME SCHEDULE

6.0	TIME SCHEDULE:																														
6.1	<p>Initial Mobilization and Time Schedule:</p> <p>After issue of LOA (though Fax/courier/email) the contractor shall report to the Construction Manager/Site In-Charge of BHEL at site within seven (07) days from date of LOA and submit detailed mobilization plan to start work.</p> <p>The contractor has to subsequently augment his resources in such a manner that the entire works are completed within the contract period of Twenty Six (26) Months from the date of start of work in a manner required by BHEL to match with the project schedule.</p> <p>Date of Start of work shall be considered as 15 days after date of LOA or as instructed by BHEL in writing.</p>																														
6.2	Schedule of Completion:																														
6.2.1	The entire work under the scope of this contract shall be carried out in such a manner that the following listed major milestones are achieved as per completion schedule given against each activity & released for erection by other agency.																														
6.2.2	VOID																														
6.2.3	<p>Detailed schedule is as per below table.</p> <table><tr><th>Sl. No.</th><th>Activity</th><th>Schedule for completion from Start of work</th></tr><tr><td>1.</td><td>Boiler Foundation (M1)</td><td>6th Months</td></tr><tr><td>2.</td><td>Bunker Bay Foundations</td><td>6th Months</td></tr><tr><td>3.</td><td>Mil Reject System Foundation</td><td>9th Months</td></tr><tr><td>4.</td><td>ESP Inlet Duct Foundations</td><td>9th Months</td></tr><tr><td>5.</td><td>FD/ID/PA Fan Foundations</td><td>10th Months</td></tr><tr><td>6.</td><td>ESP Outlet Duct Foundations</td><td>13th Months</td></tr><tr><td>7.</td><td>Mill Foundations</td><td>15th Months</td></tr><tr><td>8.</td><td>Bunker Bay – Feeder Floor, Tripper Floor and Roof Slab with Parapet Wall including Side Metal Cladding in order to Handing Over for Erection</td><td>Progressively from 20th to 24th Months</td></tr><tr><td>9.</td><td>ESP Control Room Foundations</td><td>6th Months</td></tr></table>	Sl. No.	Activity	Schedule for completion from Start of work	1.	Boiler Foundation (M1)	6 th Months	2.	Bunker Bay Foundations	6 th Months	3.	Mil Reject System Foundation	9 th Months	4.	ESP Inlet Duct Foundations	9 th Months	5.	FD/ID/PA Fan Foundations	10 th Months	6.	ESP Outlet Duct Foundations	13 th Months	7.	Mill Foundations	15 th Months	8.	Bunker Bay – Feeder Floor, Tripper Floor and Roof Slab with Parapet Wall including Side Metal Cladding in order to Handing Over for Erection	Progressively from 20 th to 24 th Months	9.	ESP Control Room Foundations	6 th Months
Sl. No.	Activity	Schedule for completion from Start of work																													
1.	Boiler Foundation (M1)	6 th Months																													
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7.	Mill Foundations	15 th Months																													
8.	Bunker Bay – Feeder Floor, Tripper Floor and Roof Slab with Parapet Wall including Side Metal Cladding in order to Handing Over for Erection	Progressively from 20 th to 24 th Months																													
9.	ESP Control Room Foundations	6 th Months																													

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Chapter – VI: TIME SCHEDULE

	10.	Completion of ESP Control Room (M2)	20 th Months
	11.	Compressor House	14 th Months
	12.	Switchyard	15 th Months
	13.	Mill Reject Silo Foundations and Trenches	18 th Months
	14.	Civil Works for Outdoor Transformer Foundations, Fire Barrier Wall, Sump, Pit, Oil Retention Pit, Fencing & Gates, etc. in Main Plant Area.	20 th Months
	15.	Fire Protection & Detention System (Within Terminal Points between BTG Island-1, BTG Island-2 and BOP Package)	22 nd Months
	16.	Fire Fighting Pipe Pedestal/ Trenches (Within Terminal Points between BTG Island-1, BTG Island-2 and BOP Package)	22 nd Months
	17.	Pipe/ Cable Rack (Within Terminal Points between BTG Island-1, BTG Island-2 and BOP Package)	22 nd Months
	18.	Area Paving (Within Terminal Points between BTG Island-1, BTG Island-2 and BOP Package)	24 th Months
	19.	Completion of Balance Finishing Works and Handing Over (including Demobilization and Area Clearance)	26 th Months
6.3	The above schedule is only tentative. The above schedule shall be advanced, if there are requirements to advance the project schedule and the civil works in the scope of the contractor is to be advanced to meet the project requirement. No extra payment whatsoever shall be paid on this account.		
6.4	In order to meet the above schedule in general, and any other intermediate targets set, to meet customer/ project schedule requirements, Contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL Engineer.		
6.5	The contractor shall submit a detailed area/ structure wise L3 schedule within 15 days from LOA in consultation with BHEL based on tentative schedule of completion as indicated above in table. The major activities as mentioned above in schedule of completion of work are to be indicated in detailed schedule which will be prepared by the contractor. The detailed L3 schedule shall be approved by BHEL and same shall be implemented. Bidder shall submit L3 schedule to meet the agreed project schedule covering various mile stone activities and their split-up details such as construction, procurement of materials, fabrication & erection activities. This schedule shall also clearly indicate the interface facilities/ inputs to be provided by BHEL/ Customer and		

