LARA BOP-2

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BHARAT HEAVY ELECTRICALS LIMITED

TECHNICAL CONDITIONS OF CONTRACT (TCC)
CONTENTS

Sl. No.	Description	Details
1	**Project Title**	2X800MW Lara Super Thermal Power Station, Stage-II
2	**Customer**	National Thermal Power Corporation Limited (NTPC Limited)
3	**Location**	The project is located in Raigarh district of Chhattisgarh State. The project is located south-east of Raigarh town near village Lara, bounded by villages Lara, Chhapora & Lhakhang and on the western side of Odisha State boundary.
4	**Nearest Airport**	The nearest commercial airport, Jarsuguda is about 90 kms from the project site.
5	**Access By Road/Major Cities**	The project site is approachable from NH-200 (Raigarh–Sarangarh) via Kondatarai through State PWD Road..
6	**Temperature**	Mean of daily minimum temperature = 13.2°C Mean of daily maximum temperature = 41.8°C
7	**Seismic Zone**	The project site lies in zone III as defined in IS: 1893.
8	**Wind Speed**	Design wind speed is 39 m/sec as per IS: 875 Part III

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.

<table>
<tr><td>1.2</td><td>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.</td></tr>
<tr><td>1.3</td><td>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.</td></tr>
<tr><td>1.4</td><td>The contractor, in the event of this work awarded to him, shall establish an office at site and keep posted an authorized, responsible officer with valid Power of Attorney for the purpose of the contract. Any order or instructions of the `Engineer' or his duly authorized representative, communicated to the contractor's representative at site office will be deemed to have been communicated to the contractor at his legal address.</td></tr>
<tr><td>1.5</td><td>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.</td></tr>
<tr><td>1.6</td><td>Bidders may fix up their site visit in consultation with below mentioned contact person:
<table>
<tr><td>Name:</td><td>Sh. Abdul Munaf</td><td>Sh. Mohd Shoaib Mansoori</td></tr>
<tr><td>Designation:</td><td>Sr. DGM</td><td>Manager</td></tr>
<tr><td>Location:</td><td>PSWR Lara</td><td>PSWR HQ, Nagpur</td></tr>
<tr><td>Email:</td><td>munaf@bhel.in</td><td>msmciv@bhel.in</td></tr>
<tr><td>Ph. No.</td><td>8884711993</td><td>9099073910</td></tr>
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2.0	**Scope of Works:**
2.1	Civil and Architectural works of Water System Package (DM, PT, etc.), CWPH, RWPH **- excluding Supply of Ready Mix Concrete (RMC)**, **Supply of Cement, & Reinforcement Steel (TMT) that shall be issued by BHEL free of cost as per BOQ Cum Rate Schedule**. Before commencement of any major foundations, the bidders have to check with mechanical/electrical drawings jointly with concerned BHEL Engineers.
2.2	**The brief scope of work is as follows:** Civil and Architectural works for following major Buildings / Structures: 1. CWPH, Sump, Channel, Forebay 2. RWPH, Sump, Forebay, Pipe Encasing etc. 3. PT Plant 4. DM Plant 5. Area Paving in Various Locations (including Boiler Area) 6. Miscellaneous Pump Houses viz. ACW, DM, Clarified Water 7. ClO2 System 8. CW Treatment Plant 9. CHP Waste Water Treatment Plant 10. Miscellaneous Electrical Works 11. Service & Clarified Water Tanks 12. Control Rooms for Various Facilities 13. Other Facilities in BOP Area 14. Other Facilities in Water System Part 15. Levelling & Grading of Above Areas
2.3	BHEL at its discretion may include other area works limited to 15% of awarded contract value, which are not mentioned in above scope of works. Contractor shall execute such works as desired and as directed by BHEL Engineer. The item rates & contract conditions shall remain unchanged for such works.
2.4	The work under this contract shall be carried out as per BOQ Cum Rate Schedule and in compliance of tender conditions including technical specifications and approved drawings/ documents.
2.5	**GENERAL**
2.5.1	Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

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 provide by the engineer during the course of works.
2.5.5	Manpower hired/deployed by contractor for this project shall be monitored through online project monitoring system. All Personnel entering in to NTPC site premises for carrying out any work shall be tracked. Tracking devices shall be provided by BHEL on chargeable basis to contractor. BHEL will provide tags free of cost at first instance. In case of damage or missing of issued worker tag, Rs. 1000/- per tag will be charged for issuing new worker tag.
2.5.6	VOID
2.5.7	All the works areas shall be adequately flood lighted to the satisfaction of the Engineer-in-Charge when the work is in progress during the night shifts.
2.5.8	Drawings showing enough details for the construction as per the specification shall be furnished to the contractor in a phased manner as far as possible.
2.5.9	All necessary arrangement for safety like Hard Barricading around deep structures of Under Ground Track Hopper, Tunnel & TP's with scaffolding pipes and providing of safety net on the slope of excavated area is in bidder's scope.
2.5.10	The Customer may depute their representative for checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works at no extra cost to BHEL. Any defect in quality of work or deviations from drawings / specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL.
2.5.11	Giving all notices, paying all fees, taxes etc., in accordance with the general conditions of contract, that is required for all works including temporary works.
2.5.12	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.
2.5.13	Arranging for joint checking (with BHEL / BHEL's Customer / Consultant) of all site construction activities Preparation of joint protocols for each & every activity and maintaining quality records for audit/inspection as per approved FQP by BHEL.
2.5.14	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 Lara Project site proportionately based on contract value.
2.5.15	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.
2.5.16	Any activity which is necessarily required for satisfactory execution of any item of BOQ in line with technical specifications shall be deemed to be included in BOQ item even if it is not described in the item description and no extra payment shall be made against such activity.
2.6	**Tentative Technical Staff Requirement:**
2.6.1	• **Project Manager –** 01 Head with 15 Years' experience in Industrial Foundation, Building & Power Plant Civil & Architectural Works etc. • **Asst. Project Managers –** 01 Heads with 12 Years' experience in Industrial Foundation, Building & Power Plant Civil & Architectural Works • Experienced Civil Engineers – 05 heads • Experienced Foreman / Supervisors – 10 heads • Planning & Billing Manager – 01 head • Planning & Billing Engineers – 02 head • Stores, Gate Pass – 02 heads • Accounts & Administration – 02 heads • Quality Control Manager – 01 head • Quality Control Engineer – 02 heads

	• Safety Engineer – As per HSE Plan • Surveyor – 2 heads capable to handle total station • Operator, Licensed Electrician, Mechanic - As per requirement • Experienced Carpenters & Helpers – lot for similar nature of work • Experienced Bar Benders & Helpers – lot for similar nature of work • Security Guards (Round The Clock) – As per requirement. **Note: Above manpower requirement is tentative only. Contractor shall augment manpower to meet the project schedule/ milestones. Deployment of manpower shall be progressive to meet the project schedule.**
2.6.2	Deputation of above man-power shall be jointly decided at site in line with construction Schedule.
2.6.3	Engineer/ supervisor for other functions like store & purchase, material management, planning, finance, administration etc. are 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.
2.7	**Supervisors / Engineer and Computer for exclusive use of BHEL:**
2.7.1	VOID
2.7.2	VOID
2.7.3	The bidder will have to provide **Two (02) Nos. of Laptops** (X-86 Architecture Based, 64-Bit Supported, Microprocessor with minimum 8 cores, On-board Graphics feature compatible with supplied OS, Minimum 8 GB RAM 2666 MHZ SDRAM upgradeable to 16 GB, 512 GB SSD M.2 Hard Drive or higher, 13" - 14" (both included) high definition anti-glare LED back lit Screen, OEM USB Optical Travel Mouse, Integrated High definition audio with integrated speakers and volume control (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 64bit latest service pack, OEM carry bag to be supplied with OS Certification from Microsoft and required software like MS Office 2010 Professional, AutoCAD 2011, ADOBE PDF CREATOR (version 8.0) **with one laser jet printer compatible for A4 and A3 size printing with power backup at places, as per instruction of BHEL**.
2.7.4	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).
2.7.5	This facility has to be provided as directed by BHEL till completion of site works or as decided by BHEL. If contractor fails to provide computer/ printer as per requirement, for a continuous period of fifteen days or more, BHEL shall have the right to purchase it on behalf of contractor and recover the expenses incurred from the dues payable to contractor. Recoveries shall be actual expenses incurred plus 5% overheads.
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	**Setting Up of Laboratory Works:** The contractor shall set up laboratory in the close vicinity of the work site as per required field QA & QC laboratory set up and as the directions of engineer-in-charge. The laboratory shall be equipped with latest testing equipment in sufficient number to carry out all the tests as required under a contract. The contractor should ensure that the equipment is available well in advance of starting of the work to avoid stoppage of work on this account. All the tests shall be carried out by the contractor in the presence of the Engineer's representative and a joint record of all observations and results thereof shall be maintained, and available with the Engineer. **Bidder shall tie up only with BHEL / Customer approved third party Lab for advance testing which are not feasible at site laboratory set-up.** The laboratory set-up should consist of one AC lab (Approx. size 4.5mtr x 6mtr) for temperature and humidity control as required during testing of cement and other materials and one non AC lab (Approx. Size 4.5 mtrx4.5 mtr.) in the field to carry out all relevant tests. Laboratory equipment as per requirement and as per NTPC specification to be arranged by the contractor within quoted rate for conducting day to day tests. The contractor may tie up with approved/registered inspection agencies for setting up test lab at site as described above.

2.8.3	Minimum Testing Facilities to be arranged by contractor at site are as under: 1. Soil Works: 1a. Facilities for HDD 1b. Field Compaction Test (Core Cutter / Sand Replacement Method). 1c. Atterberg Limit Test of Soil. 1d. Grain Size Distribution Test. 2. Road Works: 2a. Facilities for mechanical strength of aggregates. 2a(i). Impact and Abrasion Value. 2a(ii). Crushing Value. 2a(iii). Water Absorption 3. Concreting Works: 3a. Facilities for sieve Analysis for both fine and coarse aggregates. 3b. Facilities for workability test of concrete by Slump cone / BV. 3c. Facilities for Cube Strength.
2.8.4	VOID
2.8.5	VOID
2.8.6	VOID
2.8.7	VOID
2.8.8	VOID
2.9	**HEIRARCHY:**
2.9.1	In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows: 1. Items Description in BOQ Cum Rate Schedule 2. Technical Conditions of Contract (TCC) 3. Technical Specifications for Customer LARA (Section-C) 4. IS Standard 5. BHEL's Standard Specification (Section-D)

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	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	Construction Plan shall be approved by BHEL
3.2	**Electricity:**			
3.2.1	**Electricity for construction purposes (for Site/Project works only) 3 Phase 415/440 V** (Chargeable) within project premises			

Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
a	Single point source (Chargeable)	**Yes**	**For 1st Five Months from start of work with DG Set.**	Chargeable at **prevailing tariff on project site at** one point near the site at a distance of approx. 500 meter.
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.2	**Electricity for office, stores, canteen etc. of the bidder (Chargeable) within project premises**			
a	Single point source (Chargeable)	Yes	**For 1st Five Months from start of work with DG Set.**	Chargeable at **prevailing tariff on project site at** one point near the site at a distance of approx. 500 meter.
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.3	**Electricity for living accommodation of the bidder's staff, engineers, supervisors, labour Hutment etc.**			**Contractor has to make his own arrangements**
a	Single point source		Yes	
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Payment/Duties and deposits including statutory clearances if applicable		Yes	
3.3	**Water Supply:**			

Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
3.3.1	**For construction purposes:**			
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	
3.3.2	**Water supply for bidder's office, stores, canteen etc**			
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	
3.3.3	**Water supply for Living Purpose**			**Contractor has to make his own arrangement**
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	
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	
c	Providing the necessary consumables like bulbs, switches, etc. during the course of project work		Yes	
d	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5	***Communication facilities for site operations of the bidder***			

Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
a	Téléphone, fax, internet, intranet, e-mail etc.		Yes	
3.6	***Compressed air wherever required for the work***		Yes	
3.7	***Demobilization of all the above facilities***		Yes	
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:			**Not Applicable**
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 & handover to BHEL on completion of work.
d	Shipping lists etc. for reference and planning the activities			Not Applicable
e	Preparation of site erection schedules and other input requirements asper Form-14.	Yes	Yes	In consultation with BHEL
f	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly erection schedules based on Sl. No. e		Yes	In consultation with BHEL
h	Daily erection / work plan based on Sl. No. g		Yes	In consultation with BHEL

Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
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	Availability of land within plant boundary 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 erections agencies. BHEL shall provide free of charge limited open space for office, storage shed and laydown area as and where made available by Customer. It is the responsibility of the contractor to construct sheds, fabrication yard, establish batching pant, 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.
3.11	**Labour and Staff Colony:** **Following are in the Contractor's scope of work for labour & staff colony:**
3.11.1	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 drawing and in compliance of statutory requirements. Contractor shall construct/arrange Labour Hutment as per minimum specifications mentioned in the attached drawing, for which no separate payment shall be made by BHEL. Minimum One (01) set of labour hutment is to be completed within Three (03) months from the date of start of work. Payment of RA bill beyond the period of Three (03) months shall not be released without completion of One (01) set of labour hutment as per drawing and specification. Ownership of the labour hutment shall be of the contractor and contractor shall keep BHEL indemnified from any statutory obligations / legal compliances w.r.t. labour hutment establishment during as well as after the completion of contract.

3.11.2	Labour colony requirement shall be assessed by contractor as per work requirement, and labour hutments more than One (01) set, if required shall be constructed by contractor as per requirement without any cost implication to BHEL. In case labour hutment is not completed as per the drawings and specification and any penalty is imposed by Customer, same shall be recovered from contract's RA Bill. Rectification and Corrections in labour hutment as pointed out by BHEL/Customer shall be bidder's responsibility and any cost incurred by BHEL to complete the works, in case of non-compliance of the instructions, same shall be recovered from his RA Bills along with 5% overheads.
3.11.3	Land for labor 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	Development of Bidder's temporary staff colony and labour colony having adequate no. of rest rooms along with toilets & fencing etc. (**drawing enclosed for ready reference**).
3.11.5	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.
3.11.6	Providing and maintaining facilities for safety, welfare, drinking water and sanitation, hygiene, biennial health check-up etc. for construction workers at their workplaces as well as at labour & staff colonies.
3.11.7	Development and maintenance of above facilities for construction workers deployed by the Contractor shall solely rest with the Contractor.
3.12	Installation of necessary amenities- and temporary infrastructure for construction activities at Project site locations. Following are the minimum amenities to be provided by the bidder within the quoted price including removal/disposal of the same in environment friendly manner after its intended use/completion of scope of work: 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. v. Labour colony should have all hygienic condition, dining hall, toilets, proper sewerage system, good drinking water arrangements. vi. Royalty challan and statutory documents shall be submitted along with RA Bills for processing of Bills.

