

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CIVIL STRUCTURAL & ARCHITECTURAL WORKS OF BOP PACKAGE AND SWITCHYARD - AREAS/BUILDINGS/FACILITIES WHICH INCLUDES CW Pump House including Forebay, Channel & Concrete Volute Pump, ACW Pump House, Laying of CW Pipeline, Permanent Store, Gate Complex, Watch Tower, Gas Cylinder Storage Area/Shed, Hydrogen Plant Building, Fuel Oil System, Fire Detection & Protection System, Pipe/ Cable Rack, PCRI Chemical Lab, Fire Fighting Pipe Pedestals/ Trenches (Outside Main Power Block Island), Area Paving, Shed for Construction Workers and O&M Workers with cooler & Bio-toilet, Rain Water Harvesting system, Solar PV Plant on Roof Top of Building/ Facilities, Parking sheds, Roads & Drains, Plant Boundary Wall, Switchyard works including earthing works and misc. foundations, paving, sumps, pedestals etc. for both Units at **2 x 660 MW CSPGCL KORBA WEST TPP (CHHATISGARH, INDIA)**



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Chapter - I: PROJECT INFORMATION

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Chapter - I: PROJECT INFORMATION

1.0	PROJECT INFORMATION	
1.1	INTRODUCTION AND CLIMATIC CONDITION	
Sl. No.	Description	Details
1	Project Title	2X660MW Super Critical Thermal Power Project, HTPS, Korba West
2	Customer	Chhattisgarh State Power Generation Company Limited (CSPGCL)
3	Location	The project is located at Korba Village in Korba District of Chhattisgarh. The Site is located at latitudes of 22°24'38.5" N and longitudes of 82°41'39" E, respectively.
4	Nearest Airport	The nearest commercial airport, Raipur is about 214 Km from the project site.
5	Nearest Railway Station	Korba railway station, located on Gevra Road – Champa section under Bilaspur railway division of South-East Central Railway zone.
6	Access by Road/Major Cities	The project site is approximately 10 Km from Korba, 45 Kms from Champa and 125 Kms from Bilaspur city and is approachable via State Highway No. 39 from Raipur and Bilaspur.
7	Temperature	The annual daily max temperature is 42.8 °C and annual daily minimum temperature is 4.8 °C
8	Seismic Zone	As per attached Annexure-E of Customer Specification
9	Wind Speed	44m/s

1.0	INSTRUCTIONS TO BIDDERS
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,

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	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:	
	Name:	Mr. Rajesh Rav
	Designation:	DGM/Civil
	Location:	Korba Project Site
	Email:	rajeshrav@bhel.in
	Ph no:	9977003649
	Name:	Mr. Pratish Gee Varghese
	Designation:	Sr. Manager/Projects
	Location:	PSWR, Nagpur
	Email:	pgv@bhel.in
	Ph no:	9730644485

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2.0	Scope of Works:
2.1	<p>CIVIL STRUCTURAL & ARCHITECTURAL WORKS OF BOP PACKAGE AND SWITCHYARD - AREAS/BUILDINGS/FACILITIES WHICH INCLUDES CW Pump House including Forebay, Channel & Concrete Volute Pump, ACW Pump House, Laying of CW Pipeline, Permanent Store, Gate Complex, Watch Tower, Gas Cylinder Storage Area/Shed, Hydrogen Plant Building, Fuel Oil System, Fire Detection & Protection System, Pipe/ Cable Rack, PCRI Chemical Lab, Fire Fighting Pipe Pedestals/ Trenches (Outside Main Power Block Island), Area Paving, Shed for Construction Workers and O&M Workers with cooler & Bio-toilet, Rain Water Harvesting system, Solar PV Plant on Roof Top of Building/ Facilities, Parking sheds, Roads & Drains, Plant Boundary Wall, Switchyard works including earthing works and misc. foundations, paving, sumps, pedestals etc. for both units at 2 x 660 MW CSPGCL KORBA WEST TPP (CHHATISGARH, INDIA)</p> <p>(EXCLUDING SUPPLY OF CEMENT, REINFORCEMENT STEEL AND STRUCTURAL STEEL WHICH SHALL BE ISSUED BY BHEL FREE OF COST.)</p>
2.2	The brief scope of work is as follows:
2.2.1	<p>The scope of BOP Package is civil, structural & architectural works for the following areas/facilities (Buildings are common for both the Units):</p> <ol style="list-style-type: none"> 1. CW Pump House including Forebay, Channel & Concrete Volute Pump and transition zone. 2. CW Duct/Pipeline (Outside BTG Area) 3. ACW Pump House 4. O &M/ Permanent store 5. Gate Complex 6. Watch Tower 7. Gas cylinder storage shed/Area 8. Hydrogen Plant Building 9. Fuel oil system, Pump House 10. Shed for Construction workers and O&M worker in BOP Area. 11. PCRI Lab. 12. Pipe and cable supporting structures and foundations in BOP area 13. Miscellaneous Switchgear/MCC and Control Rooms in BOP Area. 14. Parking Sheds 15. Rain water harvesting Pond. 16. Rooftop Solar System foundation for buildings inside BOP Area. 17. Civil works for Outdoor transformer foundations, fire barrier wall, sump, pit, oil retention pit, fencing, Gates, etc. in BOP area. 18. Sewage Collection Sumps, Sewage network of BOP area. 19. Trenches, culverts, duct banks, pedestals, Hume pipe & culverts, buried pipes, encasing of piping, culverts across rail/road tracks for pipes/ drains/ cables and any other facility and thrust blocks, rain water harvesting facilities etc. as well as other building/facilities of PEM Engineering scope inside BOP area. 20. Area Paving in BOP area as mentioned elsewhere in specification. 21. Site levelling & grading work in BOP area. 22. Road and drain in BOP area. 23. Switchyard Consists of; <ol style="list-style-type: none"> a. Towers Foundation. b. Auxiliary Equipment Foundation. c. Building Extension Works/AC Kiosk including indoor cable trenches etc.