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Chapter – VI: TIME SCHEDULE

	the dates by which such facilities/ inputs are required. The schedule shall be acceptable to BHEL for meeting their mile stone targets/ schedule.		
6.6	The above schedule is tentative and the above completion schedule against each structure/ building is for entire completion and handing over the structure/ Building to BHEL. The foundations, pedestals, floors, and any structure, required for the start of structural erection work/ civil work/ mechanical equipment erection work, shall be handed over to BHEL progressively within the scheduled period given in the above table, as per the BHEL site requirement.		
6.7	Intermediate milestones:		
6.7.1	Two Major Intermediate Milestones are identified as M1 and M2 as below.		
	Milestones	Activity	Schedule of completion from start of work
	M1	Boiler Foundation	6 th Months
	M2	Completion of ESP Control Room	20 th Months
6.7.2	Provision of Penalty in case of slippage of Intermediate Milestones: In case of slippage of Two Major Intermediate Milestones, mentioned as M1 & M2 above, delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to F-14.		
6.7.3	In case of slippage of these identified Intermediate Milestones, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones.		
6.7.4	In case delay in achieving M1 Milestone is solely attributable to the contractor, 0.5% per week of executable contract value*, limited to maximum 2% of executable contract value, will be withheld.		
6.7.5	In case delay in achieving M2 Milestone is solely attributable to the contractor, 0.5% per week of executable contract value*, limited to maximum 3% of executable contract value, will be withheld.		
6.7.6	Amount already withheld, if any against slippage of M1 milestone, shall be released only if there is no delay attributable to contractor in achievement of M2 Milestone.		
6.7.7	Amount required to be withheld on account of slippage of identified intermediate milestone(s) shall be withheld out of respective milestone payment (corresponding RA Bill) and balance amount (if any) shall be withheld @10% of RA Bill amount from subsequent RA bills.		
6.7.8	Final deduction towards LD (if applicable), on account of delay attributable to contractor shall be based on final delay analysis on completion/ closure of contract.		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: TIME SCHEDULE

	Withheld amount, if any due to slippage of identified intermediate milestone(s) shall be adjusted against LD or released as the case may be.
6.7.9	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.
6.7.10	*Executable Contract Value - Value of work for which inputs/ fronts were made available to contractor and were scheduled for execution till the date of achievement of that milestone.
6.7.11	Common activities shall be completed in Phase wise manner/ Instruction of Engineer within the Contractual time.
6.7.12	Above milestone dates has to be completed in parallel.
6.7.13	Bidders are requested to submit Resource deployment plan Area wise with detail program in line with above schedule in the form of Bar Chart/ MS project planer along with their offer.
6.8	COMPLETION OF WORK AND COMMENCEMENT OF GUARANTEE PERIOD
6.8.1	The works shall be completed to the entire satisfaction of the Engineer and in accordance with the completion schedule as specified in the Contract, and all unused stores and materials, tools, plant, equipment, temporary buildings, site office, labor hutments and other things shall be removed and the site and work cleared of rubbish and all waste materials and delivered up clean and tidy to the satisfaction of the Engineer at the Contractor's expenses.
6.8.2	BHEL shall have power to take over from the Contractor from time to time such sections of the work as have been completed to the satisfaction of the Engineer. Such work however shall not be treated as have been completed until the remaining / pending works are executed to the satisfaction of Engineer.
6.8.3	The Engineer shall certify to the contractor the date on which the work is completed and the date thereof for commencement of Guarantee Period. Guarantee Period shall be as given in GCC.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VII: TERMS OF PAYMENT