3.13	**Construction Power:**
3.13.1	Construction power (three phase, 415 V/ 440 V) will be provided on chargeable basis at one point near the site at a distance of approx. 500M. Further, distribution shall be arranged by the contractor at his own cost and services. 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. The charges for the actual energy consumed by the bidder (Energy Charges Only) shall be recovered by the BHEL based on prevalent rate of DISCOM and type of connection used.
3.13.2	Contractor shall deploy and install required energy meter, cables, fuses, distribution boards, switchboards, bus bars, earthing arrangements, protection devices and any other installation as specified by statutory authority/act. Contractor shall provide at his own cost necessary calibrated energy meters (tamper proof, suitably housed in a weather proof box with lock & key arrangement) at point of power supply along with calibration certificate from authorized/ accredited agency for working out the power consumption. In case of recalibration required for any reason the necessary charges including replacement by calibrated meters is to be borne by the contractor. 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. Contractor shall also obtain approvals of appropriate authority and pay necessary fees, levies etc. towards the clearance of such installations, prior to use.
3.13.3	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.
3.13.4	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.
3.13.5	It shall be the responsibility of the Contractor to provide, maintain the complete installation on the load side of the supply with due regard to the safety requirements at site. All cabling and installations shall comply in all respects with the appropriate statutory requirements. The installation and maintenance of this shall be done by licensed and experienced electrician.
3.13.6	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 labour, extension of time etc. The Contractor shall adjust his working shift accordingly and deploy additional manpower, if necessary, so as to achieve the target.

3.13.7	Contractor to note that till construction power is made available by BHEL (approx. within 5 months from start of work); contractor shall make his own arrangement like DG set etc. 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.
3.13.8	Contractor shall be well equipped with back-up power supply arrangement like DG set and diesel operated welding machine etc. to tackle situations arising due to failure of supplied power, so as to ensure continuity and completion of critical processes that are underway at the time of power failure or important activities planned in immediate future.
3.13.9	BHEL is not responsible for any loss or damage to the Contractor's equipment as a result of variations in voltage or frequency or interruptions in power supply.
3.13.10	The bidder will have to Procure & install General mobile illumination system during construction right from start of his work. This system will include temporary pole lighting, portable lighting towers with DG back-up, within the quoted price. The illumination should be such that minimum illumination requirement as specified by Indian standards for general illumination is maintained.
3.13.11	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.
3.14	**Construction water:**
3.14.1	Construction water shall be arranged by bidder. Bidder has to make arrangement of further distribution of water at his own cost. No extra payment shall be made under this account.
3.14.2	The Contractor should make arrangements for storage of sufficient quantity of water required for work. The agency should also construct sumps (if required) of suitable size for storage of construction water as per their requirement for use in batching plant and construction purposes.
3.14.3	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.

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.

4.1	**For Civil Works**	
4.1.1	Hydraulic Excavator /Poclain	02 Nos.
4.1.2	Dumper	06 Nos.
4.1.3	Dozer	As per requirement
4.1.4	Trailer (20MT Capacity)	As per requirement
4.1.5	Concrete Transit Mixer	02 Nos.
4.1.6	Concrete Boom placer min. 35m long of required Capacity	01 No.
4.1.7	Concrete Pump (60 Cum/Hr min capacity)	01 No.
4.1.8	Concrete Mixture Machine	As per requirement
4.1.9	Vibrators (electrical/diesel)	As per requirement
4.1.10	Reinforcement bending machine	As per requirement.
4.1.11	Reinforcement cutting machine	As per requirement.
4.1.12	JCB	02 Nos.
4.1.13	Farana crane (Required Capacity) *Note- Hydra is not allowed at project site	As per requirement
4.1.14	Self-priming Dewatering pump of various capacity (Diesel/Electric) From 2 HP to 15 HP	05 Nos.
4.1.15	Curing / dewatering pump – 1.5 / 2 HP	10 Nos.
4.1.16	De-watering pump (diesel operated) – 20 HP & 30 HP	02 No.
4.1.17	Hydraulic Excavator /Poclain with rock breaker arrangement	As per Requirement
4.1.18	Pneumatic rock breaker with jack hammer	As per Requirement

4.1.19	Ply Shuttering board with adequate supporting structure – (Old steel shuttering plates will not be allowed).	As per requirement
4.1.20	MS Scaffolding Pipes.	As per requirement
4.1.21	Motorized External Platform (Sky Climber)	As per requirement
4.1.22	Tractor mounted grader/ loader	As per requirement
4.1.23	Plate compactor	As per requirement.
4.1.24	Earth Compactor- 3MT Capacity	As per requirement.
4.1.25	Total Station	02 Nos.
4.1.26	Auto level & staff	03 Nos.
4.1.27	Road roller/Vibro roller	02 Nos.
4.1.28	Water Tanker with sprinkler attachment	01 No.
4.1.29	Man lift crane of Minimum 20m reach	As per requirement
4.1.30	DG Set of 125 KVA Capacity	01 No.
4.1.31	Electrical Winches with Building Hoist	As per Requirement
4.1.32	Construction Cable and Water Pipe Line	As per Requirement

4.3	**Measuring and Monitoring Equipment (MMEs):** To be finalized as per site requirement.
4.4	T&Ps shown in the above mentioned list is suggestive requirement. However, mobilization schedule as mutually agreed at site for major T&Ps, have to be adhered to. Numbers/time of requirement will be reviewed from time to time at site and contractor will provide required T&Ps/equipment to ensure completion of entire work within schedule/target date of completion without any additional financial implication to BHEL. Contractor will give advance intimation & certification regarding capacity etc. prior to dispatch of heavy equipment. 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.

4.5	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.
4.6	Heavy equipment will be tracked with real-time position location for fleet management. Deployment vs planned reports shall be generated. Equipment condition monitoring data like service meter reading, operation maps, loading, fuel levels, operating information, idle time etc. shall be captured. This data shall be captured through integrated online project monitoring system. All T&Ps and Equipment deployed by contractor will also be covered/ monitored through this system. Accordingly, minimum 5 signals per equipment should be made available to provide the input to integrated online project monitoring system. Necessary software/ hardware for aforesaid system shall be provided by BHEL.
4.7	Other terms and conditions regarding T&Ps to be deployed by Contractor, shall be as per clause No. 4.2 of SCC.

5.0 LIST OF T&P TO BE PROVIDED BY BHEL FREE OF HIRE CHARGES ON SHARING BASIS:

BHEL shall not provide any T&Ps for this scope of work.

All T&Ps required for handling of items / materials to be arranged by bidder.

6	**Time Schedule and Mobilization:**	
6.1	**Initial Mobilization and Time Schedule:** After issue of Work Order (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 Work Order and submit detailed mobilization plan to start work within 15 days from date of Work Order; unless instructed by BHEL to differ start of work in writing. The contractor has to subsequently augment his resources in such a manner that the entire works are completed within the contract period of **Thirty (30) Months** from the date of start of work in a manner required by BHEL to match with the project schedule. Date of Start of work shall be considered as 15 days after date of Work Order or as instructed by BHEL in writing.	
6.2	**Schedule of Completion:** 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.	
	Activity	**Schedule of completion from date of start of work**
6.2.1	Service & Clarified Water Tanks	18 Months
6.2.2	DM Plant	20 Months
6.2.3	ClO2 System	21 Months
6.2.4	Raw Water Pump House, Sump, Forebay, Pipe Encasing, etc.	22 Months
6.2.5	Pre-treatment Plant	24 Months
6.2.6	CW Pump House, Sump, Channel & Forebay	25 Months
6.2.7	CW Treatment Plant	26 Months
6.2.8	Misc. Pump House (ACW, DM, Clarified Water etc.)	27 Months
6.2.9	Control Rooms for Various Facilities, Other Facilities in BOP Area & Water System Part	27 Months

6.2.10	Area Paving in Various Locations (including Boiler Area)	28 Months
6.2.11	CHP Waste Water Treatment Plant	29 Months
6.2.12	Finishing, Handing Over and Reconciliation	30 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.	
Milestones	**Activity**	**Schedule of completion from start of work**
M1	DM Plant	20 Months
M2	CW Pump House, Sump, Channel & Forebay	25 Months
6.6	**Provision of Penalty in case of slippage of Intermediate Milestones:** In case of slippage of Two Major Intermediate Milestones, mentioned as M1 & M2 above, delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to F-14.	
6.6.1	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	In case delay in achieving M1 Milestone is solely attributable to the contractor, 0.5% per week of executable contract value*, limited to maximum 2% of executable contract value, will be withheld.	
6.6.3	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.
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.

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	**Documents required for RA Bill:** • 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: i. Wages payment sheet as per applicable minimum wages. ii. Proof of PF contribution submission. iii. Proof of ESI/ WC contribution submission iv. Proof of Bonus payment as per Bonus Act if applicable. v. Proof of EL payment if applicable. vi. Any other statutory document if applicable.
7.1.2	**Documents required for Final Bill:** 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: • 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 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:** **Interest Free Secured Mobilization Advance as per GCC Clause No. 2.13.1** will be payable under exceptional circumstances on certification of BHEL Construction Manager at Site. Interest Free Mobilization Advance shall be disbursed in specifically mentioned stages of major resource mobilization as specified hereunder: 1. For Mobilization of Excavator & Dumper, Transit Mixers, Boom Placer/Concrete Pump, Construction Materials (Sand, Aggregate, Admixture etc.) - 2.0% 2. For Mobilization of required T&Ps and resources at site to start the work - 1.5% 3. For Installation and Erection of Site Infrastructure by contractor i.e. site office stores etc. - 1.5% Note: 1. BHEL Site-CM 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.

8.0	**TAXES & DUTIES**
8.1	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. However, provisions regarding **GST** on output supply (goods/service) and TDS/TCS as per Income Tax Act shall be as per following clauses.
8.2	**GST (Goods and Services Tax)**
8.2.1	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.
8.2.2	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.
8.2.3	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.
8.2.4	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.
8.2.5	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.
8.2.6	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.
8.2.7	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.

8.2.8	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: - a. Supply of goods and/or services have been received by BHEL. b. Original Tax Invoice has been submitted to BHEL. c. Contractor/ Vendor has submitted all the documents required for processing of bill as per contract/ purchase order/ work order. d. In cases where e-invoicing provision is applicable, vendor/contractor is required to submit invoice in compliance with e-invoicing provisions of GST Act and Rules made thereunder. e. Contractor has filed all the relevant GST return (e.g. GSTR-1, GSTR-3B, etc.) pertaining to the invoice submitted and submit the proof of such return along with immediate subsequent invoice. In case of final invoice/ bill, contractor has to submit proof of such return within fifteen days from the due date of relevant return. f. Respective invoice has appeared in BHEL's GSTR - 2A for the month corresponding to the month of invoice and in GSTR-2B of the month in which such invoices has been reported by the contractor along with status of ITC availability as "YES" in GSTR-2B. Alternatively, BG of appropriate value may be furnished which shall be valid at least one month beyond the due date of confirmation of relevant payment of GST on GSTN portal or sufficient security is available to adjust the financial impact in case of any default by the contractor. g. Contractor has to submit an undertaking confirming the payment of all due GST in respect of invoices pertaining to BHEL.
8.2.9	Any financial loss arises to BHEL on account of failure or delay in submission of any document as per contract/purchase order/work order at the time of submission of Tax invoice to BHEL, shall be deducted from contractor's bill or otherwise as deemed fit.
8.2.10	TDS as applicable under GST law shall be deducted from contractor's bill.
8.2.11	Contractor shall comply with the provisions of e-way bill wherever applicable. Further wherever provisions of GST Act permits, all the e-way bills , road permits etc. required for transportation of goods needs to be arranged by the contractor.
8.2.12	Contractor shall be solely responsible for discharging his GST liability according to the provisions of GST Law and BHEL will not entertain any claim of GST/interest/penalty or any other liability on account of failure of contractor in complying the provisions of GST Law or discharging the GST liability in a manner laid down thereunder.
8.2.13	In case declaration of any invoice is delayed by the vendor in his GST return or any invoice is subsequently amended/altered/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.
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	**Variation in Taxes & Duties:** 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. In case the Government imposes any new levy/tax on the output service/goods after price bid opening, the same shall be reimbursed by BHEL at actual. The reimbursement under this clause is restricted to the direct transaction between BHEL and its contactor only and within the contractual delivery period only. 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.
8.3	**Income Tax:** **TDS/TCS** as applicable under Income Tax Act, 1961 or rules made thereunder shall be deducted/collected from contractor's bill.

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.
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.	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: 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.
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.

9.0	**MATERIAL**
9.1	Material to be issued by BHEL (Free of Cost) as per BOQ cum Rate Schedule: 1. Ready Mix Concrete (RMC) 2. Cement 3. Reinforcement Steel and MS Round Bar (Earthing Rod)
9.2	All other materials required for proper completion of job shall be provided by the contractor and is deemed to be inclusive in the quoted price. Bidder's scope also includes following:
9.2.1	Furnishing samples of all materials required by the BHEL Engineer for testing/inspection and approval for use in the works. The samples may be retained by the Engineer for final incorporation in the works.
9.2.2	Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
9.2.3	Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
9.2.4	Contractor shall set up suitable storage facilities for Cement, sand, deck plate, bolts, aggregate, reinforcement steel, structural steel, handrail, grating, 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 lapse of storing will be because of contractor.
9.3	**HANDLING OF MATERIAL ISSUED BY BHEL:** **Refer Chapter-VI "Material Handling, Storage & Preservation" of SCC**
9.3.1	Cement and 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 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.
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	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.
9.3.8	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.
9.3.9	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.
9.3.10	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.

9.3.11	The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL.
9.3.12	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.
9.3.13	BHEL issued materials, shall not be under any circumstances whatsoever, and shall be taken out of the project site unless otherwise permitted by BHEL for outside job.
9.3.14	"BHEL/BHEL's agency for providing RMC" shall carry out design mix as per IS 456/10262 latest revision and specification, using the OPC and/or OPC with Fly Ash and/or PPC (as the case may be) and get the design mix proportions approved by BHEL's Customer/Consultant. The design mix proportion shall be used for concreting at this project.
9.3.15	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 Ready Mix Concrete and Cement:**
9.4.1	Ready Mix Concrete (Design Mix/Nominal Mix) of required grade shall be issued by BHEL at Batching Plant of BHEL's RMC / Other Agency as per relevant BOQ Items. Transportation of Concrete through Transit Mixer from the Batching Plant to Pouring Point & Concrete Pouring through Concrete Pump/ Suitable Boom Placer or other means as per site requirement shall be in the scope of contractor.
9.4.2	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.
9.4.3	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.
9.4.4	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.

9.4.5	The empty cement bags duly accounted for against issue shall be the contractor's property and the same shall be disposed as per statutory regulation prevailing in the project.
9.4.6	No cement will be issued on free basis for bought out item like Hume pipe, Interlocking Paver block, Fly ash brick etc. However, cement for mortar for fixing of these items if required will be issued on free basis.
9.4.7	One month shall be the limit for the maximum quantity of BHEL issued cement that would be with the contractor at any point of time when work is in progress (excluding what has already been incorporated in the works).
9.5	**Issue of Reinforcement Steel and MS Round Bar (Earthing Rod):** **Refer Chapter-VI "Material Handling, Storage & Preservation" of SCC**
9.6	**Return of Cement, Reinforcement Steel and MS Round Bar (Earthing Rod):** **Refer Chapter-VI "Material Handling, Storage & Preservation" of SCC**
9.7	**Return of Ready Mix Concrete:** Under no circumstances, Ready Mix Concrete will be taken back. Contractor has to plan accordingly for proper use of Ready Mix Concrete.
9.8	**Consumption and Wastage of Cement, Reinforcement Steel and MS Round Bar (Earthing Rod):** **Refer Chapter-VI "Material Handling, Storage & Preservation" of SCC**
9.9	**Consumption and Wastage of Ready Mix Concrete:**
9.9.1	**Ready Mix Concrete (RMC) Consumption:** The theoretical consumption of various grade of based on approved construction drawing shall be considered. Quantity shall be calculated considering the volume of concrete as per approved drawing. No extra cost shall be payable to you for any deviation in quantity of Ready Mix Concrete received from the Batching Plant and actual use at site. Requirement of RMC shall be provided at least one week in advance. Weekly concreate plan shall be provided to BHEL on regular basis
9.9.2	**Ready Mix Concrete (RMC) Wastage:** a) **Allowable wastage:** One and half percent (+1.5%) of theoretical consumption of cement unless specified otherwise in the technical specification. b) For RMC issued by BHEL to the contractor free of cost, and which is not accounted for by the contractor to BHEL, then recovery for such material shall be affected at penal rates.