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	<ul style="list-style-type: none"> d. Transformer & Reactor Foundations including associated miscellaneous foundations, soak pit, oil collection pits, rail-cum-road, fire wall, etc. e. Cable Trench Works including sump-pit & precast cover works, etc. f. Road Works, Culvert/ Pipe Crossing/ Cable Trestle works for cable Trench, Drainage Works & Rain Water Harvesting Works. g. Dismantling activities of Fence/ Pole/ PCC/ Rail Track/ Bitumen Road/ Underground Earthing Rod, etc. as per site requirement. h. Antiweed and Gravelling works i. Removal and Re-spreading of Existing Gravel j. Switchyard Fence k. Connection of New Scope Trench/ Drain/ Building, etc. to Existing Trench/ Drain/ Building etc. l. Any other work required not mentioned above but required for completion of Switchyard Civil Work. <p>24. Repair of road after completion of construction at the time of handover.</p> <p>25. Any other buildings/structures (of PEM Engineering scope) if required as per system requirement.</p> <p>BOP area is defined as outside the* Main power block (but excluding water package island & FGD system).</p> <p>(*Main power block is the entire area enclosed between peripheral roads encompassing the Transformer yard area, Main Plant Building area, Service building area, Boiler area, ESP Area, Chimney Area & FGD area.)</p>
2.2.2	<p>Site Fabrication & Erection of structure: -</p> <ul style="list-style-type: none"> 1. CW PH 2. FOPH 3. Shed for Construction workers and O&M worker in BOP Area. (RCC + Roof Truss) 4. Pipe & cable rack in BOP area and water package island area. 5. O&M/Permanent Store 6. Parking Shed 7. Gas Cylinder Shed 8. Any other buildings/structures (if required) as per system requirement.
2.2.3	<p>Scope of Civil, Structural & Architectural FPS (Fire Protection Systems) works of following: -</p> <ul style="list-style-type: none"> 1. Fire Detection & Protection System 2. Fire Fighting Pipe Pedestals/ Trenches (Outside Main Power Block Island) 3. Any other buildings/structures (if required) as per system completion requirement.
2.3	<p>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.</p>
2.4	<p>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.</p>
2.5	<p>General:</p>
2.5.1	<p>Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.</p>

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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.
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, transit and storage insurance 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	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. LED flood lights and mobile tower lights shall be installed for proper illumination at night to ensure safe and serious working.
2.5.6	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. Planning and RFC Drawings shall be issued progressively as per site requirement. Agency has to plan and execute the works in close co-ordination with BHEL EIC. Agency shall deploy experienced engineer/agency for evaluation of BOM from the drawings for further review/approval by BHEL Engg. /EIC time to time well in prior of starting a new work area at site
2.5.7	<p>The area of work shall be cleared of all vegetation, rubbish and other objectionable matter and materials. No separate payment for these operations shall be made for such works.</p> <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>
2.5.8	The Customer may depute their representative for checking and supervision of important stages of work based on Field Quality Plan. 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.
2.5.9	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.
2.5.10	<p><u>Royalty & other fees:</u></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</p>

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	<p>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> <p>In the event of there being a statutory increase in the rates of royalty charges/fresh levy of royalty on materials, the same shall be reimbursed to the Contractor upon submission of original challan by him of having made the payments at revised rates. In the event of there being a decrease in such rates, the same shall be recovered from the Contractor. The base date for calculating the increase or decrease shall be the rate as on seven (7) days prior to the date of Techno-commercial (Envelope-I) bid opening. The total reimbursement (positive or negative) as specified above, to be paid or recovered, shall however be calculated on the quantity of materials actually accepted for payment), whichever is less, and on the basis of documentary evidence of Govt. Notification. However, the Contractor will settle claims, if any, on account of over charge by the State Authorities.</p>
2.5.11	<p>Carrying out topographic survey of the entire and establish levels and coordinates at suitable intervals from existing grid levels and coordinates furnished by the owner established bench marks, setting out the locations and levels of proposed structures, constructions and marking of reference pillars and other identification works etc., The contractor shall provide the owner/BHEL such a assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used.</p> <p>It is the responsibility of the contractor to deploy experienced surveyors well acquainted with latest versions of auto-cad for correct plotting and representation of line, levels, contours and co-ordinates, auto-cad drawings for civil works. The contractor shall take all precautions to maintain same levels of all civil structures in both units including Power House with respect to the Bench Mark Pillars (installed by BHEL).</p> <p>For works on emergency basis/ special assignments as per project requirement under the instruction of BHEL EIC, the agency shall deploy the surveyor with no extra cost to BHEL.</p>
2.5.12	<p>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.</p>
2.5.13	<p>Medical/First aid center/medicine purchased for emergency/Doctor purpose 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 vendors working in Project site proportionately based on contract value.</p>
2.5.14	<p>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.</p>
2.5.15	<p>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</p>

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	not described in the item description and no extra payment shall be made against such activity.
2.5.16	Documentation and Reporting: The Contractor shall maintain accurate records of material supplies, including delivery challans, invoices, and stock registers. These records shall be submitted periodically for verification and reconciliation by the BHEL
2.5.17	Quantity Assessment of Supply Items: - 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. 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.
2.5.18	Reconciliation of Supply: 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.
2.5.19	The contractor has to intimate, share atleast two months in advance regarding any quantity variation in BOQ items for review by BHEL.
2.6	Tentative Technical Staff Requirement:
2.6.1	<u>A – Civil Works</u> <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 – 02 Heads with minimum 12 Years' Industrial Construction Projects Preferably in Power Plant Civil & Architectural Works etc. • Experienced Civil Engineers – 10 heads • Experienced Foreman / Supervisors – 16 heads • Planning & Billing Engineers – 04 head (1 experienced head with 3 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 head • Accounts & Administration – 02 head • Quality Control Engineer of minimum 5 years of experience – 04 head (1 no with 8-10 years and & 03 heads (2nos civil and one no. structural) with min 5 years of experience) • Safety Engineer – As per HSE Plan

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- Surveyor – 02 head capable to handle total station
- Operator, Licensed Electrician, Mechanic - Minimum 4 Nos
- Security Guards (Round the Clock) – As per requirement.