7.0	TERMS OF PAYMENT:
7.1	Progressive Payment/ Final Payment: The payments for works under the scope of this contract shall be as per clause no 2.6; 2.22; 2.23 of General Conditions of Contract and Volume-IB, Chapter-X of SCC.
7.1.1	<p><u>Documents required for RA Bill:</u></p> <ul style="list-style-type: none"> • GST Complied Invoice of the work done as per approved BBU. • WAM -6 for RA Bill. • Jointly signed Measurement sheet. • Power of Attorney before submission of Bill. • Validity of Bank Guarantees as applicable under the contract. • Royalty challan • HR/IR compliance documents: <ol style="list-style-type: none"> i. Wages payment sheet as per applicable minimum wages. ii. Proof of PF contribution submission. iii. Proof of ESI/ WC contribution submission iv. Proof of Bonus payment as per Bonus Act if applicable. v. Proof of EL payment if applicable. vi. Any other statutory document if applicable.
7.1.2	<p><u>Documents required for Final Bill:</u></p> <p>The final bill is drawn as soon as the entire work is completed. From the final amount due, all amounts already claimed up to the previous running account bill will be deducted. It should be ensured that in the final bill the following additional particulars have been provided:</p> <ul style="list-style-type: none"> • Final Bill in WAM-7 Format. • 'No claim' certificate from the contractor. • Clearance certificates where ever applicable viz. Clearance Certificates from Customer, various Statutory Authorities like Labour department, PF Authorities, Commercial Tax Department, Mining Dept(if applicable), etc. • Final Material re-conciliation statement duly approved by BHEL. • Indemnity Bond as per prescribed format. • Deviation statement showing the difference between the actuals and as per the contract. • Final Delay Analysis.
7.2	SECURED RECOVERABLE ADVANCES:

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VII: TERMS OF PAYMENT

	<p>Interest Free Secured Mobilization Advance as per GCC Clause No. 2.13.1 will be payable under exceptional circumstances on certification of BHEL Construction Manager/Project Director at Site. Interest Free Mobilization Advance shall be disbursed in specifically mentioned stages of major resource mobilization as specified hereunder:</p> <ol style="list-style-type: none"> 1. For Mobilization of Batching plant (01 No.), Excavator (02 Nos.), Dumper (05 Nos.), Transit Mixers (03 Nos.), JCB (01 No.), Boom Placer/Concrete Pump (01 No.), Farana (02 Nos.) & DG Set (01 Nos.) - 2.0% 2. For Mobilization of balance Batching plant (01 No.), balance Excavator (02 Nos.), balance Dumper (05 Nos.), balance Transit Mixers (03 Nos.), balance JCB (01 No.), balance Boom Placer/Concrete Pump (01 No.) & balance Farana (02 Nos.) - 1.5% 3. For Mobilization of Crane (150 MT - 01 No.), Crane (75 MT - 01 No.), Trailer (01 No.), Installation and Erection of Site Infrastructure by contractor i.e. site office & stores. - 1.5% <p>Note:</p> <ol style="list-style-type: none"> 1. BHEL Site-CM/Project Director shall be the deciding authority for assessing the admissibility of advance payment to contractor. 2. In case contractor do not fulfil the agreed conditions of payment of 1st mobilization advance, BHEL Construction Manager will have the authority to not allow the 2nd mobilization advance to contractor.
7.3	<p>In line with TCC Clause No 3.10.1, the following shall be applicable: -</p> <p>Payment of monthly RA bill beyond the period of Three (03) months (i.e. beyond 3rd RA Bill) shall not be released without completion of First 03 (Three) Labour shed/sets.</p> <p>Further, Payment of monthly RA bill beyond the period of Six (06) months (i.e. beyond 6th RA Bill) shall not be released without completion of total 06 (Six) Labour shed/sets of labour hutment.</p> <p>However, in case there is change in above schedule, site at its own discretion may decide to release payment of subsequent RA Bill considering the merit of the case with the approval of BHEL Construction Manager.</p>
7.4	<p>The contractor shall maintain the labour colony for its workmen as per BHEL guidelines. 0.25 % of every RA Bill shall be linked on certification from BHEL for compliance with the guidelines of labour colony.</p> <p>Regular visit of workmen establishment shall be done by team from BHEL to ensure implementation of above guidelines. Any irregularities observed shall have to be rectified by agencies on immediate basis.</p> <p>In case, the report submitted by BHEL team is not satisfactory, necessary actions including recoveries (0.25% of RA Bill value) shall be done as per contract. In addition to the recoveries as per contract (0.25% of RA Bill value), expenses incurred (if any) for maintenance & rectification by BHEL shall be recovered from agency along with 5% overheads.</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