Sl. No.	RMC consumption	Basis of issue & penal recovery
1	Theoretical consumption (without considering any wastage or loss).	Free
2	Actual consumption being Limited to one and half percent (+1.5%) of aforesaid theoretical consumption towards allowable wastage.	Free
3	Actual consumption beyond one and half percent (+1.5%) of Sl. No. (1) above.	Penal Rate

9.10 **Recovery of Materials (Penal Rates):**

If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA Bills as per following penal rates (excluding GST):

9.10.1

Sl. No.	Materials	Penal Rate (Rs.)
1	Cement (PPC)	5,000/- per MT
2	Cement (OPC)	7,000/- per MT
3	Reinforcement Steel / Earthing Rod	65,000/- per MT
4	RMC – M7.5 (1 part cement, 4 part sand, 8 parts of aggregate by volume)	4,500/- per MT
5	RMC – M10 (1 part cement, 3 part sand, 6 parts of aggregate by volume)	5,000/- per MT
6	RMC – M15 ((1 part cement, 2 part sand, 4 parts of aggregate by volume)	5,500/- per MT
7	RMC – M20	6,000/- per MT
8	RMC – M25	6,500/- per MT
9	RMC – M30	7,000/- per MT
10	RMC – M35	7,500/- per MT

9.10.2 **Penal Rate will be 1.05 times the actual cost to BHEL or Rate mentioned in Table 9.10.1 above, whichever is higher, shall be imposed.**

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

CONTENTS	
Description	**Remarks**
PART A: Instructions to the Bidders	Instructions
PART B: % weightage for amount of individual items of Schedule of quantity	Refer Latest Chapter-XI of Vol-IA TCC (BILL OF QUANTITIES AND % WEIGHTAGE OF INDIVIDUAL ITEMS)
PART C: Total Price for entire scope of Work	This part is implanted in the E- Procurement portal entitled as "Part-C of Vol-II Price Bid".

Part A:	**Instructions to the Bidders**
1.	**Bidders shall quote Total Price for the entire scope of work in Rupees in VOL II PRICE BID at BHEL E-procurement Portal.** 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.	Bidder shall quote the total price in "Price Bid".
3.	BHEL has fixed the % weightages as in "Part-B" for the amount of individual items of BOQ Cum Rate Schedule w.r.t. the total price of Price Bid Vol-II.
4.	Based on the pre-fixed % weightages, amount of individual items shall be derived by BHEL. This amount shall not be rounded off.
5.	Based on the quantities of individual item and the amount arrived in Sl. No. 4 above, item rate of individual items shall be derived by BHEL. This item rate shall be rounded off up to two decimal places and shall be used to calculate the total amount of an item.
6.	Bidders to note that this is an '**Item rate contract'**. Payment shall be made for the actual quantities of work executed at the Unit rate arrived at as per serial no. 5 above.
PART B:	% weightage for amount of individual items of BOQ CUM RATE SCHEDULE w.r.t. the total price (as quoted by the bidder in "Part C of Vol-II-Price Bid")- attached separately.

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

- SECTION-C: CUSTOMER CONTRCT SPECIFIC TECHNICAL REQUIREMENTS
- SECTION-D: GENERAL TECHNICAL REQUIREMENTS
- WORKERS ACCOMMODATION DRAWING OF CUSTOMER
- PLOT PLAN (TENDER STAGE DRAWING FOR BIDDER'S INFORMATION ONLY. FINAL PLOT PLAN SHALL BE PROVIDED TO THE SUCCUESSFUL BIDDER AFTER AWARD OF WORK).

NOTES:

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

PREAMBLE FOR BOQ CUM RATE SCHEDULE	
1	**Preamble for the Schedule of Quantities/BOQ Cum Rate Schedule:**
1.1	Details of the items in the BOQ Cum Rate Schedule shall be read in conjunction with the Corresponding Consultants/ Customer specifications, drawings and other documents and shall have precedence over any contrary statement mentioned anywhere in this document.
1.2	The work shall be carried out as per construction drawings, specifications, the description of the items in this schedule and/or Engineer's instructions, Drawings enclosed with these documents are only indicative giving some idea of the type of work involved. The layout, sizes and details of the building, structures and foundations shown in tender drawings may vary at a large extent during actual construction. Final drawings will be issued progressively during the execution of the work.
1.3	Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
1.4	Unless specifically mentioned otherwise in the contract, the contractor shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant , temporary works, labour materials, levies , taxes , transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
1.5	The rate shall also be inclusive of carrying out topography survey of site to establish levels and coordinates at suitable intervals, form existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references, pillars and other identification marks etc. No separate payment will be made towards the same.
1.6	The quantities of the various items mentioned in the BOQ cum Rate Schedule are approximate and may vary up to any extent or be deleted altogether. The overall variation in contract value on execution shall be dealt as per GCC. Contractor has to obtain prior approval of BHEL/ Customer before procurement of bought out items/ building materials.
1.7	BHEL Engineer's decision shall be final and binding on the contractors regarding clarification of items in BOQ cum Rate schedule with respect to the other sections of the contract.
1.8	In case of any discrepancy between item description, relevant specification, clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the contractor has quoted for the more stringent requirement.

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
100	EARTH WORK: Earth work In excavation, backfilling and disposal including all labour, equipments etc complete as per specification, drawing and as directed by engineer- in-charge for the following.					
101	Earth work in excavation in all types of soil including ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1Km, spreading/levelling of disposed materials etc all complete for following depths below ground level.					
a	Depth from ground level but not exceeding 2 m	CUM	172341			2.4147509238
b	Depth exceeding 2 m but not exceeding 4 m	CUM	53594			0.9405563304
c	Depth exceeding 4 m but not exceeding 6 m	CUM	22671			0.4973323992
d	Depth exceeding 6 m but not exceeding 8 m	CUM	5506			0.1511774851
103	Earth work in excavation in soft rock including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc but does not require chiselling or blasting including setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.					
b	Depth exceeding 2 m but not exceeding 4 m	CUM	5900			0.1472989910
c	Depth exceeding 4 m but not exceeding 6 m	CUM	100			0.0029959117
105	Earth work in excavation in hard rock requiring controlled blasting including wedging, line drilling, pre shearing etc as required, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, necessary licenses/statuatory clearances for blasting, supply, storage & handling of blasting materials, stacking/disposal of surplus excavated material within a lead upto 1Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.					
e	Depth exceeding 8 m but not exceeding 10 m	CUM	18958			1.7332836275
f	Depth exceeding 10 m but not exceeding 15 m	CUM	2234			0.2248029205
106	Earth work in excavation in hard rock requiring chiselling including setting out, levelling, deawtering (wherever required), dressing the sides & bottom, all lifts, stacking/disposal of surplus excavated material within a lead upto 1Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.					
e	Depth exceeding 8 m but not exceeding 10 m	CUM	280			0.0405560844
f	Depth exceeding 10 m but not exceeding 15 m	CUM	450			0.0716973635
A107	Earthwork in Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 300mm compacted thickness using/with selected materials from compulsorily excavated earth available within a lead upto 1 Km and compacted as specified including re-excavation of stacked earth, watering, ramming/compaction by manual/mechanical means, dressing etc all complete.for the following.					
a	at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	194830			2.2133862260
b	at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	774536			9.8219743908
108	Earthwork in Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with selected earth directly from excavation within a lead upto 1Km and compacted as specified including watering, ramming/compaction by manual/mechanical means, dressing etc all complete.for the following:					
a	at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	14024			0.0734404271
109	Extra over ST No. 101 and 103 to 108 for carriage of material/earth for every 500m or part thereof beyond an initial lead of 1km.					
b	Carriage for disposal of serviceable/unserviceable material/ earth	CUM	163194			0.2771634115
111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.					
a	For 80% Relative Density	CUM	2939			0.4700317652
A111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 300mm compacted thickness and compacted so as to achieve at least 80% relative density as per IS 2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.	CUM	258			0.0384364267
B111	Supplying and filling clean and well graded sand (conforming to IS 383 with grading zone I to III) upto any depth under floors, around foundations, plinths, paving, tank foundations, etc. in layers not exceeding 300mm compacted thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.	CUM	1807			0.3034415685
112	Extra over item no. 101 for shoring and strutting in trenches including packing cavities (wherever required as instructed by engineer) all complete as per specification and as directed by engineer in charge.					
a	upto depth of 2m	SQM	3500			0.1604952686
b	Depth exceeding 2 m but not exceeding 4 m	SQM	280			0.0160495269
200	CONCRETE WORK: Providing and placing concrete work including cost of labour, materials (unless otherwise specified in BOQ/contract specification) and equipment for handling, transportation, batching, mixing, placing, vibrating and curing (excluding cost of centering, shuttering and reinforcement) with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.					
RMC-201	Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 40 mm graded aggregate by volume) as mass filling course, lean concrete, levelling course, mud mat under and around foundations/floors below finished floor level upto depth of 10m from FFL. (For depth greater than 10m from FFL, extra over for additional depth to be paid in Item No 224). (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	6511			1.2008161033

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
RMC-202	Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	3127			0.5766820939
RMC-203	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	1			0.0001844379
RMC-204	Concrete of grade M20 (1 part cement, 1.5 part sand, 3 parts of 10-20 mm graded aggregate by volume) under floors, paving, plinth protection, pipe encasing etc complete below finished floor level upto depth of 10m from FFL. (For depth greater than 10m from FFL, extra over for additional depth to be paid in Item No 224). (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	616			0.1135492152
RMC-205	Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under floors etc for any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing below finished floor level upto a depth of 10m from FFL(For depths greater than 10m from FFL, extra over for additional depth to be paid in Item No 224), for the following. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
a	M 20 Grade	CUM	100			0.0184437936
b	M 25 Grade	CUM	17083			3.1506818802
c	M 30 Grade	CUM	4511			0.8319995285
RMC-206	Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with sand and graded hard stone aggregate of 20mm nominal size in superstructure for any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing upto 10m level above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 225), for the following. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
b	M 25 Grade	CUM	5469			1.0086726272
c	M 30 Grade	CUM	219			0.0403919079
210	Extra over ST Nos. 205 to 207 for conducting UPV test for concrete at all levels including all equipments, making necessary arrangements, staging, submission of report etc. all complete as directed by engineer in charge and as per specification.	CUM	1075			0.0529540892
RMC-211	Encasing of structural steel member with concrete using nominial aggregate size of 12.5mm down. Encased member shall be wrapped with welded wire mesh/chicken wire mesh with proper lap etc. complete as per specification for the following grades. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
Ac	M 30	CUM	113			0.0207492678
RMC-212	Screed concrete conforming to IS 456 with sand and graded hard stone aggregate 12.5mm/6 mm nominal size on the roof upto 10m level above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 225) or thickness, drains etc complete as per following. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
a	1:2:4	CUM	80			0.0147550349
RMC-213	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in precast works like roof slabs/trench covers, fins, lintels, chajas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/moulds, curing, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transpoting, all leads, erection without damage, setting in position with cement sand mortar (1:3), filling the gaps between adjacent preacast units with M30 grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc.complete with graded aggregate (20/12.5/10 mm) and as per specification and drawing for following grades. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
b	M25	CUM	345			0.1532591399
c	M30	CUM	38			0.0168807169
RMC-214	Design Mix cement concrete as per IS:456, IS 3370 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in water retaining/conveying structures including addition of suitable plastisizer cum waterproofing cement additives confirming to IS 9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS 2545 and specification with 20 mm nominal size graded aggregate upto depth of 10m from FFL, (For depth greater than 10m from FFL, extra over for additional depth to be paid in Item No 224). for following grades. Watertightness is to be ensured including structural grouting if required. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
b	M30	CUM	32245			6.5074339226
215	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer in charge.					
a	Plain cement concrete of all grades	CUM	146			0.0212073098
b	Reinforced cement concrete of all grades	CUM	256			0.0566750127