B – Fabrication & Erection of Site Fabricated Structure works:

- **Asst. Project Managers** – 01 Heads with 12 Years' experience in Industrial Building & Power Plant Civil / Structural Works
- Experienced Civil/Structural Engineers – 04 heads
- Experienced Foreman / Supervisors – 10 heads
- Safety Engineer – As per HSE Plan

C – Tentative Breakup of Manpower Requirement for Civil & Structural Works:

Experienced Carpenters, Painter & Helpers	Approx. 150 nos.
Experienced Mason, Bar Benders & Helpers	Approx. 150 nos.
Experienced Erection Manpower including Fabricator, Rigger, Fitter & Helpers.	Approx. 75 nos.
Other manpower like Painters, Supervisors, Operators, Helpers, etc.	Approx. 75 nos.
Total	Approx. 450 nos.

Note:-

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.

2.6.2	Deputation of above man-power shall be jointly decided at site in line with construction Schedule. In case of any dispute, the decision of BHEL shall be final binding on you.
2.6.3	Engineer/ supervisor for other functions like store & purchase, material management, finance, administration etc. are to be provided as per site requirement and not considered in above list.
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.

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	The contractor shall not transfer/shift areas for the deployed staff without prior permission of BHEL.
2.7	Computer Infrastructure & Operator/Support Staff for exclusive use of BHEL:
2.7.1	<p><u>Laptop/Computer and Printer for exclusive use of BHEL:</u></p> <p>The bidder will have to provide Two (02) No. of Laptops/Computer (X-86 Architecture Based, 64-Bit Supported, minimum intel core i-7 or equivalent CPU, On-board Graphics feature, Minimum 16 GB DDR4 RAM (or higher) upgradeable to 32 GB, minimum 512 GB SSD M.2 Hard Drive or higher, minimum 14" high definition anti-glare LED back lit Screen, OEM USB Optical Travel Mouse, Integrated High definition audio with integrated speakers and volume control (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, 1 x HDMI Port. 1 x RJ – 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 64 bit latest service pack, OEM carry bag to be supplied with OS Certification from Microsoft and required software like latest MS Office Professional, latest AutoCAD, latest ADOBE PDF CREATOR with two (2 nos.) laser jet printer compatible for A4 and A3 size printing with power backup at places out of which 2 nos shall be color printers, as per instruction of BHEL.</p>
2.7.2	<p>These laptops/ 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. The computer/printer shall remain at BHEL offices during the contract period/ extended period (if any).</p> <p>If case successful bidder fails to provide computer/ 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.</p>
2.8	Field Quality Assurance:
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><u>Setting Up of Laboratory Works:</u></p> <p>BHEL shall set up centralised civil quality laboratory within 06 (six) months 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. The civil lab building and the testing equipment shall be excluded from the contractor's scope.</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>

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	<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> <p>However, till such time the centralized civil quality laboratory is set up and made operational by BHEL, the contractor shall make necessary arrangements to carry out required testing either in their own facility or through third-party laboratory, in consultation with and to the satisfaction of BHEL, without any extra cost.</p>
2.8.4	<p>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.</p>
2.8.5	<p>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.</p>
2.8.6	<p>The following specifications of PCE-type high performance super plasticizer shall be used for concrete works as per BOQ item.</p>
2.8.6.1	<p>High performance super plasticizer PCE-based water reducing admixture of Type-G/F as per ASTM C-494 of approved make FOSROC/STP/SIKA/BASF or Equivalent having minimum water reduction capability of 30%.</p> <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.
2.8.7	<p>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. (Note: -Contractor may make alternative arrangement for temperature control of fresh concrete.)</p>
2.9	<p>Erection Clause:</p>

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2.9.1	The work to be carried out at quoted / accepted rates by the Contractor under the scope of these specifications covers the complete work of handling, loading and transporting of materials from project stores sheds / storage yards to site of erection or preassembly yard and unloading at pre-assembly area/erection site, checking, cleaning chipping and levelling of foundations, providing packers and shims/pre-assembling of equipment at the preassembly yard, inspection, minor rectification, preservation, erection, levelling, and other adjustments, cutting, edge / surface preparation, welding, fixing, grinding, wherever needed (as and where required). Payment for application of Primer & Paint, including its supply, for touch-up works in shop fabricated structure shall be paid separately as per BOQ.
2.9.2	<p>The works to be performed under this contract consist of providing all labour, supervision, material, scaffolding, construction equipment's, tools and plants, temporary works, supplies including Consumables, transportation and all incidental items not shown or specified but reasonably implied or necessary for the proper completion of work in all respects. Testing of all materials etc. are included on the rates of items of work. Works shall be carried out only with approved structural erection drawings.</p> <p>The unit rates shall include all resources, consumables, equipment, fixtures, labour, construction plant, temporary works and everything whether of permanent or temporary nature necessary for the completion of job in all respects.</p>
2.9.3	The bidder should fully apprise himself of the prevailing conditions at the proposed site, climatic conditions including monsoon pattern, local conditions, soil strata and site-specific parameters and shall include for all such conditions and contingent measures in the bid, including those which may have not been specifically brought out in the specifications.
2.9.4	The quantities indicated in the tender specification are approximate and are liable for variation at the discretion of BHEL. The work executed shall be measured and priced as per the unit rate arrived at for each work area as mentioned in the relevant clauses.
2.9.5	Supervisors / Engineers, consumables etc., required for the scope of work shall be provided by the contractor. All the expenditure including taxes and incidentals in this connection will have to be borne by agency unless otherwise specified in the relevant clause. The contractor's quoted rates should be inclusive of all such contingencies.
2.9.6	<p>It shall be specially noted that, the contractor may have to work round the clock (24x7) or may have to deploy additional manpower/resources to achieve the completion schedules / plans / targets during the entire course of erection and commissioning works, which may involve considerable expenses including overtime. Hence contractor's quoted rate shall take into consideration of all expenses that will be incurred for such arrangement of personnel including labours, engineers / supervisors, T&Ps etc.</p> <p>Time is the essence of contract. Night shift working is envisaged for works not hazardous in nature with due permission of BHEL like- Erection works at low heights, Material shifting, Preassembly works etc.</p>
2.9.7	The terminal points can be inferred from the relevant drawings and any further clarifications can be obtained/decided by BHEL and that is final and binding on the contractor for deciding the scope of work and effecting the payment for the work done up to the terminals. Carrying out work as per the specification between equipment constituting terminal points, whether the terminal equipment fall within the scope of work/specification, contractor shall carry out the terminal joints at either end.