8.0	TAXES & DUTIES
8.1	<p>The contractor shall pay all (save the specific exclusions as enumerated in this clause) taxes, fees, license, charges, deposits, duties, tools, royalty, commissions, other charges, etc. which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes/duties, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.</p> <p>However, provisions regarding GST on output supply (goods/service) and TDS/TCS as per Income Tax Act shall be as per following clauses.</p>
8.2	GST (Goods and Services Tax)
8.2.1	<p>GST as applicable on output supply (goods/services) are excluded from contractor's scope; therefore, contractor's price/rates shall be exclusive of GST. Reimbursement of GST is subject to compliance of following terms and conditions. BHEL shall have the right to deny payment of GST and to recover any loss to BHEL on account of tax, interest, penalty etc. for non-compliance of any of the following condition.</p>
8.2.2	<p>The admissibility of GST, taxes and duties referred in this chapter or elsewhere in the contract shall be limited to direct transactions between BHEL & its Contractor. BHEL shall not consider GST on any transaction other than the direct transaction between BHEL & its Contractor.</p>
8.2.3	<p>Contractor shall obtain prior written consent of BHEL before billing the amount towards such taxes. Where the GST laws permit more than one option or methodology for discharging the liability of tax/levy/duty, BHEL shall have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor.</p>
8.2.4	<p>Contractor has to submit GST registration certificate of the concerned state. Contractor also needs to ensure that the submitted GST registration certificate should be in active status during the entire contract period.</p>
8.2.5	<p>Contractor/Vendor has to issue Invoice/Debit Note/Credit Note indicating HSN/SAC code, Description, Value, Rate, applicable tax and other particulars in compliance with the provisions of relevant GST Act and Rules made thereunder.</p>
8.2.6	<p>Vendor has to submit GST compliant invoice within the due date of invoice as per GST Law. In case of delay, BHEL reserves the right of denial of GST payment if there occurs any hardship to BHEL in claiming the input thereof. In case of goods, vendor has to provide scan copy of invoice & GR/LR/RR to BHEL before movement of goods starts to enable BHEL to meet its GST related compliances. Special care should be taken in case of month end transactions.</p>
8.2.7	<p>Vendor has to ensure that invoice in respect of such services which have been provided/completed on or before end of the month should not bear the date later than last working day of the month in which services are performed.</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

8.2.8	<p>Subject to other provisions of the contract, GST amount claimed in the invoice shall be released on fulfilment of all the following conditions by the Contractor: -</p> <ol style="list-style-type: none"> a. Supply of goods and/or services have been received by BHEL. b. Original Tax Invoice has been submitted to BHEL. c. Contractor/ Vendor has submitted all the documents required for processing of bill as per contract/ purchase order/ work order. d. In cases where e-invoicing provision is applicable, vendor/contractor is required to submit invoice in compliance with e-invoicing provisions of GST Act and Rules made thereunder. e. Contractor has filed all the relevant GST return (e.g. GSTR-1, GSTR-3B, etc.) pertaining to the invoice submitted and submit the proof of such return along with immediate subsequent invoice. In case of final invoice/ bill, contractor has to submit proof of such return within fifteen days from the due date of relevant return. f. Respective invoice has appeared in BHEL's GSTR - 2A for the month corresponding to the month of invoice and in GSTR-2B of the month in which such invoices has been reported by the contractor along with status of ITC availability as "YES" in GSTR-2B. Alternatively, BG of appropriate value may be furnished which shall be valid at least one month beyond the due date of confirmation of relevant payment of GST on GSTN portal or sufficient security is available to adjust the financial impact in case of any default by the contractor. g. Contractor has to submit an undertaking confirming the payment of all due GST in respect of invoices pertaining to BHEL.
8.2.9	Any financial loss arises to BHEL on account of failure or delay in submission of any document as per contract/purchase order/work order at the time of submission of Tax invoice to BHEL, shall be deducted from contractor's bill or otherwise as deemed fit.
8.2.10	TDS as applicable under GST law shall be deducted from contractor's bill.
8.2.11	Contractor shall comply with the provisions of e-way bill wherever applicable. Further wherever provisions of GST Act permits, all the e-way bills, road permits etc. required for transportation of goods needs to be arranged by the contractor.
8.2.12	Contractor shall be solely responsible for discharging his GST liability according to the provisions of GST Law and BHEL will not entertain any claim of GST/interest/penalty or any other liability on account of failure of contractor in complying the provisions of GST Law or discharging the GST liability in a manner laid down thereunder.
8.2.13	In case declaration of any invoice is delayed by the vendor in his GST return or any invoice is subsequently amended/alterd/deleted on GSTN portal which results in any adverse financial implication on BHEL, the financial impact thereof including interest/penalty shall be recovered from the Contactor's due payment.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