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
216	Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer including equipment, safety precautions, making good the broken surface etc all complete as per specification, drawing, instructions of engineer in charge but excluding cutting of reinforcement .	CUDM	1343			0.0138774829
217	Extra over and above St No 216 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer in charge. Measurement shall be on the cross sectional area of reinforcement cut.	SQCM	215			0.0001825740
218	Cutting Reinforced concrete with mechanised tools like Core drilling machine etc. for cutting pockets, holes, cores in slab, beam, column or foundation as per direction of engineer in charge.	CUDM	135			0.0055409081
220	Providing & laying Plum cement concrete 1:3:6 with 75% graded metal of maximum size 40 mm and 25% plums of maximum size 150 mm.	CUM	812			0.3802786783
222	Cutting of groove of 10mm X 40mm size with groove cutting machine in concrete paving all complete.	RM	350			0.0031207413
223	Cutting of existing concrete/ RCC work inside control room/ pump house or anywhere inside boundary using power tools of (DD2E of HILTI/ BOSCH make) with low noise and dust including cutting reinforcements, removing the rubbish within a lead of 1 km, including making good the broken edges/ surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/ supporting at any level, all complete and as directed by Engineer (measurements shall be taken as per cutting surface area).	SQM	175			0.0683095603
224	Extra over item no. 201 to 205 and 214 for depth below FFL (Finished Floor Level) as per following:					
a	Depth exceeding 10m from FFL but not exceeding 20m	CUM	750			0.0307828227
225	Extra over item no. 206 and 212 for height above FFL (Finished Floor Level) as per following:					
a	Height exceeding 10m from FFL but not exceeding 20m	CUM	1750			0.0899070718
300	FORMWORK: Providing, fixing and removing formwork at all elevations for all structures, as per specifications and including all labour, material, scaffoldings and centereing etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.					
301	Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams & slabs(for which scaffolding work not required for vertical support of bottom face of formwork), mass concrete, trenches, grade slab, paving etc.including chamfering of edges as per drawing, specification and instruction of engineer in charge.					
a	Upto Depth 10m From FGL	SQM	17008			1.5020449543
A301	Fairface form work with good quality water proof ply wood with Filmface of minimum 12mm thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams & slabs(for which scaffolding work not required for vertical support of bottom face of formwork), mass concrete, trenches, grade slab, paving etc.including chamfering of edges as per drawing, specification and instruction of engineer in charge.					
a	Upto Depth 10m From FGL	SQM	74928			6.9481183708
b	Depth exceeding 10m From FGL	SQM	600			0.0617015144
302	Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface above finished ground floor level for columns, beams, suspended/intermediate floors, roofs, lintels, cantilevers, staircases, landings, balconies, etc. including chamfering of edges as per drawing.for all heights as per specification, drawing and instruction of engineer in charge.					
a	For Height Upto 20m from FGL	SQM	8403			0.8931693605
A302	Fairface form work with good quality water proof ply wood with Film face of minimum 12mm thickness and smooth surface above finished ground floor level for columns, beams, suspended/intermediate floors, roofs, lintels, cantilevers, staircases, landings, balconies, etc. including chamfering of edges as per drawing.for all heights as per specification, drawing and instruction of engineer in charge.					
a	For Height Upto 20m from FGL	SQM	38165			4.2593869509
304	Providing, fixing and removing formwork in block-outs/pockets and openings (below 0.1 sqm plan area) at all elevations including cutting, formation of all shapes and all other operations required for making the required shape and size all complete as per specification, drawing and instruction of engineer in charge.					
a	Upto 150 mm depth	Each	30			0.0010529848
b	Pockets of depths more than 150mm and upto 300 mm depth	Each	220			0.0127348891
c	Pockets of depths more than 300mm and upto 600 mm depth	Each	280			0.0286513776
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	280			0.0446216475
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	35			0.0080099028
305	Extra over item no.301 and 302 for curved form work for foundations, footings, beams, walls, trenches, domes, arches etc as per specification.					
a	Extra for Curve Shuttering for Item No. 301/ A301	SQM	1500			0.0282352787
b	Extra for Curve Shuttering for Item No. 302/ A302	SQM	9783			0.2215344216
B306	Transporation from BHEL store and shifting at site, alingning, fixing and removal and deposit / disposal of shuttering material after concrete of concrete volute pump (CVP), at all heights and depths as per approved drawing complete in supervision of BHEL engineer/supervisor/foreman all complete. (Shuttering material shall be issued free of cost by BHEL)	SQM	1750			0.0749151295
400	REINFORCEMENT WORK : Reinforcement work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge.					
401	Providing, straightening, cutting, bending, placing in position at any level, binding of mild steel reinforcements conforming to grade 1 of IS:432 part 1 in concrete including cost of reinforcement and binding wire, labour, scaffolding, transportation to & from stores etc. all complete as per specifications & drawings.	MT	7			0.0743469564
403	Transportation, straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500D or 500EQR or HCRM or any other Grade confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer. (BHEL to supply steel free of cost)	MT	6717			9.9825773151

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
405	Providing & fixing of Rebar in existing concrete surface by inserting reinforcemnet bar with Epoxy based suitable bonding compound of Hilti or equivalent make (HIT-RE-500 of Hilti or equivalent make) for interconnection of new R.C. structure with existing R.C. structure. Depth of drilled hole should be suitable to develop maximum recommended strength as per approved manufacturer's recommendation. This item includes supply of all materials including bonding chemicals, T&P required to execute the work, cost of all labour, transportation of chemical, staging to reach work place etc. all complete as directed by Engineer - in - Charge. Random Pull out non destructive test as directed by engineer shall beconducted to ensure strength of bond and same is included in this item. Reinforcement bar shall be paid separately under item no. 402, 403, 405 as applicable.					
a	12mm Reinforcement bar	Nos.	**70**			0.0042501525
b	16mm Reinforcement bar	Nos.	70			0.0066674886
c	20mm Reinforcement bar	Nos.	70			0.0093225955
407	Transportation from BHEL yard, straightening, cutting, bending, welding / binding in position of old cut piece TMT steel reinforcements confirming to IS:1786 including binding wire, labour for placing in concrete, chair and other misc. works complete all as per bar bending schedule and as directed by Engineer. [Old cut piece TMT Reinforcement steel will be issue by BHEL Store free of cost]	MT	35			0.0631281390
408	Straightening, cutting, bending of TMT steel reinforcement (Grade Fe-500D or 500EQR) of already fixed/embedded TMT in concrete binding in position including cost of binding wire, labour, scaffolding, etc complete all as per specifications, drawings and as directed by Engineer.[Measurement for payment shall be done for the exposed steel used in concreting. Additional/new TMT Reinforcement steel used in this item will be paid seperately in the relevant Item No 401-403]	MT	18			0.0071585985
500	Roof Treatment works: Roof treatment works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, curing, sampling, testing etc at all level as per specification, drawings and as directed by engineer - in - charge.					
502	Providing and laying underbed/topping grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 15 mm including preparation of surface, batching, mixing, leveling etc all complete. (Cement shall be issued by BHEL free of cost)	SQM	3265			0.0651555594
A503	Providing and applying bitumen felt water proofing for normal treatment having bonding materials consisting of blown type conforming to IS: 702 or residual bitumen conforming to IS: 73 or a mixture of the two with one layer of felt consisting of five courses and with a minimum overlap of 75 to 100 mm of felt including preparation of surfaces etc all complete. (For description of layers refer specification)					
a	With hessian base felt	SQM	1750			0.0478843908
A506	Providing and applying PU based high solid content (minimum 90%) of approved make water proofing treatment with one coat of polyurethane or any other equivalent material based primer with an application rate of minimum 6 sq.m per litre and two successive liquid coatings of high solids content urethane pre-polymers or equivalent material based finish coats as per relevant IS/ASTM standards to form an elastomeric membrane with overall dry film thickness 1.5 mm subject to minimum 500 gm/sqm/coat application rate. Item includes surface preparation.The coating shall have high viscosity, min. 400% elongation and forming a perfectly smooth permanently flexible seamless membrane which should have good adhesion to roof substrates.The cured film should have a very low water absorption rate (0.5% maximum at ambient temperature after 7 days), reinforcing layer of polyscrim cloth (non woven polyscrim cloth of 100% polyester with min. weight of 40gsm/sqm) or geo-textile non woven polyster (120-150 gsm), polymerised mastic base preparation, primer, making of fillets, cleaning & preparation of surface, vaccum removal of loose sand, expansion joints & sealing at suitable intervals, application by using a pneumatic machine as per manufactures recommendations, etc. all complete as per specifications, drawings and direction of engineer in charge. The application of waterproofing treatment shall be carried by authorised applicator of approved Manufacturer of Waterproofing materials.	SQM	**3265**			0.5064573978
B506	Providing and applying Roof water proofing with High Solid content liquid applied urethane based elastomeric membrane to give uniform joint less dry film thickness of minimum 1.5 mm (as per ASTM C 836 and C 898), laid over reinforcing layer of polyscrim cloth or non woven geo-textile . This treatment shall include application of polymerized mastic over the screed / mortar to achieve smooth surface. Wearing course on the top of membrane shall consist of 25mm thick PCC (1:2:4) cast in panels of maximum 1.2 x 1.2m size and reinforced with 0.56mm dia galvanised chicken wire mesh and sealing of joints using sealing compound/elastomeric water proofing membrane.	SQM	32			0.0043806433
A507	Providing and laying wearing course consisting of 20 mm thick plain cement mortar 1:4 (1 cement : 4 sand)) cast in panels of maximum size 1.2mx1.2m and reinforced with 0.56 mm dia. galvanised chicken wire mesh and sealing of joints (in grooves of 6mm X 6mm) using silicon /elastomeric compound etc all complete. (Cement shall be issued by BHEL free of cost)	SQM	3265			0.1552134811
A510	Providing and laying cement concrete chequered roof / floor tiles of 22 mm thickness and size min. 200x200 mm conforming to IS 13801 with 8 mm thick 1:4 cement mortar over the top most layer of roofing treatment in pathway or entire area with fine joints including sealing of joints (silicon/elastomeric sealant) and providing expansion gap in both directions including underbed (as per drawings) filled up with (silicon/elastomeric) joint sealant etc all complete. (Water proofing paid elsewhere) (including cost of cement for tiles making).	SQM	950			0.1106554019
A511	Providing and applying two coats of bitumen paint of minimum 150 micron DFT with suitable primer, conforming to IS 9862 with 1% antistripping compound conforming to IS 6241 in foundation, wall, column etc on concrete surfaces including surface preparation etc. all complete.	SQM	11113			0.2675727335
A514	Providing and applying two component transparent polyamide cured epoxy sealer coating (having solid by volume minimum 40% ±2%) of minimum 50 micron DFT followed by epoxy phenolic coating (solid by volume minimum 63%) of minimum 400 micron DFT. This coat shall be applied after an interval of minimum 24 hours (from the application of primer coat) by airless spray technique on beams,wall, column, slab, basin floor, basin wall, fill supporting beams and columns, internal surfaces of fan stack, underside of fan deck roof slab etc on concrete surfaces as per IS 9862 and IS 3384 complete all as per specifications & drawings.	SQM	52500			4.9693347550
B514	Providing and applying Food grade epoxy coating complying to FDA Ttitle 21, Part 175.300 of minimum 400 micron DFT over absolutely dry, clean and dust free surafe of water retaining structures storing drinking water. This coat shall be applied by airless spray technique and shall conform to as per IS 9862 ,complete as per specifications & drawings.	SQM	350			0.0376628897

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
A517	Providing and laying Cinder / foam concrete blocks in the toilets,pantry,sunken slab etc. after water proofing and laying of plumbing pipes complete as directed by engineer in charge.	CUM	10			0.0033698345
A518	Providing and laying water proofing treatment for wet areas like toilets,kitchen,pantry for sunken slab etc.material with min.two coats of Acrylic Polymer Modified Flexible Cementitious Waterproofing Coating material like Danocrete I-protect flex or equivalent make applied @ 0.70 to 0.8 0 Kg./m2 per coat .The First layer shall be of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/sqm.The Second layer shall be of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm.The waterproofing coat applied (confirming to IS 2645) , while maintaining a gap of 4 to 8 hours between the coats all complete with water ponding test as per IS Code and as directed by engineer in charge. (Cement shall be issued by BHEL free of cost)	SQM	31			0.0028800975
A519	Water Proofing system provision for Concrete Volute Pump - Internal RCC & metal surfaces.					
a	Applying and providing Acrylic sealing profiles which swell in contact with water having size of 20 mm width x 10 mm thickness like Sika Swell A Profiles 2010 and bonded with One part polyurethane sealant which swells in contact with water like Sika Swell S 2 , as per the manufacturers specifications at suitable locations between two RCC construction joints preferably at the center of joint , joint between RCC and Metal plates preferably at the sufficient depth of Steel & RCC junction so as the same can intercept the probable water path and can seal the leakage by swelling property including cost of material , labour, tools & tackles etc.	RM	125			0.0084796062
b	Water Proofing system provision for Concrete Volute Pump - Internal RCC & metal surfaces , including surface preparation, opening of groove between metal surface & RCC surface with mechanical means and filing the same with Two Comp. , Moisture Insensitive Epoxy Putty like, Sikagard 694 FI and covering the treated junctions with PCI Tape & Master Brace ADH 2200 adhesive of BASF Make , grouting the metal plate & RCC surface junctions and openings of RCC surface with Master seal 901 grouting material of BASF make through GI threaded nozzles mounted with Non return valve and operated using air compressor based grouting pump, repair of honey comb area of RCC surface & provision of round Coaving having 25 mm radios between RCC Floor and RCC Wall junctions using Sika Top Seal 122 HS - Repair Mortar of Sika Make and Sika Raintite I - Acrylic Polymer bonding agent of Sika Make, Water proofing of RCC surface using Sika Raintite I - Acrylic Polymer of Sika Make, Sika Fab 1					
b cont..	. . .- Fibre Glass Reinforcement of Sika Make & Sika Top seal 107 - Two Comp. water proofing slurry coat of Sika Make, Bolt hole cleaing the sealing with Sikadur 52 - Solvent Free Two comp. Epoxy grout of Sika Make, GP 2 Surface saturation with MYK Injection E 200 LV - Two Comp. Ultra low viscous Epoxy grout of MYK make. All as per approved methodology and manufacturers specification (All rates are inclusive of material supply up to the site location, labor , tools & tackles , scaffolding cost etc.)					
i	Removal of Loose Material and cleaning the RCC & Metal surface by mechanical means including cost of labor , tools & tackles etc. as directed by engineer in charge.	SQM	145			0.0159350360
ii	Provision of round Coaving having radius of 25 mm at RCC Wall & RCC Floor Junctions.	RM	**130**			0.0060320887
iii	Provision of grouting system including cost of drilling hole , cleaning the same with air blow, fixing GI threaded nozzles, provision of non return valve grouting the material using air compressor operated grouting machine @ 3 to 4.5 Kg/cm2 pressure and cutting the nozzles after completion of work, with necessary tools & tackles and labor without grouting material.	Nos.	300			0.0350041030
iv	Cost of material & Application Charges for Master Seal 901 , 3 Comp. , Water Swellablle, Elastic PU Grout.	Kg	75			0.0156703674
v	Provision of Groove minimum 15 mm x 15 mm along the RCC & Metal surface using mechanical means and sealing the same with Sikagard 694 FI or equivalent to ensure the perfect sealing of water proof joint.	RM	320			0.0096815728
vi	Provision of Joint sealing in between Flange and GP 2 surface using Sikagard 694 FI with necessary tools & Tackles and labor charges. Min size shall be 40 mm (H) x 20 mm (Depth)	RM	35			0.0018519371
vii	Provision of PCI Tape along the PCI Tape adhesive Master Brace ADH 2200 at the treated junction of Metal & RCC surface with necessary overlaps etc.	RM	**320**			0.0694652961
viii	Cleaning of Bolt Holes with air blow and mechanical means and sealing the same with Two comp. epoxy based grout system like Sikadur 52 including cost of tools & tackles with labor & material.	Nos.	80			0.0133503757
ix	Provision of Honeycomb Surface Repair using Sika Top 122 HS - Single Comp. Polymer Modified Repair Mortar along with Sika Raintite I - Acrylic Polymer based bonding agent including cost of bonding agent and repair mortar with necessary tools & tackles and labor	SQM	25			0.0018994417
x	Provision of Water Proofing System using Sika Raintite I (Primer Coat) , Sika Fab 1 and Sika Top Seal 107 (Two Top Coats)	SQM	145			0.0171152494
xi	Cost of material & Application Charges for MYK Injection E 200 LV - Two Comp. Ultra Low viscous Epoxy Grout System for sealing micro cracks.	Kg	90			0.0150191727
c	Providing and Painting by airless spray or brush including preparation of surface of concrete water passage surface (i.e. Suction channel and discharge channel) of Concrete volute pumps including joints with metal embedments as described below: Surface preparation as per standard/specification on which application of one coat of primer of 100 to 175 micron DFT (Dry Film Thickness) of high solids, low viscosity, two or three pack epoxy primer of amber color with excellent adhesion to damp surfaces (CORROCOAT PLASMET ECP or equivalent), intermediate 3 coats of 900 to 1200 micron solventless chemically resistant two pack epoxy repair and re-building compound of dark grey color which is highly resistant to abrasion and wear (CORROCOAT PLASMET R or equivalent) and final one coat of 150 to 500 micron polyamide cured, high solids, two pack glass filled epoxy with good gloss and chemical resistance(Epoxy glass flake, CORROCOAT PLASMET ZE or equivalent)	SQM	850			0.1395415781
d	Providing and application of bond coat on the concrete surface by mixing high dispersion SBR latex like MasterEmco SBR2 of BASF with OPC or PPC in the ratio of 2:3. The mixing shoul be done to a lump free consistency for the bond coat and the screed/ mortar should be applied once the bond coat is tacky. Master Emco SBR 2 of BASF or Nitobond SBR (Latex) of Fosroc or equivalent. Note: The concrete surface at construction joint of previously cast concrete shall be green cut. This can be done by applying retarders to the concrete surface immediately after deshuttering and before the final set of concrete slurry shall be washed away and the aggregate shall be exposed to make the surface rough by water jet.	SQM	1750			0.0861869500