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2.9.8	The work shall conform to dimensions and tolerances given in various drawings and quality manuals provided by BHEL. If any portion of work is found to be defective in workmanship not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost, failing which the job will be carried out by BHEL by engaging other agencies / departmentally and recoveries will be affected from contractor's bill towards expenditure incurred including BHEL's overhead charges (5%).
2.9.9	No member of the already erected structure/ platform, pipes, grills, platform, other component and auxiliaries should be cut without specific approval of BHEL engineer. In case it is necessary to cut, the contractor shall take prior approval of BHEL. If approved, after completion of work the contractor rectify / repair in a manner acceptable to BHEL / Customer without any additional cost.
2.9.10	The storage yard is located within the plant boundary of the plant premises at multiple locations which shall be intimated during course of work. All materials have to be transported from storage yard to construction area by the contractor at his own cost, using own Pick & Carry Crane (Farana) , crane and trailer.
2.9.11	During the course of erection, certain rework / modification / rectification / repairs / fabrication etc will be necessary on account of feedback/revision from various relevant sources, and also on account of design discrepancies/ alterations, manufacturing defects, site operations/ maintenance requirements. This will also include modifications / re-works suggested by BHEL / customer / other inspection group. Contractor shall carry out such rework / modification / rectification / fabrication / repairs etc promptly and expeditiously.
2.9.12	<p>The scope of work covered under this specification is of highly sophisticated nature, requiring the best quality workmanship, engineering and construction management including high standard safety management (as per relevant clause of tender document) and green belt management (Project Management, HSE & Quality etc.). The contractor should ensure successful and timely completion of the work. The contractor must have adequate quantity of tools, construction aids, equipment etc., in his possession. He must also have on his rolls adequately trained, qualified and experienced supervisory staff and skilled personnel. The manpower deployment identified by contractor shall match with above scope of works. (Refer HSE Manual).</p> <p>Contractor shall execute the work as per sequence and procedure prescribed by BHEL at site. The erection manuals which are available with BHEL site office are to be referred for compliance and guidance before taking up the work. Any failure to comply with the above might lead to rework and the cost for the same shall be borne by the contractor only. BHEL engineer, depending upon the availability of materials, fronts etc., will decide the sequence of erection and methodology. No claims for extra payment from the contractor will be entertained on the grounds of deviation from the method/sequence of erection adopted in erection of similar jobs or for any reason whatsoever.</p>
2.9.13	Furnishing samples of all materials required by the engineers for testing/inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works.
2.9.14	Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.

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2.9.15	Giving all notices, paying all fees, taxes, statutory clearances/license/Certificates (like T&P load test, etc), etc., in accordance with the general conditions of contract, that is required for all works including temporary works is in the scope of bidder.
2.9.16	Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
2.9.17	The contractor shall provide the owner/BHEL such an 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.
2.9.18	Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.
2.9.19	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.
2.10	EXCAVATION IN ROCK
2.10.1	Excavation in rock shall be carried out by mechanical means and if blasting is required for founding of some of the structures under this package, control blasting only shall be carried out.
2.10.2	Controlled blasting shall be done by a specialized agency duly approved by Engineer. All controlled blasting shall be done by using time delay detonators (i.e. excel type).
2.10.2.1	Contractor shall engage an agency expert in blasting such as, NIRM (National Institute of Rock Mechanics), CMPDIL, Central Institute of Mining and Fuel Research Dhanbad, Dept. of Mining of Govt. Institutions etc. to design detailed blasting scheme and get the same approved from BHEL/Customer before carrying out the blasting operation. All blasting shall be done as per the approved blasting scheme & initial blasting operations shall be done under the supervision & guidance of the representative of the blasting expert.
2.10.2.2	All the statutory laws, (Explosives Act etc.) rules, regulations, Indian Standards, etc. pertaining to the acquisition, transport, storage, handling and use of explosives, etc. shall be strictly followed.
2.10.2.3	The Contractor shall obtain Licenses from Competent Authorities for undertaking blasting work as well as for procuring, transporting to site and storing the explosives as per explosives act. The Contractor shall be responsible for the safe transport, use, custody and proper accounting of the explosive Materials.
2.10.2.4	The Contractor shall be responsible and liable for any accident and injury / damage which may occur to any person or property of the project or public on account of any operations connected with the storage, transportation, handling or use of explosive and blasting operations.
2.10.2.5	For controlled rock blasting specialized agency, equipped with sensors to assess the impact of the blast on the adjoining existing structures, shall be employed. All arrangements to be done by the agency including obtaining necessary permission from State authorities. Liaising with locals during blasting for safe, hindrance free work is the responsibility of the contractor.

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2.11	HEIRARCHY:
2.11.1	<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">1. Items Description in BOQ Cum Rate Schedule2. Technical Conditions of Contract (TCC)3. Customer's Technical Specifications (Section-C)4. BHEL's Standard Specification (Section-D)

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

Sl. No	Description PART I	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 bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipment, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder'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	
3.1.2	For living purpose of the bidder:			
a	Open space for labour colony	Yes	Yes	Contractor has to make his own arrangements for shelter and transportation of labours as per requirement.
b	Labour Colony with internal roads, sanitation, complying with statutory requirements		Yes	As per Annexure A – "Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites"
3.2	Electricity:			
3.2.1	Electricity for construction purposes (for Site/Project works only) 3 Phase 415/440 V			

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Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
a	Single point source	Yes		Construction power shall be provided by BHEL free of cost (within 03 months from award of work) at one point near the site at a distance of approx. 500M. During initial 03 months contractor has to make his own arrangement for construction power.
b	Further distribution including all materials, Energy Meter, Protection devices and its service		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 office, stores, canteen etc. of the bidder			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	Duties and deposits including statutory clearances if applicable		Yes	At contractor's own cost
3.3	Water Supply:			
3.3.1	For construction purposes:			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
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Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
a	Making the water available at single point	Yes	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. During initial 06 months contractor has to make his own arrangement for construction water.
b	Further distribution as per the requirement of work including supply of materials and execution.		Yes	
3.3.2	Water supply for bidder's office, stores, canteen etc.			
a	Making the water available at single point		Yes	Single point as above for construction purpose, no separate point shall be given
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	Contractor has to make his own arrangement for distribution
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	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
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