8.2.14	Any denial of input credit to BHEL or arising of any tax liability on BHEL due to non-compliance of GST Law by the Contractor in any manner, will be recovered along with liability on account of interest and penalty (if any) from the payments due to the Contactor.
8.2.15	In the event of any ambiguity in GST law with respect to availability of input credit of GST charged on the invoice raised by the contractor or with respect to any other matter having impact on BHEL, BHEL's decision shall be final and binding on the contractor.
8.2.16	<p><u>Variation in Taxes & Duties:</u></p> <p>Any upward variation in GST shall be considered for reimbursement provided supply of goods and services are made within schedule date stipulated in the contract or approved extended schedule for the reason solely attributable to BHEL. However downward variation shall be subject to adjustment as per actual GST applicability.</p> <p>In case the Government imposes any new levy/tax on the output service/goods after price bid opening, the same shall be reimbursed by BHEL at actual. The reimbursement under this clause is restricted to the direct transaction between BHEL and its contactor only and within the contractual delivery period only.</p> <p>In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer but before opening of the price Bid, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of price bid. Claim for any such impact after opening the price bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.</p>
8.3	<p><u>Income Tax:</u></p> <p>TDS/TCS as applicable under Income Tax Act, 1961 or rules made thereunder shall be deducted/collected from contractor's bill.</p>

8.4 BOCW Act & Cess Act

8.4.1 BOCW Cess is not to be borne by contractor. Refer Annexure-I for BOCW Act & Cess Act.

Annexure-I:	
Bidder may please note that the sub-contractor/bidder of BHEL engaging building or construction worker in connection with building or other construction work, are required to follow the procedures enumerated below:	
1.	It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.
2.	It shall be sole responsibility of the contractor engaging Building Workers in connection with the building or other construction works in the capacity of employer to apply and obtain registration certificate specifying the scope of work under the relevant provisions of the Building and Other

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Chapter – VIII: TAXES AND DUTIES

	Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 from the appropriate Authorities.
3.	It shall be responsibility of the contractor to furnish a copy of such Registration Certificate within a period of one month from the date of commencement of Work.
4.	It is responsibility of the contractor to register under the Building and other Construction Workers' Welfare Cess Act, 1996 and deposit the required Cess for the purposes of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 at such rate as the Central Government may, by notification in the Official Gazette, from time to time specify. However, before registering and deposit of Cess under the Building and other Construction Workers' Welfare Cess Act, 1996, the contractor will seek written prior approval from the Construction Manager.
5.	It shall be sole responsibility of the contractor as employer to get registered every Building Worker, who is between the age of 18 to 60 years of age and who has been engaged in any building or other construction work for not less than ninety days during the preceding twelve months as Beneficiary under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996.
6.	It shall be sole responsibility of the contractor as employer to maintain all the registers, records, notices and submit returns under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.
7.	It shall be sole responsibility of the contractor as employer to provide notice of poisoning or occupation notifiable diseases, to report of accident and dangerous occurrences to the concerned authorities under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the rules made thereunder and to make payment of all statutory payments & compensation under the Employees' Compensation Act, 1923.
8.	<p>It shall be the responsibility of the sub-contractor as employer to make payment/deposit of applicable cess amount on the extent of work involving building or construction workers engaged by the sub-contractor within a period of one month from the receipt of payment. It shall also be responsibility of the Contractor to furnish BHEL on monthly basis, Receipts/ Challans towards Deposit of the Cess under the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder along with following statistics:</p> <ul style="list-style-type: none"> i) Number of Building Workers employed during preceding one month. ii) Number of Building workers registered as Beneficiary during preceding one month. iii) Disbursement of Wages made to the Building Workers for preceding wage month. iv) Remittance of Contribution of Beneficiaries made during the preceding month