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

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ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
e	Providing & grouting with cement slurry mix of approved ratio using pressure pump for concrete volute pump casing on vertical faces- outer faces and water passage faces as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at maximum 600 mm centre to centre spacing, cutting of nipples after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing.	SQM	650			0.0539714169
600	JOINTS AND FILLERS: Joints & fillers including all labour, material, equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge.					
601	Supplying & installation of bitumen impregnated fibre board confirming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete.					
a	12 mm wide joints.	SQM	7			0.0005904641
b	20 mm wide joints.	SQM	7			0.0008658819
c	25 mm wide joints	SQM	1300			0.1948446528
A602	Providing and applying polysulphide based sealant conforming to IS:12118 in expansion joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves:					
c	25mmX25mm	RM	6654			0.3870371596
d	50mmX25mm	RM	350			0.0376747782
603	Providing and applying polysulphide based sealant conforming to IS:12118 in expansion joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves (10 mm thick backer rod to be paid separatly):					
a	25mmX25mm groov size	RM	30			0.0018002644
b	50mmX25mm groove size	RM	30			0.0032948235
Ac	20mmX25mm groove size	RM	1410			0.0648163114
604	Supplying and filling in position hot applied bitumin sealing compund (Grade A) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete.					
b	12mm X 25mm	RM	165			0.0010508619
A605	Supply and installation of Polystyrene flexible board confirming to IS 4671 (type-1), 20 Kg/ Cum. as joint filler at joint of concrete including nailing, coating of both faces with coal tar pitch /butimen etc. all complete.					
a	100 mm thick	SQM	70			0.0217945640
610	Providing and fixing PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following: (Bulb or Kicker type)					
b	230 mm wide and 8 mm thick	RM	200			0.0078407741
d	230 mm wide and 6 mm thick	RM	6799			0.1982263759
615	Providing and fixing 300 mm wide Stainless steel strips over expansion joints with minimum lap of 50mm length including stainless steel screws, rawl plugs etc. all complete.	Kg	70			0.0060037119
700	MS EMBEDMENTS: Embedments including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
701	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete.	MT	254			3.5406201521
702	Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete.	MT	24			0.4077089332
703	Same as above items 701 & 702 with BHEL supplied material free of cost including loading, transportation, unloading etc. all complete from BHEL store to plant site.					
A	Mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc.	MT	8			0.0261373480
B	Mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc.	MT	7			0.0258863017
704	Supplying, fabricating, erecting and installing following items in concrete/brickwall for all kind of works, including setting material in concrete, layout, scaffoling, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete.					
a	MS pipes of all diameters	kg	175			0.0020061909
b	PVC pipes / conduits of all diameters	kg	70			0.0037746109
c	UPVC pipes / conduits of all diameters	kg	70			0.0042897809
d	Expansion anchor fasteners (galvanised) of HILTI make(HUD-1 Universal Fastners) or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:					
i	8mm Dia	Nos.	14			0.0001089783
ii	10mm Dia	Nos.	14			0.0001208668
iii	12mm Dia	Nos.	14			0.0001367182
e	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with expansion sleeve of stainless steel:					
i	HST M8	Nos.	**14**			0.0004061917
ii	HST M10	Nos.	14			0.0005369657
iii	HST M12	Nos.	14			0.0008341791
800	GROUTING: Grouting including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, roughening surface, cleaning, ramming, curing etc. at all level , drawings and as directed by engineer - in - charge.					
802	Providing & grouting of pocket holes, pipe sleeves under base plates, machinery, pipe supporting structures etc. with mix 1:1 (1 cement :1 sand) using non shrink admixture etc. all Complete. (Cement shall be issued by BHEL free of cost)	CUM	7			0.0227427740

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

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803	Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips) using non shrink admixture as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor). (Cement shall be issued by BHEL free of cost)	CUM	7			0.0220472945
804	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with Conbextra GP-1 or equivalent as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	19			0.1144908001
805	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing, etc. all complete with Conbextra GP-2 or equivalent as per specification, drawing and direction of engineer-in-charge.(Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	**4**			0.0270820905
900	DOORS & WINDOWS: Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, preparation of working drawings etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
A903	Providing, fitting and fixing solid core flush door shutter as per IS 2202 part II, 35mm thick homogenous particle board bonded with BWP type phenolformaldihyde synthetic resin, partical board core conforming to IS 3087 type I, 35x12 mm thick teakwood beading all around including preparation of working drawings. godrej or equivalent make mortice lock with handels on both sides,approved ISI mark anodised fittings like door stopper,300mm long tower bolts,16x300mm long aldrops ,125mm long handles on both sides etc. butt hinges, sliding bolt, knobs, (all fittings shall be anoidised aluminium color dyed), finish flat oil paint confirming to IS: 137 over primer, screws etc. all complete as per drawing, specification and instruction of engineer in charge. with commercial faces and teak wood edges. (Finish painting paid separately) (Note: All particle board shall have recycled content. The bidder is required to provide material cutsheet sample/ declaration from manufacturer mentioning the percentage of recycled content used in maufacturing of particle board to the engineer in charge)	SQM	7			0.0044880421
904	Providing and fixing single or double steel door shutters with 45mm thk flush design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, side, top & bottom edges of shutter shall be reinforced by continous pressed steel chanel with min 18G, shop and final painting etc all complete.	SQM	25			0.0281503606
A904	Providing and fixing single or double steel door shutters with 35mm (min) thk flush design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	63			0.0691808614
905	Providing and fixing single or double steel door shutters with 18 gauge M.S. sheets shutter presenting a flush surface on the outside and inside stiffened with semitubular edge and central stiffening rail which shall convey the lock including fixtures, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	19			0.0229561733
A905	Providing and fixing electrically operated, self operable/closing anodized extruded aluminium doors (single or double shutter) conforming to IS:1948, IS:1949 fabricated from extruded sections of HINDALCO/JINDAL or equivalent make having minimum 3mm wall thickness as per IS:1285, IS:733 and anodized and electro color coating of required shade as per IS 1868 (minimum anodized coating of grade AC15). fixed with rawl plugs, expansion fasteners,SS screws / fixing clips necessary filling of gaps at Junctions, at top, bottom & sides with required PVC / neoprene felt for bi-metallic protection etc. Glazing shall be clear float glass of 6mm thickness including snap fit type beading, concealed screws, fixtures, Godrej or equivalent make Mortice lock with handle on both sides, etc all complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required. Weight of aluminium section only shall be measured. (Glazing shall be paid separately)	SQM	18			0.0394436994
907	Providing and fixing fire proof steel doors (single or double shutter) with vision panel, panic devices shall be 45mm thk flush design comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centers including all fittings, shop painting with approved post office/signal red color fire resistant paint and mineral wool insulation (64 kg/cum density) complete and shall be fire proof as per IS:3614, NBC 2016 & TAC requirements and as per specification. Vision panel shall be provided with interlayered fire rated glass. Minimum ratings shall be 2 Hrs.	SQM	93			0.1222647012
B907	Providing and fixing automatically closing fire proof steel flush doors along with frame of minimum 44mm thk flush shutter design comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm center to center of approved make conforming to IS : 3614 (part 1) & tested to IS/ISO 3008,satisfying LPA regulations and shall carry a unique label with certification/test report number,fire rating embossment, fixed at all elevations, with or without removable panels,with panic bar,panic trim with following fire rating using galvanised MS sheets for frames conforming to IS 277, made out of minimum 1.6mm (16 SWG) for both frame and shutter, G.I. sheet (min.zinc coating 120 gsm), and leaves, mineral wool / PUF/ any other fire retardant insulation material filled with required density, mastic caulking and grouting the frame, reinforcing and insulating the shutters with fire retardant material, with panic devices, including all fittings, fire rated vision glass, shop painting with approved post office/signal red color fire resistant paint and mineral wool insulation (min.64 kg/cum density) complete and shall be fire proof as per IS:3614, LPA requirements and as per specification.Shop drawings shall be submitted by the fabricator/manufacturer for approval before exectuion Minimum ratings shall be 2 Hrs. All hardware fittings shall be fire rated.	SQM	81			0.2006519279

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

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ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
908	Providing and fixing steel windows/ventilator with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision including all fittings, metal beadings, hold fasts, shop and final painting ,glazing etc. all complete. (Glazing shall be paid separately)					
a	Openable type	SQM	59			0.0226626679
b	fixed type	SQM	55			0.0139959234
909	Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door frames, windows, ventillators, partitions, railing etc with extruded standard tubular and other sections including all fittings & fixtures and accessories of approved make conforming to IS733 and IS1285, anodised and electro color dyed to required shade according to IS 1868 (minimum anodic coating of grade AC15), fixed with rawl plugs, expansion fasteners, SS screws or with fixing clips, including necessary filling of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt for bi-metalic protection etc. including preperation of working drawings, aluminium cleat angle, aluminium snap-on-beading for glazing/panelling, stair case tread nosing, with all fittings and fixtures (like tower bolts, handles, door stopper with rubber shoes, 'L' drops, stays, floor springs, hydraulic door closures etc.), CP brass/stailess steel screws, providing and fixing hinges/pivots, and making provision for fixing of fitting wherever required including cost of PVC/neoprene gasket, all complete as per drawing, specification and instructions of engineer in charge (Glazing and panelling shall be paid seperately).Weight of aluminium section only shall be measure.	Kg	14862			1.1989264059
A910	Providing, fabricating, designing, supplying and fixing of Aluminium composite panel cladding (ACP) in pan shape in solid or metallic colour of approved shades made out of 4mm thick aluminium composite panel (weight of panel should be 8.1 kg/sqmt) material consisting of 3mm thick FR grade Class A2 as per EN 13501,mineral core sandwiched between two Aluminium sheets (each 0.5mm thick).The aluminium composite panel cladding sheet shall be coil coated, with Kynar 500 based PVDF conforming to AAMA 2605 or Lumiflon based fluoropolymer resin coating of approved colour and shade on face # 1 and polymer (Service) coating on face # 2 as specified using stainless steel screws, nuts, bolts, washers, cleats, weather silicone sealant, backer rods etc. The top coated surface of ACP shall comply with the "specification for coated coil for the exterior building application" issued by ECCA (European Coil Coating Association). The aluminium composite panel top and bottom skin should conform to Aluminium Alloy 5005 (AlMg 1) marine grade series and H 22/24 temper with mechanical properties confirming to EN 485-2 standard. The ACP product must conform to either BS 476 part 6 & 7 or ASTM E 84 standards along with EN-13501-1. The manufacturer must furnish Class 1A certificate for this ACP produced in the plant from which it is going to be supplied. The panel shall be designed for 12mm groove in horizontal & in verticals with close joint system. Vertical & Horizontal groove shall be filled by non-staining high performance weather sealant. ACP panel shall have sub frame all around panel and aluminium stiffener profile as per structural requirements. The finished surface of ACP shall be protected with a self-adhesive (Rubber based) peel off foil with 70 microns thickness white or black, tested to withstand up to 6 months' exposure to local weather condition without losing the original peel off characteristic or causing stain or other damages on the coated surface of the aluminium composite panel. Cont.....	SQM	175			0.0855736995
Cont... A910	Cont..... Installation of ACP Coping/facia at terrace level sealing the top gap of the parapet wall and ACP Panel shall have GI stiffeners below with required aluminium grid work with necessary MS HDG / aluminium alloy brackets & SS fasteners.2nd barrier of 1mm thk GI sheet laid continuously below the copping to seal the parapet wall. Overlap of GI sheet shall be properly sealed with weather sealant, All shade approval shall be as per Architect's Approval.as per approved sample from Alucobond Plus, Aludecor,Alpolic or equivalent. The system shall be designed to withstand a wind pressure of 200kg/Sqm or as per design requirement and shall be fixed to the Masonry/RC walls or aluminium frame with necessary clamps, brackets and anchor fasteners etc. All clamps and brackets shall be Hot dip galvanized minimum 80 microns thick and shall conform to IS: 4759-1996. The extruded aluminium section shall be anodized in approved colour with a anodic coating of minimum 20 microns. Extruded section shall be 6063 T5 or T6 alloy conforming to ASTM B221. Any other festering straps, nuts, bolts, rivets, washers, etc. shall be in stainless steel SS316 grade. EPDM gaskets, open cell polyethylene backer rods, weather sealant etc. shall be provided as per requirement. Item shall include aluminium base frame with all fixing arrangements to wall/RC members, fastening material and hardware(festering straps, nuts, bolts, rivets, washers etc.), EPDM gaskets, open cell polyethylene backer rods, weather sealant, scaffolding, approach to all height, material handling, transportation, labour, T&P, preparation of working drawings etc.all complete as per drawing, specification & instructions of engineer in charge. Measurement of payment shall be outer finished area of ACP panel.The contractor shall provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in maufacturer of ACP.					
911	Providing and fixing of door closers as per IS 3564 ,of approved make & quality all complete of following type :					
a	Over head hydraulic door closures	Each	4			0.0012284823
b	Floor mounted Hydraulic door closers	Each	4			0.0017459168
912	Providing and fixing pressed steel frames fabricated from 16 gauge M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars ,paintings etc all complete as per specifications.	Kg	200			0.0049818637
A912	Providing and fixing pressed steel frames (complying general requirements of IS 4531) fabricated from 1.2 mm thick M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars ,paintings etc all complete as per specifications.	Kg	2958			0.0679086307
913	Providing and fixing in position rolling shutter of hot rolled double dipped galvanised steel lath section of 18 SWG tested mild steel strips at 75mm rolling centres interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation including wire springs, top cover, primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.(partly coiled and lath/full lath).					
c	Electrically operated	SQM	60			0.0354023690