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Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
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 bidder at the colony / quarters		Yes	At contractor's own cost
3.5	Communication facilities for site operations of the bidder			At contractor's own cost
a	Téléphone, fax, internet, intranet, e-mail etc.		Yes	
3.6	Compressed air wherever required for the work		Yes	At contractor's own cost
3.7	Demobilization of all the above facilities		Yes	At contractor's own cost
3.8	Transportation			
a	For site personnel of the bidder		Yes	
b	For bidder's equipment and consumables (T&P, Consumables etc.)		Yes	
3.9	Erection Facilities			
3.9.1	Engineering works for construction:			
a	Providing the erection/constructions drawings for all the equipment covered under this scope	Yes		
b	Drawings for construction methods	Yes	Yes	In consultation with BHEL
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 & handed over to BHEL on completion of work.
d	Shipping lists etc. for reference and planning the activities			Not Applicable
e	Preparation of site construction / erection schedules and other input requirements as per Form-14.	Yes	Yes	In consultation with BHEL
f	Review of performance and revision of site construction / erection schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly construction / erection schedules based on Sl. No. e		Yes	In consultation with BHEL

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Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
h	Daily work plan based on Sl. No. g		Yes	In consultation with BHEL
i	Periodic visit of the senior official of the bidder to site to review the progress so that works is completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	
j	Preparation of preassembly bay		Yes	
k	Laying of racks for gantry crane if provided by BHEL or brought by the contractor /bidder himself		Yes	

3.10	Land/Open Space:
3.10.1	<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 and laydown area as and were made available by Customer.</p> <p>It is the responsibility of the contractor to construct office, sheds, fabrication yard, establish batching pant, 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> <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>
3.11	Labour and Staff Colony:
	Following are in the Bidder's scope of work for labour & staff colony:
3.11.1	<p>Labour colony is to be developed by bidder for all the labourers required to be deployed for the works. 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. Cement & Steel required for the Labor shed/Set shall be in contractor's scope.</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)
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3.11.2	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)
3.11.3	Land for labour colony shall be arranged by Contractor at their own cost as per availability outside project area within 5Km, Necessary levelling/dressing of land shall be done by the contractor. All arrangement for electricity and drinking/service water to be arranged by the contractor within his quoted price.
3.11.4	One Medical Centre (24 x7 working) 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) .
3.11.5	Development of contractor's temporary staff colony and labour colony having adequate no. of rest rooms along with toilets & fencing etc.
3.11.6	Development and maintenance of above facilities for construction workers deployed by the contractor shall solely rest with the Contractor.
3.11.7	All Civil and Structural work associated with drinking and service water for Bidder's labour and other personnel at the work site/colony/offices including pump houses, pipes, overhead tank, tube wells etc.
3.12	<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 bidder within the quoted price including necessary maintenance, removal/disposal of the same in environment friendly manner after its intended use/completion of scope of work:</p> <ul style="list-style-type: none"> i. Labour rest sheds near work spot. ii. Canteen facility creation. iii. Drinking water facility. iv. Labour Bio toilets near work spot in sufficient nos. with regular cleaning & maintenance arrangement. Exclusive arrangement of Bio toilets to be made at site for ladies. v. Labour colony should have all hygienic condition, dining hall, toilets, proper sewerage system, good drinking water arrangements. vi. Recreational facilities, etc
3.13	Construction Power:
3.13.1	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. For initial 06 months , contractor has to arrange construction power (including DG sets) at his own cost.

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	<p>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> <p>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.</p>
3.13.2	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.
3.13.3	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.
3.13.4	<p>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.</p> <p>All cables being used for construction power shall be armored only. Buried cable shall be suitably identified by the route markers.</p>
3.13.5	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.
3.13.6	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.
3.13.7	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.
3.13.8	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.
3.13.9	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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3.13.10	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.
3.13.11	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.
3.13.12	Contractor to arrange energy meter for office.
3.13.13	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.
3.13.14	Contractor has to make their own arrangements for electricity requirement for labour colony at his own cost within quoted price.
3.14	Construction water:
3.14.1	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.
3.14.2	The Contractor should make arrangement 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.
3.14.3	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.
3.14.4	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.

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

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 bidder (Common for both Units).

Sl. No.	Description of T&P	Quantity
A	T&Ps for Civil Works	
1	Concrete Transit Mixer	04 Nos.
2	Batching Plant (30 Cum/Hr.) with Sufficient Capacity of Silos.	01 No.+01 No.* (*Additional 1 no. as per requirement)
3	Hydraulic Excavator /Poclain	02 Nos.
4	Concrete Pump of Suitable Capacity with Sufficient lift (Minimum 30 m) in order to pour concrete at roof of Transfer Points	01 No.
5	Mini excavator with dozing blade and auger arrangements and mini bucket arrangements	01 No.
6	Back Hoe Loader (JCB)	01 Nos.
7	Dumper (with capacity 16 to 25 mt)	06 Nos.
8	Concrete Boom placer min. 35m long	01 Nos
9	Vibrators (electrical/diesel)	10 Nos.
10	Self-priming Dewatering pump of various capacity (Diesel/Electric) From 2 HP to 7.5 HP	04 Nos.
11	Curing / dewatering pump – 1.5 / 2 HP	5 Nos.
12	De-watering pump (diesel operated) – 50 HP & 10 HP	10 HP 1 nos, 20 HP 1 nos 50 HP 1 nos
13	Poclain with rock breaker arrangement.	2 Nos
14	Pneumatic rock breaker with jack hammer	1 Nos.
15	Ply Shuttering board with adequate scaffolding supporting structure – (Old steel shuttering plates will not be allowed).	As per requirement & as per the direction of Engineer In charge.