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

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Chapter-IX: MATERIALS

9.0	MATERIAL
9.1.	<p>Following Material shall be issued by BHEL (Free of Cost) unless otherwise specified in BOQ cum Rate Schedule:</p> <ol style="list-style-type: none"> Cement Reinforcement Steel (TMT) and MS Round Bar (Earthing Rod) Structural Steel <p>(Note: All material required for the development of Labour sheds shall be in the scope of the bidder)</p>
9.2.	All other materials required for proper completion of job shall be provided by the contractor and is deemed to be inclusive in the quoted price. Contractor's scope also includes following:
9.2.1.	<p>ACCEPTANCE CRITERIA FOR SUB VENDORS FOR ALL CIVIL ITEMS (Except for Cement, Reinforcement steel, Structural Steel materials)</p> <ol style="list-style-type: none"> It should confirm to relevant Indian/international Standards. It should be of reputed makes supplied to similar construction/ infrastructure projects. The Contractor should furnish documentary evidence to prove (a) and (b) above. For make / sub vendor for specific civil items, BHEL / Customer's approval shall be final and binding on contractor.
9.2.2.	Furnishing samples of all materials required by the BHEL Engineer for testing/ inspection and approval for use in the works. The samples may be retained by the Engineer for final incorporation in the works.
9.2.3.	Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the BHEL engineer.
9.2.4.	Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
9.2.5.	Contractor shall set up suitable storage facilities for Cement, sand, bolts, aggregate, reinforcement steel, structural steel, foundation bolts, shuttering item, inserts, water proofing material, admixture other BOI's etc. and all are stored properly as per IS recommendation/ technical specifications/ manufacturer recommendation. Wastage due to inadequate storage facilities will be on account of contractor and same shall be replaced by contractor at their own risk & cost without affecting the time schedule for completion of works.
9.2.6.	BHEL free supplies shall be provided only for incorporation in the permanent works of the project.

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9.2.7.	<p>Embedments/ inserts required for the works in general shall be supplied by the contractor and payment shall be made as per corresponding item in BOQ.</p> <p>If BHEL provides Structural Steel for embedments/ inserts from scraps (if available), payment shall be made as per corresponding item in BOQ. Contractor shall use the scrap materials for embedment/inserts etc. after necessary store issue formalities and shall be accounted for in monthly reconciliation. If BHEL provides fabricated embedments/ inserts as supplied by BHEL manufacturing units, payment for fixing of those shall be made as per corresponding item in BOQ.</p>
9.2.8.	<p>In general, the steel will be issued to the agency in standard lengths. In any instance of supply of non-standard lengths of steel or supply of 8mm, 10mm & 12mm dia. Reinforcement steel in coil form, no extra claims will be entertained against any such issues of Non-standard lengths of steel and de coiling of 8mm, 10mm & 12mm dia. Steel.</p> <p>Areas of work requiring cut to length steel in order to minimize scrap generation and wastage, has to be specifically identified in consultation with BHEL site engineer and contractor shall furnish the requirement to BHEL well in advance of such requirement.</p>
9.2.9.	<p>If any matching sections of steel are not available with BHEL, contractor may arrange these sections from Customer approved suppliers and the landing cost of these sections at site will be reimbursed based on production of supporting documents like Tax invoice, MTC, etc. and any other billing documents as required by BHEL.</p> <p>This Clause shall be operated if required, at the discretion of BHEL.</p>
9.3.	<p>HANDLING OF MATERIAL ISSUED BY BHEL:</p> <p>Refer Chapter-VI “Material Handling, Storage & Preservation” of SCC</p>
9.3.1.	<p>Cement and Steel required for the tender scope shall be procured by BHEL and issued to contractor free of cost as FOC item. However, unloading, handling/ storage of Cement and Reinforcement steel procured by BHEL for this tender scope at site, Contractor’s Stores, issuance of materials from BHEL Stores and further transportation from Stores to work area (including loading and unloading) will be in the scope of contractor. No Extra payment shall be made for this work.</p>
9.3.2.	<p>The contractor shall take care of material issued by BHEL and shall protect the same from damage and weathering.</p> <p>a.) The cement shall be provided normally in bulkers and shall be unloaded in the silos to be installed by the contractor nearer to their batching plants. In cement supplies in bags, Contractor shall construct waterproof cement store for storing and stacking of cement issued by BHEL. 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.</p> <p>b.) All TMT shall be stacked diameter wise over sleepers</p>