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
A913	Providing and fixing in position rolling shutter of hot rolled double dipped galvanised steel lath section of 18 SWG tested mild steel strips at 75mm rolling centres interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides of 75mm wide and 3mm thick(min.) and arrangements for inside and outside locking with push and pull operation including wire springs, top/hood cover 0.9mm thick (min.) , factory galvanized, primed & field painted, partly grilled (as required) with approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.(partly coiled and lath/full lath).					
c	Electrically & Mechanically operated	SQM	487			0.4276368580
915	Providing, fixing and fitting of glazing of first grade class in steel/aluminium/wooden frames, where ever required, cleaning after fixing including hardware, gaskets, clips, beadings etc. all complete.					
b	4 mm thick clear float glass	SQM	**30**			0.0070482049
Ab	4 mm thick plain or tinted float glass	SQM	80			0.0204256412
d	6 mm thick wired glass	SQM	276			0.0807809202
g	6 mm thick tinted heat reflecting type float glass	SQM	**16**			0.0050316824
h	6 mm thick clear toughened safety glass	SQM	44			0.0154935962
h(a)	6 mm thick clear reflective toughened safety glass of Saint Gobain(India) or Asahi (India) or equivalnet make and should have solar factor 25% or less, Maximum U-vlaue 3.3W/SQMK, VLT min 30%, light reflection internal 10 to 15%, light reflection external 10 to 20%, shading coefficient (0.25-0.28)	SQM	36			0.0154257862
Ah	6 mm thick clear toughened glass conforming to IS 5437	SQM	1712			0.5962225644
AhA	6 mm thick reflective toughened glass conforming to IS 5437. Reflective toughened glass, with technical characteristics: Solar factor 45% or less, U-value less than 5.7 W/m2.K, VLT min 40% shall be used. The glass to be used should be from the manufacturers of glass like Saint Gobain (India) or ASAHI (India) or equivalent. The glass should be free from distortion and thermal stress.	SQM	6			0.0031608736
AhB	8 mm thick clear toughened glass	SQM	456			0.1940757319
AhC	8 mm thick clear toughened fire resistant glass	SQM	185			0.1263004213
I(c)	One outer 6mm thick tinted heat-reflecting type toughened glass and one inner 6mm thick plain float glass hermetically sealed and seperated by 12 mm thick gap for thermal insulation (only single elevation area to be measured).The glazing to be used in all exterior walls shall be of Saint Gobain or equivalent.The glazing to be used should comply to mentioned standards VLT (Visible Light Transmittance) ≥62 %, SHGC/ SF (Solar Heat Gain Coefficient/ Solar Factor) 0.2 ≤ 0.32 and U- Value 1.2 TO 2.5 W/MSq K,The properties of performance glass shall be as per detail design values as approved by engineer incharge.The glass to be used should be from the approved manufacturers of glass and should be free from distortion and thermal stress.	SQM	10			0.0066605395
m	6 mm thick clear toughened safety glass	SQM	24			0.0084510525
o	10 mm thick clear toughened safety glass	SQM	**22**			0.0081048695
A921	Providing & fixing 120 minutes Fire Rated, Fully Glazed non load bearing fixed partition with valid fire test certificate from national or international lab with Partition Frame manufactured from minimum 1.6mm galvanized steel sheet pressed to form a profile of nominal size 60mm x 70 mm & fixed to the supporting construction by means of M 10 X 120 or bigger steel bolts at 150mm from the edges & every 500mm c/c. The frame shall be finished with etch primer for scratch resistance and shall be powder coated of approved shade and color. The glass panels shall be interlayered minimum 14mm thick, 120 minute fire rating and partially insulated (EW120), with 30minute full insulation, Non Wired Toughened Interlayered glass having a sound reduction of greater than 37dB, light transmission of 86% and compliant to class 1(B)1 category of impact resistance as per EN 12600. The glass should be manufactured in UL & TUV audited Facility and including UL-EU Certification. The glass shall be held in position with minimum 1.6mm G.I Beading, clamped or bolted to the frame profile by 4mm x 35mm steel screws at every 250 mm c/c and a ceramic tape of cross section of 5mm x 20mm on both sides of the glass. The item shall include intumescent putty and fire resistant acrylic sealants and the total assembly shall satisfy the fire resistance criteria of stability, integrity & radiation control and partial insulation (EW120). Design, Shop drawings along with hardwares for the item with all construction and anchoring details, etc. along with fire rating test reports shall be got approved before execution.	SQM	140			0.3015002692
A922	Providing and fixing electrically operated, self operable/closing, approved anodized aluminium framed glass door with 10 mm thk. tinted glass, all complete. Automatic Sliding operating system comprising of Advanced DC brushless motor, Automatic Reversing Safety Device, Suitable for door weight 100 kg, Opening speed : 90-110cm /sec (adjustable), Closing Speed : 40-110cm/sec (adjustable), opening time : within1-9 seconds after door stopped in opening, controller : 8 Bit micro computer, Motor (Dortexor equivalent) : DC12V, 35W brushlees motor, Power Voltage : AC 110V - 240V. 50Hz - 60Hz, Power Consumption : 45W including Infra Red Sensors 2No both sides, rails & top & bottom as required, any aother accessories as required etc. all complete of best make and quality as approved by Engineer in charge. The door shall be double panel sliding door of approx. area 5 sq.m. to 7.5 sq.m. each.	SQM	6			0.0141286872
1000	BRICKWORK: Brickwork masonry including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding etc. at all levels as per specification, drawings and as directed by engineer - in - charge.					
1001	Providing brick work in cement mortar 1:6 (1 part cement 6 parts coarse sand) in walls, chambers etc. in thickness varying from 230mm to 460mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting. (Cement shall be issued by BHEL free of cost)					
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	21			0.0181962148
A1001	Providing brick work in cement mortar 1:6 (1 part cement 6 parts coarse sand) in walls, chambers etc. in thickness varying from 230mm to 460mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting. (Cement shall be issued by BHEL free of cost)					
a	Using table moulded/machine made fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2 and minimum percentage of fly ash 25% (including cost of cement for brick making)	CUM	110			0.0833061024

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

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ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
1002	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc. in thickness 230mm upto 10m level above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 1014), places and position above plinth including raking out joints, curing, scaffolding etc complete but excluding plastering and painting. (Cement shall be issued by BHEL free of cost)					
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	1655			1.3660573613
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	1349			1.2768099194
1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm upto 10m above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 1015), places and position above or below plinth/graded level including providing two nos. 6 mm diameter MS bars at every third layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification. (Reinforcement payment shall be made seperately as per applicable BOQ in 400 Series) (Cement shall be issued by BHEL free of cost)					
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	SQM	600			0.0740486107
1005	Breaking of existing brick work at all levels including plastering, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc. all complete as directed by the engineer.	CUM	23			0.0064517966
A1006	Providing and encasing of structural steel member with masonary work around flanges, webs etc. and filling the gap between steel and masonry by minimum 12mm thick mortar. Encased member shall be wrapped with chicken wire mesh with 50mm lap etc. complete as per specification. (Chicken wire mesh to paid separately)	CUM	4			0.0031364738
1008	Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar 1:6 etc. complete. (Cement shall be issued by BHEL free of cost)	CUM	**2**			0.0006422641
1010	Filling existing brick wall/ partition wall opening at all level including making good the broken edges/surface with cement mortar 1:6, painting, finishing to match with existing finishing, scaffolding/supporting at any level, removal of debris upto a lead of 1 km including loading, unloading, transportation etc. all complete.	SQM	2			0.0002751347
1014	Extra over item no. 1002, 1006, 1012 & 1013 for height above FFL (Finished Floor Level) as per following:					
a	Height exceeding 10m from FFL but not exceeding 20m	CUM	280			0.0327331091
1015	Extra over item no. 1003 for height above FFL (Finished Floor Level) as per following:					
a	Height exceeding 10m from FFL but not exceeding 20m	SQM	100			0.0007925692
1100	DAMP PROOF COURSE: Damp proof course including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, shuttering, centering, curing etc at all level as per specification, drawings and as directed by engineer - in - charge.					
1101	Providing Damp Proof Course of following thickness with 1:1.5:3 concrete (10mm and down graded aggregate) with 2% of approved admixture of water proofing compound all complete. Two layers of hot bitumen coating 85/25 grade as per IS:702 @ 1.7Kg./sqm shall be applied one before & one after the DPC.					
b	50mm thick	SQM	1339			0.0610036572
1102	Providing Damp Proof Course 50mm thick 1:1.5:3 concrete (6 mm and down graded stone chips) with 1% of approved admixture of water proofing compound all complete. Then hot bitumen (residual petroleum bitumen of penetration 80/100 of approved quality) shall be applied over the prepared surface in two coats at the rate of 1.7kg per sq. meter per coat and dry sand spread over it					
b	50mm thick	SQM	18			0.0007387877
1200	PLASTERING: Cement mortar plaster including making grooves wherever required including all labour, material (unless otherwise specified in BOQ/contract specification), scaffolding, curing etc at all level as per specification, drawings and as directed by engineer - in - charge.					
A1201	Providing 18mm thick plaster in two layers outside the building/boundary wall/rough surface of internal wall in cement mortar 1:6 on walls, finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete. (Cement shall be issued by BHEL free of cost)	SQM	14648			0.6551284393
1202	Providing 12mm thick plaster internal/external surfaces of building/boundary wall in cement mortar on walls finished to a smooth finish as per specification all complete. (Cement shall be issued by BHEL free of cost)					
a	Cement Mortar 1:6	SQM	13114			0.4751574803
b	Cement Mortar 1:4	SQM	200			0.0072463472
1204	Providing 6mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete. (Cement shall be issued by BHEL free of cost)	SQM	4995			0.1590527219
A1210	Providing moldings and cornices on plastered surface at all elevations for all type of work such as chajjas, parapet, projections etc. including scaffolding, finishing etc. complete with all labour, tools and plants as per specification, drawing and instructions of engineer in charge.	RM	100			0.0012879250
1300	FINISHES TO CONCRETE / PLASTERED SURFACES: Finishes, painting to concrete, plastered surfaces including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, surface preparation, scaffolding etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
1301	Two or more coats of white wash/ colour wash as per IS 627 of approved brand and manufacture to give an even shade including a priming coat as per specifications.	SQM	5040			0.0273911925
1304	Two or more coats of acrylic distemper of approved brand and manufacture to give an even shade including a priming coat with distemper primer complete.	SQM	696			0.0107173475
A1304	Two or more coats of Low VOC (volatile organic compound) acrylic distemper of approved brand and manufacture to give an even shade including a priming coat with distemper primer complete. All necessary documentation (certificates, manufacturer declarations) should be provided by the contractor to engineer in charge	SQM	7220			0.1111817019
1305	Providing and applying two or more coats of acrylic emulsion paint as per IS 5411 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline.	SQM	1136			0.0253868982

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

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ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
A1305	Providing and applying two or more coats of low VOC (volatile organic compound) acrylic emulsion paint as per IS 15489, relevant latest code of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline. Note: The paint should have VOC content limit less than 50 grams per litre All necessary documentation (certificates, manufacturer declarations) should be provided by the contractor to engineer in charge.	SQM	60			0.0013408573
A1306	Providing and applying 2 or more coats of oil resistant paint (epoxy based & minimum 150 micron thickness) of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying primer complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, complete as per specifications.	SQM	85			0.0027971113
B1306	Providing and applying 2 or more coats of acid/alkali resistant paint (epoxy based & minimum 150 micron thickness) of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying primer complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, complete as per specifications.	SQM	1788			0.0813271476
1312	Providing and applying 3 coats of water proof cement paint of approved make and color on exterior surface at all heights including material, labour, scaffolding, curing etc including primer coat complete as per specification.	SQM	5040			0.0646974261
A1313	Providing and applying ready made Epoxy Paint over areas other than steel structure/flooring with suitable pigments of approved shade as per specification and direction of Engineer. Epoxy Painting shall be provided with surface preparation of concrete substrate with Captive Shot Blasting Machine OR Light Grinding to form the required anchor profile on the floor substrate followed by application of epoxy resin based moisture barrier underlay of 2 mm thickness including filling of saw cut joints with epoxy cementitious resin based moisture barrier underlay as per manufacturer specification. Application of self smoothing epoxy floor topping of epoxy based resin of 2 mm thickness over epoxy resin based moisture barrier underlay including application of solvent free epoxy resin based two component primer shall include application of PU Sealant at Expansion and Isolation Joint respectively including surface preparation of the joint, fixing of backup strip and application of sealant etc all complete as per specification. The epoxy coating shall be a two pack material and shall be resistant to water, oil, splash, spillage & acidic environment. The epoxy paint coating shall be of minimum 4 mm thickness.	SQM	372			0.0419582866
A1315	Providing and applying three coats of Solvent based (100% pure acrylic co-polymer resin based) paint (shall not contain any water sensitive ingredients)of approved brand and manufacture and required shade over one coat of primer or one coat of cement paint after necessary cleaning/ washing, removing loose & flaking materials, removing mould, algae, organic growth & grease, preparing the surface using coir brush/ wire brush, sand paper, including all required tools, material, scaffolding and other painting accessories, filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish. The final finished coating shall be fungus resistant, UV resistant, water resistant & repellant and extremely durable with color fastness as per the specifications/manufacturer's specifications, instructions and satisfaction of Engineer-in-charge	SQM	1329			0.0503978156
A1317	Providing and applying 2 mm thick Acrylic wall putty punning on walls including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer.	SQM	7280			0.1569581594
A1319	Providing and applying two or more coats of Premium Acrylic Smooth Paint with Silicone additives weather coat paint of approved brand and manufacture and required shade over one coat of primer after necessary cleaning/ washing, preparing the surface using coir brush/ wire brush, sand paper, including filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellant and extremely durable with color fastness as per specification	SQM	9038			0.2200363503
1400	FLOORING AND SKIRTING: Flooring and skirting at all level including base layer, labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, curing, polishing etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
1401	Providing and laying 50 mm thick heavy duty cement concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron particles in flooring. Under layer of 38mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5 mm 20 well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips): (Cement shall be issued by BHEL free of cost)	SQM	23372			2.0177850134
A1401	Providing and laying 50 mm thick heavy duty cement concrete in flooring without metallic hardener pigmented topping 12mm thick uniform graded treated iron particles in flooring. Under layer of 38mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5 mm well graded) (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips): (Cement shall be issued by BHEL free of cost)	SQM	1752			0.1435693866
1402	Providing and laying 25 mm thick heavy duty cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates) flooring with metallic hardener pigmented topping of 10 mm thick uniform graded treated iron particles in skirting and dado. Under layer of 15mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5 mm 20 well graded) and top layer of 10mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete as per specification. (Cement shall be issued by BHEL free of cost)	SQM	70			0.0052903996
A1404	Providing and laying interlocking M35 Grade concrete blocks in paving with approved colour and pattern and should be laid on the subbase and bedding of sand minimum 20mm thick as per specifications and recommendations of manufacturer.(inclusive of cost of cement for paver manufacturing)					
b	80mm	SQM	2546			0.3024577097