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16	Farana crane (Required Capacity) *Note- Hydra is not allowed at project site	01 Nos.
17	Trailer (min 20MT Capacity)	01 No.
18	Tractor mounted grader/ loader	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	Plate compactor	02 Nos.
23	Earth Compactor- 3MT Capacity	01 Nos.
24	Total Station with prim and stand	02 Nos.
25	Auto level & staff	02 Nos.
26	Vibro roller (8-10 Tonne)	01 Nos
27	Dozer (D-80) capacity	01 Nos
28	Water Tanker with sprinkler attachment	02 No.
29	All equipment for area Lightning like LED/Halogen bulbs and Portable light Towers etc.	As per requirement
30	Computer with printing/photocopy & CD writing facility	As per Requirement
31	Man lift crane of Minimum 20m reach	As per requirement
32	DG Set of 125 KVA Capacity	01 No.
33	DG Set of 250 KVA Capacity	01 No.
34	Fully mechanized paver fitted with electronic sensors	As per requirement
35	Reinforcement scrap straightening machine	As per requirement
36	Portable Welding machine	As per requirement
37	Builder Hoist	1 nos
38	Electric winch 5T capacity	2 nos

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39	Movable tower crane	As per requirement
B	T&Ps for Structural Fabrication & Erection works	
1	75 MT Capacity Crawler Crane	01 No.
2	40/45 MT Capacity Tyre mounted Crane	01 No.
3	Trailers with pulling unit_40 MT	01 No.
4	Trailers with pulling unit_20 MT	01 No.
5	Farana crane (Required Capacity) *Note- Hydra is not allowed at project site	02 No.
6	Power/Hand winch	As per requirement
7	Welding Machine	As per requirement
8	Heating Oven	01 No.
9	Portable Oven	As per requirement
10	Portable grinding machine of various sizes	As per requirement
11	Calibrated Power driven bolt tightening machines	As per requirement
12	Manual Torque tightening machine	As per requirement
13	Torque calibrator	As per requirement
14	Bolt Tension Calibrator	As per requirement
15	Impact wrench with socket (Pneumatic)	As per requirement
16	3-phase distribution board with complete set up for drawl of construction power	As per requirement
17	Power cable for drawl of construction power	As per requirement
18	Self-drilling cum tapping machine for screws	As per requirement
19	Radiography arrangement with radioactive isotope source	As per requirement
20	Pug Cutting machines	As per requirement
21	Plasma Cutting Machine	As per requirement

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

22	Rolling Machine	As per requirement
23	Chain pulley blocks	As per requirement
24	Turn Buckles and Huck-Chuks	As per requirement
25	Scaffolding materials with clamps for cladding fixing, etc works	As per requirement
26	Hoisting and pulley devices/pulleys	As per requirement
27	SPANNERS / EYE BOLTS (OF ALL SIZES)	As per requirement
28	Wooden/Concrete sleeper 1.5-2.0 Mtr length	As per requirement
29	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
30	Suspended working platform Size :7mX1mX0.5m, Rated load 800 kg to 1000 Kg (For Cladding Fixing Works)	As per requirement
31	Theodolite of required accuracy	01 Nos.
32	Air compressor/blower (electric/diesel operated)	01 Nos.
33	Hydraulic Jack set for Tank Erection	As per requirement
34	Fill pump	As per requirement
35	Hydraulic Test pumps/ Hand pumps Along with Suitable/ different ranges of calibrated Pr. gauges	As per requirement
36	Shot Blasting Cleaning set up with copper slag	As per requirement
37	Stud Welding Machine	As per requirement
38	UT Machine	As per requirement
S.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-25 Nos
2.	Fall Arrestor 'Rope grab fall arrester' & anchorage line. Anchorage Line: 14mm- 16 mm diameter, three strand twisted Polyamide rope.	Min. 10 nos. of Rope Grab Fall arrester' and Karbinder each.

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	<p>Rope Grab fall arrester: Openable & Guided type Fall Arrester (on flexible line) conforming EN 353-2 & works on 14-16 mm diameter polyamide rope. Material: Nickel Chrome plated Steel</p> <p>Connector: Karbiner conforming to EN 362 (Minimum Strength 22 KN), material: Steel</p> <p>Retractable Fall arrester Block (Range 6 Mtr to 15 Mtr)</p>	<p>Min 10 nos. anchorage line, 30 metre long each,</p> <p>Min 05 nos. anchorage line, 40 metre long each</p> <p>Min 20 Nos</p>
3.	<p>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).</p>	<p>Min 05 nos. of wire rope, each 40m long. Min 05 nos. of wire rope, each 25 metre long.</p>
4.	<p>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. The ladder shall have proper fastenings for attaching it to a column using positive means such as bolt, weld or other type of fasteners.</p>	<p>Cumulative length of ladders is 200 metres</p>
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.	<p>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</p>	
16.	Rubber Mat as per IS 15652	Min 200 Sqm
17.	Electrical rubber gloves	As per requirement

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – IV: T&PS AND MMES TO BE DEPLOYED BY
CONTRACTOR

18.	Water Sprinkling tanker for dust suppression	2 Nos.
4.1	Measuring and Monitoring Equipment (MMEs): To be finalized as per site requirement.	
4.2	T&Ps (excluding Cranes of 75T) 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. Also, on completion of the respective activity, demobilization of T&Ps in total or in part can be done with the due approval of Engineer-In-Charge. Retaining of the T&Ps during the contract period will be mutually agreed in line with construction requirement.	
4.3	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.	
4.4	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 DEPLOYED BY BHEL ON SHARING BASIS

5.1	LIST OF T&P TO BE PROVIDED BY BHEL FREE OF HIRE CHARGES ON SHARING BASIS:			
5.2	SN	DESCRIPTION	QUANTITY	REMARKS
	1	CRAWLER/MOBILE CRANE OF CAPACITY OVER AND ABOVE 75 MT CRANE	As per requirement	BASED ON WORK REQUIREMENT
	2	CRAWLER/MOBILE CRANE OF CAPACITY 75 MT CRANE	Over and above quantity mentioned in Chapter – IV – (T&PS AND MMES TO BE DEPLOYED BY CONTRACTOR.)	BASED ON WORK REQUIREMENT
5.3	<p>Note:</p> <ol style="list-style-type: none"> 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). 			
5.4	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 suitable duration and intended purpose. Augmentation of BHEL T&P under special circumstances shall be discretion of BHEL.			