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	Clotting of cement and excessive rusting of steel must be avoided. In case, due to lack of preservation on the part of contractor, rusting of steel (issued by BHEL)/ clotting of cement (issued by BHEL) takes place rendering the same unusable, then cost of such quantity of steel/ cement shall be recovered from the interim payment at the penal rate specified in the tender.
9.3.3.	The contractor shall maintain proper store account for all the BHEL issued materials and shall give Three (03) copies of monthly-computerized reconciliation statement of such account showing total receipt, consumption and balance at site to the BHEL. BHEL Engineer's certification for the reconciliation of steel shall be final. Contractor shall also maintain Cement register and other free issue item register and update on daily basis and share with BHEL.
9.3.4.	The contractor shall in no case be entitled for any compensation on account of any delay in supply or non-supply thereof for all or any such materials. However, in case of non-availability of any specific material / section(s) which delays the completion of work, such cases shall be recorded separately in monthly planning format (F14) and shall be considered for time extension of contract.
9.3.5.	Contractor will have to make his own arrangement at his own cost for procurement of any other materials except as mentioned above, as required for the works and of such quality as acceptable to BHEL.
9.3.6.	Contractor shall also carryout in complete association with BHEL, the material management functions and execution like day-to-day update of materials, issued to contractor, accounting for surplus/scrap material returned etc. These functions shall also be carried out through computerized system utilizing suitable software. Contractor shall engage experienced software personnel to associate on dedicated basis for efficient discharge of the same in time.
9.3.7.	The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL.
9.3.8.	BHEL reserves the right to recover from the contractor any loss of material issued by BHEL arising out of damage/ theft or any other causes during verification/stacking or at any time under the custody of the contractor.
9.3.9.	BHEL issued materials, shall not be under any circumstances whatsoever, and shall be taken out of the project site unless otherwise permitted by BHEL for outside job.
9.4.	ISSUE OF CEMENT
9.4.1.	The cement issued by the BHEL shall be properly accounted (issue and reconciliation). Cement as received from the manufacturer/ stockiest will be issued free of cost to the contractor.

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9.4.2.	The cement shall be provided normally in bulkers and shall be unloaded in the silos to be installed by the contractor nearer to their batching plants. Silos Capacities shall be finalized mutually. Cement unloading arrangements to silo or stores, in case of cement bags and necessary assistance & manpower support shall be provided by the contractor at his own cost.
9.4.3.	On advance request of the contractor, the cement shall be supplied in 50kg tamper proof sealed Bags for other than RCC works like masonry, flooring works, etc. The theoretical weight of each bag of cement for issued purposes will be considered as 50kg, the contractor shall be accountable for the cement issued to the contractor on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement.
9.4.4.	The empty cement bags duly accounted for against issue shall be the contractor's property and the same shall be disposed as per statutory regulation prevailing in the project.
9.4.5.	The contractor shall satisfy himself of the quality and quantity of supplied cement at the time of taking delivery from BHEL stores. No claims whatsoever will be entertained by BHEL because of quality or quantity after the materials are taken by the contractor from BHEL stores.
9.4.6.	Contractor will be responsible for sampling and testing of cement as per Indian Standard/ Specification/ approved quality plan in the testing laboratory established by the contractor.
9.4.7.	Contractor will be responsible for unloading the cement as soon as the storage of cement in the weather proof cement storage sheds/ Silo's having dense impervious bituminous or concrete floors which shall be kept swept clean at all times. The storage arrangements shall be fully completed and approved by the owner before any cement is delivered to site. The construction of cement storage sheds as per the requirement of BHEL, unloading of cement bags, stacking properly in the storage sheds, removal of the sheds after the completion of the work are in the scope of contractor. Though the cement is unloaded directly at the contractor storage shed, it will be deemed to be considered that the cement was issued from BHEL stores. Necessary documents are to be submitted by the contractor to the BHEL stores for having received cement.
9.4.8.	No cement will be issued on free basis for bought out item like Hume pipe, Interlocking Paver block, Fly ash brick etc. However, cement for mortar for fixing of these items if required will be issued on free basis.
9.4.9.	The contractor shall submit to the engineer, a statement indicating estimated quantity of cement required during a quarter, at least two months in advance of the quarter. In addition, the contractor shall also furnish the estimated requirement of cement during a month by the third week of the previous month indicating his requirement.

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9.4.10.	One month shall be the limit for the maximum quantity of BHEL issued cement that would be with the contractor at any point of time when work is in progress (excluding what has already been incorporated in the works).		
9.5.	Issue of Steel Refer Chapter-VI “Material Handling, Storage & Preservation” of SCC		
9.6.	Return of Cement and Steel Refer Chapter-VI “Material Handling, Storage & Preservation” of SCC		
9.7.	Consumption and Wastage of Cement and Steel Refer Chapter-VI “Material Handling, Storage & Preservation” of SCC		
9.8.	Scrap & Serviceable Materials Refer Chapter-VI “Material Handling, Storage & Preservation” of SCC		
9.9.	Reconciliation of Materials Refer Chapter-VI “Material Handling, Storage & Preservation” of SCC		
9.10.	Recovery of Materials (Penal Rates): If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA Bills as per following penal rates (excluding GST):		
9.10.1.	Sl. No.	Materials	Penal Rate (Rs.)
	1	Cement (PPC)	5,500/- per MT
	2	Cement (OPC)	6,500/- per MT
	3	Reinforcement Steel / Earthing Rod	60,000/- per MT
	4	Structural Steel (Plates, Rolled Sections etc.)	70,000/- per MT
	5	Anchor / Foundation Bolts	1,00,000/- pet MT
9.10.2.	Penal Rate will be 1.05 times the actual cost to BHEL or Rate mentioned in above Table, whichever is higher, shall be imposed.		