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

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1414	Providing and laying polished Granite stone 18-20mm thk in skirting and dado with 6mm thick projection from adjacent plaster minimum 12 mm thick cement mortar bedding of 1:3 (1 cement : 3 sand) with thick cement slurry @3.3kg/sqm spread over the surface with fine joint finished including cutting brickwall upto the required depth, edging, finishing etc. all complete. including mortar ,cement slurry ,pigments, curing, grinding,moulding, granite polishing etc. all complete. (Cement shall be issued by BHEL free of cost)	SQM	10			0.0033231295
1416	Providing and laying vitrified ceramic tiles of polished variety of size 600x600 from reputed / approved manufacturer, complete including underbed of cement mortar 1:3 minimum 20mm thick underbed for flooring and 12mm thick underbed for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete for following (Cement shall be issued by BHEL free of cost)					
b	10mm thick tiles In flooring	SQM	85			0.0140150300
d	10mm thick tiles In skirting and dado upto specific height	SQM	100			0.0176629714
B1416	Providing and laying heavy duty Antiskid full body vitrified tiles 18-20 mm thick of size 600x600mm in flooring, of approved shade, colour, pattern and make from reputed / approved manufacturer as Simpolo,Endura,Varmora or equivalent ,complete including underbed of cement mortar 1:3 minimum 30mm thick for flooring with neat cement slurry @3.3Kg/sqm etc.all complete. Full body Vitrified Tiles shall be laid on properly laid levelled floor, with joints 3 to 5mm wide & 8 to 10mm deep & shall be filled with approved Epoxy Grout mix of 0.70kg of organic coated filler of desired shade (0.10kg of hardener and 0.20kg of resin per kg). Full body Vitrified Tiles shall have water absorption less than 0.5%, Modulus of Rupture more than 38N/mm2, Breaking strength more than 7500N, Moh's scale more than 6, Abrasion resistance less than 144 mm3 and coefficient of friction more than 0.4. Vitrified Tiles shall generally conform to IS: 15622. All complete (including cost of epoxy grouting)as per engineer incharge. (Cement shall be issued by BHEL free of cost)	SQM	255			0.0511902275
D1416	Providing and laying matt finish vitrified ceramic tiles of polished variety of size 600x600 / 800x800 of approved shade, colour, pattern and make from reputed / approved manufacturer as Simpolo,Endura,Varmora or equivalent , complete including underbed of average 40 mm thick cement concrete mix 1:1.5:3 (1 cement: 1.5 sand : 3 stone aggregates 12.5mm well graded) with 3mm groove joints as per approved pattern pointed neatly with 3X4mm stainless epoxy grout SP- 100 of Laticrete, Luxture or approved equivalent in approved colour to match colour of tile etc. all complete for following. (Cement shall be issued by BHEL free of cost)					
a	9.0 mm (min.) thick tiles In flooring	SQM	214			0.0395251443
b	9.0 mm (min.) thick tiles In dado	SQM	37			0.0073522118
1417	Providing and laying vitrified ceramic tiles of matt finish of size 600x600mm from reputed / approved manufacturercomplete including underbed of cement mortar 1:3 minimum 20mm thick underbed for flooring and 12mm thick underbed for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete for following. (Cement shall be issued by BHEL free of cost)					
b	10mm thick tiles In flooring	SQM	30			0.0049464812
d	10mm thick tiles In skirting and dado upto specific height	SQM	109			0.0192526388
A1417	Providing and laying Digitally vitrified ceramic tiles of matt finish of size 600x600mm from reputed / approved manufacturer Simpolo, varmora or equivalent complete including underbed of cement mortar 1:3 minimum 40mm thick underbed for flooring and 12mm thick underbed for dado / skirting with neat cement slurry @3.3Kg/sqm etc. all complete for following. (Cement shall be issued by BHEL free of cost)					
b	9.00 mm (min.) thick tiles In flooring	SQM	271			0.0512802198
d	9.00 mm (min.) thick tiles In skirting and dado upto specific height	SQM	38			0.0076315925
B1417	Providing and laying vitrified ceramic tiles of matt finish variety of size 600x600/1000X1000 from reputed / approved manufacturer, complete including including underbed of 40.5 mm thick cement concrete mix 1:1.5:3 (1 cement: 1.5 sand : 3 stone aggregates 12.5mm well graded) with 3mm groove joints as per approved pattern pointed neatly with 3X4mm stainless epoxy grout SP- 100 of Laticrete or approved equivalent in approved colour to match colour of tile etc. all complete for following. (Cement shall be issued by BHEL free of cost)					
a	9.5 mm thick tiles In flooring	SQM	500			0.0910039310
c	9.5 mm thick tiles In skirting and dado upto specific height	SQM	170			0.0333232901
C1417	Providing and laying vitrified ceramic tiles of matt finish polished variety of size 1000X1000 from reputed / approved manufacturer Simpolo,varmora or equivalent, complete including of 40mm average thick underbed of cement mortar 1:3 with neat cement slurry, and 12mm thick underbed for dado/skirting with cement mortar 1:3 with neat cement slurry @3.3Kg/sqm etc. with 3mm groove joints as per approved pattern pointed neatly with 3X4 mm stainless epoxy grout SP- 100 of Laticrete or approved equivalent in approved colour to match colour of tile etc. all complete for following. (Cement shall be issued by BHEL free of cost)					
a	10 mm thick tiles In flooring	SQM	175			0.0293745970
c	10 mm thick tiles In skirting and dado upto specific height	SQM	18			0.0032328333
1419	Providing and laying granite stone slab of 20mm thickness single piece for wash basin / sink slab /facia of black or approved colour including 20mm underbed of cement mortar 1:3 with cutting,making corners,moulding and opening etc. all complete. (Cement shall be issued by BHEL free of cost)	SQM	4			0.0020691718
A1420	Providing and laying Heavy Duty dust pressed Ceramic Tiles of 7mm thick Designer glazed/matt finish of reputed manufacturer Simpolo,varmora or equivalent of approved finish shade and colour on walls, skirting etc.including underbed of cement mortar 1:3 with neat cement slurry etc. all complete. (Cement shall be issued by BHEL free of cost)					
a	300X300 mm	SQM	234			0.0309653967
A1421	Providing and laying Heavy Duty anti skid (grade-5) Ceramic Tiles (Matt Finish) of size 600x600mm(approved size) , vitrified tiles min.7mm thick on floor, skirting and dado of reputed / approved manufacturer Simpolo,varmora or equivalent of approved finish, shade and colour. The tiles shall be scratch resistance of minimum 5 on Mohr's scale and shall have a bending strength of 350 Kg./sqm,with Under bed shall average 43mm thk of 1 cement : 3 sand by volume and brought to proper level including cement mortar,12mm thick underbed for dado / skirting with neat cement slurry @3.3Kg/sqm etc. all complete. (Cement shall be issued by BHEL free of cost)	SQM	265			0.0538530339

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12mm thick (to be laid in layers of 6mm each). The tiles shall be applied with 6mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing etc. all complete for following thicknesses. The tiles should be abrasion resistant & durable.					
a	20mm thick	SQM	120			0.0440894939
b	38mm thick	SQM	170			0.0846195028
A1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12mm thick (to be laid in layers of 6mm each). The tiles shall be applied with 6mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing, pointing joint of bedding 20mm deepx6mm wide with epoxy/Furane mortar etc. all complete for following thicknesses. The tiles should be abrasion resistant & durable.					
a	20mm thick	SQM	6200			2.1855665408
b	38mm thick	SQM	500			0.2412835484
1423	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado beded and jointed with epoxy mortar all complete for following thicknesses. The tiles should be abrasion resistant & durable.					
Ac	75mm thick	SQM	22			0.0236430949
B1424	Providing & fixing chemical resistant (AR)(Acid / Alkali) tiles (75mm thick) conforming to IS:4457 in the floor of neutralization pit. Surface on which lining to be applied shall be prepared in accordance with IS:2395. Bitumen primer as per IS:158 followed by 18mm thick bituminastic followed by 6mm thick potassium silicate mortar bedding shall be provided before laying AR bricks. The joints between AR tiles shall be filled with resin type of mortar conforming to IS:4832, part II, seal coat of readymade epoxy paint shall be provided on joints to cover up any porosity that may be left in mortar. End sealing shall be done with bituminastic AR bricks shall be laid with 6mm wide & 50mm deep pointing (epoxy / furnace / CNSL) & acid curing shall be done all complete as per specification.	SQM	1116			0.5177526415
C1424	Providing & fixing chemical resistant (AR)(Acid / Alkali) bricks (115 mm thick) conforming to IS:4860 in the walls of neutralization pit. Surface on which lining to be applied shall be prepared in accordance with IS:2395. Bitumen primer as per IS:158 followed by 18mm thick bituminastic followed by 6mm thick potassium silicate mortar bedding shall be provided before laying AR bricks. The joints between AR bricks shall be filled with resin type of mortar conforming to IS:4832, part II, seal coat of readymade epoxy paint shall be provided on joints to cover up any porosity that may be left in mortar. End sealing shall be done with bituminastic AR bricks shall be laid with 6mm wide & 50mm deep pointing (epoxy / furnace / CNSL) & acid curing shall be done all complete as per specification.	SQM	1022			0.5752935666
A1427	Providing and fixing Designer digitally glazed ceramic tiles of approved color and design as per IS: 15622 of size 300x300mm / 300x450mm, 300X600 of reputed / approved manufacturer Simpolo,varmora or equivalent of approved finish,size in dado, projecting 6mm uniformly from adjacent plaster or wall finish. The mix for 20mm thick underbed plaster shall consist of 1part cement and 3 parts sand by weight. fairly moist but firm, tiles shall be pressed over under bed by applying cement slurry @ 3.3kg/sqm including pigments, curing etc all complete as instructed by engineer incharge for following thicknesses,. (Cement shall be issued by BHEL free of cost)					
b	7mm thick	SQM	52			0.0070405340
A1429	Providing and fixing Removable type flooring system (raised access floor) consisting of of fire resistant Cementitious panels of 600 x 600x 35 mm and Laminated with 1.2 mm thick fire retardant food grade antistatic laminate top finish to ensure max bonding to the steel surface. Cementatious panels shall be steel welded construction, with an enclosed bottom pan of 64 hemispherical and top plain sheet which are fuse welded at multiple location to form a panel. The panel is coated with 40-60-micron epoxy coat after cleaning, de-greasing, phosphate by several tank processes & is heated to achieve max adhesion to the panel surface & corrosion resistance. The inner empty core of the panel is injected with a light weight fire retardant, non-combustible cementatious compound at high pressure to fill in all the crevices of the panel and ensures support of not less than 90% of the top surface area of the panel. Pedestal (300mm – 800 mm) must be 25mm dia. pipe with min.2.0 mm thickness with bottom plate of 100x100x min.2.0mm thick & top plate must be 75x75x3.0 mm. All pedestal shall be tightening to Stringer of 20x30x575x1.0 mm Rectangular tube. The system shall be design and taken approval for Uniformly distributed load (UDL) of 13 KN (1300 kg/ sqm), for the same all complete as per specification. Cavity area below the false flooring shall be made dust proof by using Polyurethane paint etc complete as per specification.	SQM	100			0.0647655021
1500	ROOFING / SIDE CLADDING: Roofing / side cladding work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
1514	Providing and installing under deck insulation with resin bonded rock wool 50 mm nominal thickness conforming to IS 8183 having a density of 48kg/cum using minimum 0.05 mm thick aluminium foil on exposed surface followed by 0.56 mm dia and 25 mm mesh GI wire netting, fixed at various elevations with rawl plugs including clips, etc complete as per specifications.	SQM	32			0.0031114003
1600	FALSE CEILING: False ceiling including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, suspension system etc at all level as per specification, drawings and as directed by engineer - in - charge.					
1602	Providing, fixing and laying light weight mineral fiber tile false ceiling of minimum thickness 15 mm and exposed surface semi-perforated with depth of perforation as 4 mm and humid resistance of 95% RH and fire performance of class 0/1 as per BS 476 with metal suspension grid system with galvanized Tees of section 24 X 38 mm for main runners of approved colour and make as per specification including 50mm thick mineral wool insulation (density48kg/cum) as per IS:8183 bound in polythene bags on top of panels. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures. A.C. ducts etc. suitable M.S. channel (minimum MC 75 @ 1.2m) grid shall also beprovided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. complete with cut-outs etc.The size of tiles shall be 600 X 600 mm or 600 X 1200 mm. Required MS channel shall be measured & paid extra under respective item unit rate.	SQM	52			0.0100384554

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
A1602	Providing, fixing and laying light weight mineral fiber tile false ceiling of minimum thickness 15 mm and exposed surface semi-perforated with depth of perforation as 4 mm and humid resistance of 95% RH and fire performance of class 0/1 as per BS 476 with metal suspension grid system with galvanized Tees of section 24 X 38 mm for main runners of approved colour and make as per specification including 50mm thick mineral wool insulation (density48kg/cum) as per IS:8183 bound in polythene bags on top of panels. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures. A.C. ducts etc. suitable M.S. channel (minimum MC 75 @ 1.2m) grid shall also beprovided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. complete with cut-outs etc.The size of tiles shall be 600 X 600 mm or 600 X 1200 mm. Required M.S. channel shall be measured & paid extra under respective item unit rate.(All mineral fiber board to be used should be with appropriate % of recycled content. Mineral wool insultaion to be paid separately.	SQM	158			0.0419238551
A1603	Providing and fixing permanently colour coated aluminium false ceiling of approved colour of Luxalon Hunter douglas, or approved equivalent with corrosion resistant aluminium alloy panels of size 600 mm x 600 mm and 0.6 mm thk. with clip on torsion spring system ,perforation patterns in combination with built in nonwoven tissue, acoustic fleece for providing good acoustic properties and installed with silhouette T-Grid (of profile 24 mm) in same or contrasting colours or with 6 mm recess joints. The whole system shall be level adjusting arrangement and shall be suspended as per manufacturer. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures, A.C. ducts etc all complete. Suitable M.S. channel grid with minimum MC 75 shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. (Materials for structural platform grid made up of MS Channels/ Beams / Angles shall be supplied by BHEL and shall be paid under ST No 2301)	SQM	100			0.0496529053
A1607	Providing and Fixing 12mm thick Calcium silicate board of HILUX or equivalent in plan or elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers etc. including two or more coats of acrylic emulsion paint of approved colour to give an even shade with smooth finish all complete as per architectural design and detail. Metal suspension system as per ASTM C-635 shall be hot dipped M.S.galvanized (grade 180 as per is :277) and nominal size of T-section shall be 24 x 38 mm or 24 x 25 mm cross runners. 24mm wide exposed flange surface shall be permanently color coated. Suspension system shall be as per manufaturer's specification. Movement platform of structural steel shall be provided if required for the movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. (Structural steel works for platform for movement is separately payable under relevant items of BOQ). Work shall include 25mm thick resin bonded mineral wool insulation (as per IS:8183) bound in polythene bags on top of ceiling. The work to be complete as per specifications, drawings and direction of engineer.	SQM	295			0.1123289702
A1608	Providing and fixing Pre-Painted Coil coated Steel false ceiling system, at all level, for all kind of works, in approved pattern,consisting of 0.5 mm thick galvanised as per IS 277 including 50mm thick mineral wool insulation(density 48 kg/cum) conforming to IS:8183 bound in polythene bags on top of panels. , along with galvanised supporting steel members exposed faces of galvanised member to be prepainted with regular modified polyester coating / super polyester coating minimum 20 DFT, to form panels of specified size for tile type panels and roll formed stove enamelled 0.6 mm thick steel carrier, for fixing of lineal type panels by clip on arrangement, suspended from RCC slab / structural steel or catwalk way steel channel grid above with 4 mm (minimum) galvanised wires (rods), with special height adjustment clips, providing angle section of minimum 25 mm leg width along the perimeter of ceiling, including all labour, material, supporting grid system (members minimum 0.8 mm thick and galvanised as per IS 277) anchor fasteners for making suspension arrangement from RCC, providing openings for AC ducts, return air grills, insulation light fixtures, etc., all complete.(Materials for structural platform grid for movement made up of MS Channels/ Beams / Angles shall be supplied by BHEL and shall be paid under ST No 2301)	SQM	175			0.0228730526
1700	RAIN WATER DOWN TAKE PIPES: Rain water down take pipes at all level including all labour, material (unless otherwise specified in BOQ/contract specification), transportation, 2 coats of approved paint over one primary coat, fixtures, accessories etc as per specification, drawings and as directed by engineer - in - charge.					
A1704	Providing and fixing galvanised MS down take pipes of 150 mm dia- Medium quality as per IS:1239(part-I) with welded joints and provided with roof drain heads and complete with shoes bends, junctions, sockets, adapters, brackets and finished with anti corrosive painting over a coat or primer all complete. Galvanising shall be as per IS: 4736. The minimum mass of zinc coating shall not be less than 360 gms/sq.m. as per IS:6745. The zinc coating shall be smooth and shall be subjected to testing as per IS: 2633, for uniformity of coating. The zinc coating shall be free from all defects as per IS: 2629.	RM	2000			0.5264924156
C1704	Providing and fixing galvanised MS down take pipes of 100 mm dia- Medium quality as per IS:1239 (part-I) with welded joints and provided with roof drain heads and complete with shoes bends, junctions, sockets, adapters, brackets and finished with anti corrosive painting over a coat or primer all complete.Galvanising shall be as per IS: 4736. The minimum mass of zinc coating shall not be lessthan 360 gms/sq.m. as per IS:6745. The zinc coating shall be smooth and shall be subjected to testing as per IS: 2633, for uniformity of coating. The zinc coating shall be free from all defects as per IS: 2629.	RM	440			0.0792116331
1705	Providing and fixing UPVC down take pipes of 110mm diameter- Class 3 as per IS:4985 all complete.	RM	150			0.0202954334
1800	MISCELLANEOUS: Miscellaneous works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge.					
A1801	Providing and Filling in trenches, plinths, area paving, grade slab and other underground structures with graded stone aggregate of size range 63 mm to 45 mm in layers not exceeding 200 mm in thickness including breaking of stone boulders to required sizes, filling the interstices with selected moorum and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	18519			4.4451168149
1802	Supply and laying approved quality Stone aggregate 40mm size in transformer yards.	CUM	20			0.0091145461