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: TIME SCHEDULE

6	Time Schedule and Mobilization:	
6.1	Initial Mobilization and Time Schedule: <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 within 15 days from date of LOA; unless instructed by BHEL to differ start of work in writing.</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-Four (24) 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: <p>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.</p>	
Sub-Clause No	Activity	Schedule completion from date of start of work
6.2.1	Plant Boundary Wall	06 th Months
6.2.2	Watch Tower,	08 th Month
6.2.3	Shed for construction workers and O & M workers in BOP area	08 th Month
6.2.4	Fuel Oil System including Day Oil Tank, Pump House & Unloading System	10 th Month
6.2.5	Gate Complex,	10 th Month
6.2.6	PCRI Lab	12 th Month
6.2.7	ACW Pumphouse	12 th Month
6.2.8	CW Duct/ pipeline (outside BTG area)	13 th Month
6.2.9	CW Sump & Pump House including Concrete Volute Pump, Forebay & Channel (M2)	14th Month
6.2.10	Permanent Store/O & M Store Building	16 th Month
6.2.11	Gas Cylinder Storage Area/Shed,	16 th Month
6.2.12	Pipe and Cable Supporting Structures and Foundations for BOP area	17 th Month
6.2.13	Sewage Collection Sumps (in BOP area)	17 th Month
6.2.14	STP Line (BOP Area)	18 th Month
6.2.15	Roof Solar system foundations for building inside BOP area	19 th Month
6.2.16	Area Paving, site Levelling and Grading work	19 th Month
6.2.17	Hydrogen Plant Building	20 th Month
6.2.18	Parking Sheds	20 th Month
6.2.19	Rain water harvesting Pond, Rain water harvesting pump House etc.	20 th Month
6.2.20	Trenches, Culverts, Duct Banks, Pedestals, Hume Pipe & Culverts, Buried Pipes, Encasing of Piping in BOP area	21 th Month

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: TIME SCHEDULE

6.2.21	FPS System & Related Works	22 nd Months									
6.2.22	Culvert across rail/road tracks for pipes/drains/cables and any other facility and thrust blocks	22 th Month									
6.2.23	Road and Drain, Repair of road at the time of handover (BOP Area)	22 th Month									
6.2.24	Switchyard Works										
6.2.24.1	Switchyard - Equipment Foundations of Priority Bays	06 th Months									
6.2.24.2	Switchyard - Tower Foundations of Priority Bays (M1)	08th Months									
6.2.24.3	Switchyard - Balance Equipment Foundations	09 th Months									
6.2.24.4	Switchyard - Balance Tower Foundations	10 th Months									
6.2.24.5	Switchyard – Other Balance Works	13 th Months									
6.2.29	Any other miscellaneous structure/ building/ foundation/ etc. and Handing Over of Entire Facilities	24 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	Intermediate milestones:										
6.5.1	Two Major Intermediate Milestones are identified as M1 and M2 above.										
	<table border="1"> <thead> <tr> <th>Milestones</th><th>Activity</th><th>Schedule of completion from start of work</th></tr> </thead> <tbody> <tr> <td>M1</td><td>Switchyard - Tower Foundations of Priority Bays (M1)</td><td>08th Month</td></tr> <tr> <td>M2</td><td>CW Sump & Pump House including Concrete Volute Pump, Forebay & Channel (M2)</td><td>14th Month</td></tr> </tbody> </table>		Milestones	Activity	Schedule of completion from start of work	M1	Switchyard - Tower Foundations of Priority Bays (M1)	08th Month	M2	CW Sump & Pump House including Concrete Volute Pump, Forebay & Channel (M2)	14th Month
Milestones	Activity	Schedule of completion from start of work									
M1	Switchyard - Tower Foundations of Priority Bays (M1)	08th Month									
M2	CW Sump & Pump House including Concrete Volute Pump, Forebay & Channel (M2)	14th Month									
6.6	<u>Provision of Penalty in case of slippage of Intermediate Milestones:</u> <u>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.</u>										
6.6.1	In case of slippage of these identified Intermediate Milestones, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones.										
6.6.2	<u>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.</u>										

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: TIME SCHEDULE

6.6.3	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.
6.6.4	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.
6.6.5	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.
6.6.6	Final deduction towards LD (if applicable), on account of delay attributable to contractor shall be based on final delay analysis on completion/ closure of contract. Withheld amount, if any due to slippage of identified intermediate milestone(s) shall be adjusted against LD or released as the case may be.
6.6.7	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	Common activities shall be completed in Phase wise manner/ Instruction of Engineer within the Contractual time.
6.8	Above milestone dates has to be completed in parallel.
6.9	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.
	*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.
6.10	COMPLETION OF WORK AND COMMENCEMENT OF GUARANTEE PERIOD
6.10.1	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.
6.10.2	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.
6.10.3	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	<u>Documents required for RA Bill:</u> <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.• HR/IR compliance documents:<ul 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 submissioniv. Proof of Bonus payment as per Bonus Act if applicable.v. Proof of EL payment if applicable.vi. Any other statutory document if applicable.vii. Royalty challan and statutory documents shall be submitted along with RA Bills for processing of Bills.
7.1.2	<u>Documents required for Final Bill:</u> <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: <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</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VII: TERMS OF PAYMENT

	<p>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 (1 No.), Hydraulic Excavator/Poclaim (1 Nos.) & Dumper (2 Nos), Transit Mixers (1 Nos.), JCB (1 Nos), Boom Placer/Concrete Pump (1 Nos.) - 2.0%2. For Mobilization of balance Hydraulic Excavator/Poclaim (1 Nos.) & Dumper (4 Nos), Transit Mixers (1 Nos.), Farana (1 Nos.), - 1.5%3. For Mobilization of Crane (75 MT-1 No.), Crane 40/45 MT Capacity Tyre Mounted Crane (1 No.), Trailers (2 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	TERMS & PROCEDURE FOR THE PAYMENT LINKED TO RA BILL FOR SAFETY: (For details refer Clause 5.2 of HSE Plan)
7.3.1	Amount linked to Safety Aspects/ compliance to Safety Rules' should not be less than 1.5 % of the cumulative total of Service Portion of the Contract, i.e. Civil + Installation/ Erection + Structural Works etc.
7.3.2	<p>Contractor must fulfil all the details mention in this clause to process the amount linked to RA bill for Safety aspect/ safety Rule/ Compliance etc.</p> <p>The amount linked to Safety Aspects/ compliance to Safety shall be paid in two parts, viz,</p> <ol style="list-style-type: none">A. 10% amount (calculated as 0.1 Y of the service portion amount of RA bill) shall be linked to Fatal/Major Accidents, andB. 90% amount (calculated as 0.9 Y of the service portion amount of RA bill) shall be linked to various Safety Aspects specified in HSE Plan for Site operation by Contractor. <p>Note:</p> <p>Y= 1.5% of Total Amount for Construction/service portion of the contract i.e. (Civil Installation/Erection, Structural Works etc.)</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>
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>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

	<ul 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 permit, all the e-way bill, 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.
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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

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 contractor 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 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.