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Chapter-X: BILL OF QUANTITIES AND % WEIGHTAGE OF INDIVIDUAL ITEMS

10.0	BILL OF QUANTITIES AND % WEIGHTAGE OF INDIVIDUAL ITEMS	
10.1.	This Chapter consists of Part A & Part B of Volume II “Price bid”:	
	<u>CONTENTS</u>	
	Description	Remarks
	PART A: Instructions to the Bidders	Instructions
	PART B: % weightage for amount of individual items of Schedule of quantity	BOQ Cum Rate Schedule
	PART C: Total Price for entire scope of Work	This part is implanted in the E-Procurement portal entitled as “Part-C of Vol-II Price Bid”.

<u>Part A:</u>	<u>Instructions to the Bidders</u>
1.	<u>Bidders shall quote Total Price (Except for BOQ ST No. A1.1 & A1.2) for the entire scope of work in Rupees in VOL II PRICE BID at BHEL E-procurement Portal.</u> Any other entry elsewhere in the offer of the bidder shall be treated as Null and Void. The total value shall be automatically calculated on E-portal.
2.	a) Payment of Rs. 50,00,000/- per shed , a total amount of Rs. 3,00,00,000/- (Rs. Six Crores Only) for 06 (Six) Labour Sheds as per BOQ ST No. A1.1 towards construction/development of labor colony shall be paid by BHEL. b) Payment of Rs. 24,000/- per acre per month , a total amount of Rs 15,60,000/- for 65 acre-month (~2.5 acres x 26 months) as per BOQ ST No. A1.2 towards lease of land shall be paid by BHEL. c) Bidder shall quote the total price in “Price Bid” excluding this fixed amount.
3.	BHEL has fixed the weightages as in “Part-B” for the amount of individual items of BOQ Cum Rate Schedule w.r.t. the total price of Price Bid Vol-II.
4.	Based on the pre-fixed weightages, amount of individual items shall be derived by BHEL. This amount shall not be rounded off.
5.	Based on the quantities of individual item and the amount arrived in Sl. No. 4 above, item rate of individual items shall be derived by BHEL. This item rate shall be rounded off up to three decimal places and shall be used to calculate the total amount of an item.
6.	Bidders to note that this is an <u>‘Item rate contract’</u> . Payment shall be made for the actual quantities of work executed at the Unit rate arrived at as per serial no. 5 above.

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Chapter-X: BILL OF QUANTITIES AND % WEIGHTAGE OF INDIVIDUAL ITEMS

<u>PART B:</u>	Weightage for amount of individual items of BOQ CUM RATE SCHEDULE w.r.t. the total price (as quoted by the bidder in “Part C of Vol-II-Price Bid”)- attached separately.
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TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-XI: TECHNICAL SPECIFICATIONS AND DRAWINGS

11.0	<p>TECHNICAL SPECIFICATIONS AND DRAWINGS</p> <p>Following Technical Specifications shall be integral parts of this tender (attached separately):</p> <ul style="list-style-type: none">• SECTION-C: Customer contract specific technical requirements• SECTION-D: General Technical Specifications• Drawing - Plot Plan• Typical layout of Medical Center• HSE plan• Approved BOI Vendor List <p>NOTES:</p> <ul style="list-style-type: none">• Contractor has to make him well conversant with the Customer and BHEL's Technical Specification. In case of ambiguity between BHEL and customer specification, customer specification shall prevail.• Above documents have been uploaded Separately.
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Chapter-XII: ANNEXURES

12.0	<p>Following Annexures shall be integral parts of this tender (attached separately):</p> <ul style="list-style-type: none">• Annexure-A: Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites• Annexure-B: Details of medical equipment, instrument & furniture required for 'medical center' <p>NOTES:</p> <ul style="list-style-type: none">• Contractor has to make him well conversant with the Customer and BHEL's Technical Specification. In case of ambiguity between BHEL and customer specification, customer specification shall prevail.• Above documents have been uploaded Separately.
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