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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.
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.

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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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9.0	MATERIAL
9.1	<p>Material to be issued by BHEL (Free of Cost) unless otherwise specified in BOQ cum Rate Schedule</p> <ol style="list-style-type: none">1. Cement2. Reinforcement Steel and MS Round Bar (Earthing Rod)3. Structural Steel.
9.2	<p>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. Bidder's scope also includes following:</p>
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">a. It should confirm to relevant Indian/international Standards.b. It should be of reputed makes supplied to similar construction/ infrastructure projects.c. The Contractor should furnish documentary evidence to prove (a) and (b) above. <p>For make / sub vendor for specific civil items, BHEL / Customer's approval shall be final and binding on contractor.</p>
9.2.2	<p>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.</p>
9.2.3	<p>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.</p>
9.2.4	<p>Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.</p>
9.2.5	<p>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.</p>
9.2.6	<p>BHEL free supplies shall be provided only for incorporation in the permanent works of the project.</p>
9.2.7	<p>Embedment/ 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 embedment/ 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 embedment's/ inserts as supplied by</p>

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	BHEL manufacturing units, payment for fixing of those shall be made as per corresponding item in BOQ.
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	Cement, Reinforcement Steel, (wherever specified as free issue by BHEL) 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, Gratings 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.
9.3.2	The contractor shall take care of material issued by BHEL and shall protect the same from damage and weathering. Contractor shall construct waterproof cement store (capacity minimum 300 MT/ 6000 Bags) for storing and stacking of cement issued by BHEL free of cost.
9.3.3	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.
9.3.4	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.
9.3.5	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.

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9.3.6	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.
9.3.7	No cement will be issued on free basis for bought out item like Hume pipe, Interlocking Paver block, Fly ash brick, etc or any other BOI which involves cement and is procured from outside of plant premises. However, cement for mortar for fixing of these items if required will be issued on free basis.
9.3.8	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). Necessary arrangements for first in first out must be maintained.
9.3.9	Contractor will be responsible for unloading the cement as soon as the arrival 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 bidder. 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.
9.3.10	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.
9.3.11	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.
9.3.12	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.
9.3.13	The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL.
9.3.14	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.
9.3.15	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.

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9.3.16	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			
9.3.17	Before commencement of work, Contractor has to satisfy/ensure the above design mix proportion 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.			
9.4	Issue of Cement			
9.4.1	Cement as received from the manufacturer/ stockiest will be issued free of cost to the contractor. The theoretical weight of each bag of cement for issued purposes will be considered as 50 kg, the contractor shall be accountable for the cement issued to the contractor on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement.			
9.4.2	In case cement is issued through bulkers being supplied from manufacturer/stockiest; the same shall be emptied in cement silos of batching plant and necessary assistance shall be provided by contractor.			
9.4.3	In case BHEL supplies cement through Bulker, Bidder has to store cement in Silos of Suitable capacities as decided by Engineer in charge. Silos Capacities shall be finalized mutually.			
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.			
9.5	Issue and Return of Cement, Reinforcement Steel, MS Round Bar (Earthing Rod) and Structural Steel. Refer Chapter-VI "Material Handling, Storage & Preservation" of SCC			
9.6	Consumption and Wastage of Cement, Reinforcement Steel, Structural Steel and MS Round Bar (Earthing Rod): Refer Chapter-VI "Material Handling, Storage & Preservation" of SCC			
9.7	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):			
9.7.1	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	

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	5	Structural Steel (Plates, Rolled Sections etc.)	70000/- per MT	
	6	Structural Steel Gratings	1,00,000/- per MT	
9.7.2	Penal Rate will be 1.05 times the actual cost to BHEL or Rate mentioned in Table 9.7.1 above, whichever is higher, shall be imposed.			

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Chapter-X: BOQ CUM RATE SCHEDULE AND % WEIGHTAGE OF INDIVIDUAL ITEMS

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

Description	Remarks
PART A: Instructions to the Bidders	Instructions
PART B: % weightage of individual items of Schedule of quantity	BOQ CUM RATE SCHEDULE
PART C: Total Lump Sum Price for entire scope of Work	This part is implanted in the E-Procurement portal entitled as “Part-C of Vol-II Price Bid”.

<u>Part A:</u>	<u>Instructions to the Bidders</u>
1.	<u>Bidders shall quote Total Price 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.	Contract Value based on the price quoted by Bidder in Price Bid shall be as per Part-B.
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 value quoted in price-bid.
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 two 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.
<u>PART B:</u>	% weightage 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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Chapter-XI : TECHNICAL SPECIFICATIONS AND DRAWINGS

11.0 Following Technical Specifications shall be integral parts of this tender (attached separately):

- SECTION-C: CUSTOMER CONTRACT SPECIFIC TECHNICAL REQUIREMENTS
- SECTION-D: GENERAL TECHNICAL REQUIREMENTS
- SEISMIC DESIGN CRITERIA
- STANDARD GUIDLINES FOR WORKER'S ACCOMODATION/ESTABLISHMENT AT BHEL'S PROJECT SITES **(ANNEXURE-A)**
- STANDARD DRAWING FOR WORKMEN SHED
- STANDARD DRAWING FOR MEDICAL CENTER WITH EQUIPMENT LIST
- BOI VENDOR/SUPPLIER'S LIST
- TENTATIVE PLOT PLAN_PE-DG-530-100-M001

NOTES:

- Contractor has to make him well conversant with the Technical Specifications of Customer (Section-C) and BHEL (Section-D). In case of ambiguity between BHEL's and Customer's specification, Customer's specification shall prevail.
- Above documents have been uploaded Separately.