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

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ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
1807	Anti termite chemical treatment of soil with Chlorpyriphos/Lindane E.C. 20% with 1% concentration conforming to IS:8944 and as per IS 6313 all complete. (Plinth area of building at ground floor only shall be measured for payment). Drilling 12mm dia hole @300 c/c using material one liter per hole.	SQM	3850			0.0899070718
1808	Laying of earthing mats/rods including risers, transportation from yard stores, loading, unloading, cutting to length, welding, protective painting of joints etc. all complete. (Excavation & Back filling shall be paid separately under respective item of earth work. Earthing mats/rods shall be supplied by BHEL free of cost)	MT	58			0.0991675002
1809	Construction of below ground earthing system test pits as per drawing / sketches including concreting, reinforcement, formwork, providing & fixing GI strip etc as per drawing and specification (excavation & backfilling only will be paid under applicable BOQ items & cement/steel to be supplied by BHEL free of cost)	Nos.	14			0.0221384400
1810	Construction of below ground earthing system test links as per drawing/ sketches including concreting, reinforcement, formwork, providing & fixing GI strip etc as per drawing & specification (excavation & backfilling only will be paid under applicable BOQ items & cement/steel to be supplied by BHEL free of cost)	Nos.	18			0.0217560253
1811	Construction of below ground earthing system earth electrodes as per drawing and specification. (Excavation and backfilling only will be paid under applicable BOQ items & steel shall be supplied by BHEL free of cost.)	Nos.	53			0.0061374580
1812	Construction of below ground earthing system - Earth connection and riser pig tails as per drawing and specification. (Excavation and backfilling only will be paid under applicable BOQ items& steel shall be supplied by BHEL free of cost.)	Nos.	18			0.0012804947
1813	Providing Earthing pit as per drawing with charcoal & salt, GI pipes, GI earth electrodes, GI wire, GI strips, brick chamber with covers including associated earthwork etc. all complete.	Nos.	14			0.0522204050
1814	Construction of below ground earthing system test pits as per drawing/ sketches including brickwork, plaster, providing & fixing GI strips/pipes, GI wires, covers etc as per drawing & specification including associated earthwork.	Nos.	14			0.0377857379
1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	70			0.0010996898
1816	Providing and fixing PVC pressure release valve of minimum dia 90mm in water retaining structure including 160 mm dia housing pipe of minimum length 3.75 m with perforation as per IS4558, nylon jali, perforated end plug, collar, graded filter, excavation, fixing in concrete slab/wall etc. all complete.	Nos.	553			0.5835528710
A1831	Providing and Filling below foundations with random rubble stone chipping in layers including breaking of stone boulders to required sizes, filling the interstices with selected sand and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	20			0.0045289670
1849	Providing 50mm thick premix carpet surfacing laid to slope in two layers 30mm and 20mm respectively with 12mm downgraded stone chips mixed with 80/100 grade bitumen @ 52 Kg/Cu.M including compaction etc. all complete.	SQM	140			0.0121516714
1850	Providing 50mm thick anti corrosive layer laid to required slope consisting of clean & well graded coarse sand mixed with A90 grade bitumen for softening point upto 45 degree Celcius or A65 grade bitumen for softening point above 45 degree celcius as per IS: 73 or its equivalent quality 8 to 10% by volume and rolled or compacted all complete.	SQM	140			0.0120732070
2000	FENCING AND GATES: Fencing and gates including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc at all level as per specification, drawings and as directed by engineer - in - charge.					
A2003	Supplying and erecting in position 2.4 m high PVC coated gavanised chain linked fencing of minimum 8 gauge (including PVC coating) of mesh size 75mm x 75mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 12 gauge. The PVC coated chain link will be stretched by the clips at 0.5m intervals to three strands of galvanised high tensile spring steel wire (HTSSW) of 2.5 mm diameter interwoven with chain link wire mesh and kept under tension which in turn are attached to the fence post with security nuts and bolts. Concertina of height of 600 mm at top of chain link fencing shall be provided with all accessories. Concertinal shall be from tensile serrated galvanised wire (HTSW) made with wire diameter of 2.5 mm which will be stretched to 6m and attached on two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5mm dia by means of clips at 1m interval. These two HTSSW strands will be attached to the fence posts/ angles with 12 mm security fasteners. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts etc. all complete. (Structural post shall be paid separately under ST No. A2008)	RM	942			0.3555683512
A2008	Supply, fabrication and fixing of mild steel posts for fencing including painting with chlorinated rubber paint over a suitable primer etc all complete.	MT	9			0.1295375146
2009	Supply, fabrication and installing in position and testing galvanised MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete.	MT	5			0.0841934968
2100	WATER SUPPLY: Water supply work including men, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
A2101	Providing and fixing in position tested heavy duty type chromium plated (CP) brass long neck bib cocks with flow rate less than 5 LPM (litres per minute) at 45 psi, including sockets, union, nuts etc all complete -15mm nominal bore.(Note: Flow rate of all faucets at 45 psi should be less than 5 lpm. The contractor should submit the cutsheets/ declaration from the manufacturers mentioning the same to Engineer in charge.)	Nos.	42			0.0046266031
2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.	Nos.	42			0.0013077392
2103	Providing and fixing in position heavy duty brass full way valve with wheel of approved quality including all specials etc all complete for following sizes:					
a	25mm nominal bore.	Nos.	21			0.0018665005
b	50mm nominal bore.	Nos.	21			0.0071331231
2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrsive paint, complete for internal works with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc all complete for following sizes:					
a	15 mm nominal bore.	RM	84			0.0057421641

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

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ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
b	20 mm nominal bore.	RM	32			0.0023539306
c	25 mm nominal bore.	RM	21			0.0016970889
d	50 mm nominal bore.	RM	11			0.0014221664
2105	Providing and fixing GI pipes class B complete for external work with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete for following sizes:					
a	15 mm nominal bore.	RM	42			0.0021934353
b	20 mm nominal bore.	RM	21			0.0012304637
c	25 mm nominal bore.	RM	21			0.0013582655
d	50 mm nominal bore.	RM	11			0.0012527547
A2106	Providing and fixing 600mm x 900mm x 6mm thk mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws , edge mounting with teak beading and minimum 12 mm thick plywood backing etc all complete.	EACH	21			0.0052275984
2108	Providing and fixing 25 mm diameter stainless steel towel rails (600mm X 25mm) with C.P. mounting brackets all complete.	Nos.	21			0.0039024127
2110	Providing and fixing C.P. Soap holder mounted with C.P. screws etc all complete.	Nos.	42			0.0060393775
2111	Providing and fixing stainless steel / C.P. liquid soap dispenser. Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on C.P. brackets etc all complete.	Nos.	42			0.0137193733
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. all complete.	Nos.	21			0.0037448896
A2113	Providing and fixing rotating type chromium plated brass shower rose with 15 or 20 mm inlet all complete.	Nos.	17			0.0008805770
2114	Providing & fixing in position P.V.C. water tank of Syntex or approved equivalent including making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete for following capacities. GI pipes shall be paid separately under ST No. 2105.					
a	500 litres capacity	Nos.	6			0.0036124173
b	1000 litres capacity	Nos.	2			0.0024082782
c	2000 litres capacity	Nos.	2			0.0048165564
d	5000 litres capacity	Nos.	4			0.0240822160
A2116	Providing and fixing glass shelves 600mmx127mmx4 mm with chromium plated brackets all complete.	EACH	4			0.0003904309
A2117	Providing and fixing metal storing cabinets all complete.	EACH	4			0.0083997676
A2118	Providing and fixing electric operated hand dryer with photo voltaic control.etc all complete..	EACH	4			0.0027999206
A2120	Providing and fixing grab bars, barrier-free access and appropriate fittings and fixtures for toilets for handicapped etc. all complete.	EACH	21			0.0058798333
2200	SANITARY: Sanitary work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
2201	Supply and fixing glazed vitreous china Wash Basin of approved make conforming to IS:2556 part 4 of oval shape with R.S. or C.I. brackets painted white, 15mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32mm chromium plated brass bottle trap and waste of standard pattern, 32mm dia chromium plated brass trap unions, plastic connection pipe with chromium plated nuts, fittings, cutting and making good the walls where required etc all complete.					
a	White	EACH	1			0.0018193710
A2201	Supply and fixing coloured glazed vitreous oval shape china wash basin 450x550mm conforming to IS: 2556 mounted over 20 mm thk granite beveled edge counter counter. The Basin shall be fitted with approved shape bib cock, photo-voltic control system for water control with flow rate less than 5 LPM (litres per minute) at 45 psi,CP brass chain with rubber plug, 40mm CP brass waste and bottle trap as per IS: 2556 with two taps, necessary union including cutting of notch in granite counter slab etc complete as per specification	EACH	42			0.0456801634
2202	Providing and fixing approved vitreous china laboratory basin/sink of size 550x400x200mm conforming to IS:2556 (part-5) with R.S. or C.I. brackets, chromium plated brass chain with rubber plug 32mm, 32mm CP brass waste coupling and 32mm CP brass bottle trap with necessaary union complete including painting the fittings, cutting and making good the wall where required etc. all complete.	EACH	1			0.0008501720
A2202	Providing and fixing approved vitreous china laboratory sink of size 600x400x200mm conforming to IS:2556 (part-5) with R.S. or C.I. brackets, chromium plated brass chain with rubber plug 40mm, 40mm CP brass waste and 40mm CP brass trap with necessaary union complete including painting the fittings, cutting and making good the wall where required etc. all complete.	EACH	1			0.0009718880
2203	Providing and fixing stainless steel kitchen sink of size 610x510x200mm conforming to IS: 13983 including all fittings etc. all complete.	EACH	1			0.0013411404
A2203	Providing and fixing stainless steel kitchen sink/Eye wash sink of size size 610 x 510 mm, bowl depth 200 mm as per approved manufacturer with drain board of at least 450 mm length with trap, hot and cold water mixer, conforming to IS: 13983 including all fittings etc. all complete.	EACH	1			0.0013925413
a	Floor mounted	EACH	1			0.0010379826
A2204	Providing and fixing colour glazed vitreous china European type water closet of approved make conforming to IS:2556 with siphon, open front solid plastic seat and plastic cover, low level 12.5 litre PVC flushing cistern (same colour as WC) with valveless fittings, necessary C.P connections, water faucet etc all complete.					
b	Wall mounted	EACH	21			0.0347175043
2205	Providing and fixing colour glazed vitreous indian type Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 with all fittings including foot rests, low level 12.5 litre PVC flushing cistern with valveless fittings, 2 way bibcock with health faucet necessary C.P connections etc all complete.	EACH	21			0.0218570779
A2205	Providing and fixing colour glazed vitreous china Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 with all fittings including foot rests, low level 12.5 litre PVC flushing cistern with valveless fittings, necessary C.P connections etc all complete having flow rate of 6/3 LPF (litres per flush) or less at 45 psi.	EACH	42			0.0437141558
A2206	Providing and fixing white/coloured water efficient flat black glazed vitreous china urinals of size 610x375x390mm with photo voltaic control flushing systems of approved manufacturer simpolo, varmora or eqivalent per IS: 2556(pt-6 sec-1) with flush pipes, lead pipes, gratings, traps and necessary C.P fitting etc. all complete as per specification having flow rate of 2 LPF (litres per flush) or less at 45 psi.	EACH	42			0.0980047120

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
2207	Supply, laying and jointing UPVC pipes of class 3 as per IS:4985 including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.					
a	75mm dia pipes	RM	100			0.0051375470
2208	Providing, laying light duty non pressure NP3 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc all complete for following. (Cement for mortar shall be issued by BHEL free of cost)					
a	200mm dia	RM	200			0.0231543439
b	300mm dia	RM	5205			1.0379606908
c	450mm dia	RM	1084			0.3589998929
d	600mm dia	RM	42			0.0189503302
e	900mm dia	RM	21			0.0166409816
2209	Providing, laying light duty non pressure NP2 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete for following. (Cement for mortar shall be issued by BHEL free of cost)					
a	150mm dia	RM	135			0.0104895122
b	250mm dia	RM	21			0.0021399369
c	300mm dia	RM	21			0.0026333113
d	450mm dia	RM	21			0.0038934963
e	500mm dia	RM	21			0.0045592545
2210	Providing, laying light duty non pressure NP4 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete for following: (Cement for mortar shall be issued by BHEL free of cost)					
a	450mm dia	RM	21			0.0079385715
b	600mm dia	RM	11			0.0052443315
c	900mm dia	RM	11			0.0096728121
2211	Providing and fixing C.I Manhole heavy duty cover of size 600mmx450mm including frame from reputed manufacture etc. all complete.	EACH	40			0.0615090333
A2211	Providing and fixing C.I Manhole heavy duty cover of size 600mmx600mm including frame from reputed manufacture confirming to IS:4111 etc all complete as per specification.	EACH	42			0.0731957694
2213	Providing and fixing square mouth S.W Gully trap grade 'A' complete with CI grating, brick masonry chamber(Clay Brickwork in 1:6 mortar, 12mm plaster in 1:6 mortar & 1:2:4 Cement Concrete) and water tight CI cover with 300x300mm (inside). The weight of cover to be not less than 4.53 Kg and frame to be not less than 2.72 Kg etc all complete for following sizes: (Cement shall be issued by BHEL free of cost)					
a	100x100mm P or S Type.	EACH	21			0.0048772729
b	150x100mm P or S Type.	EACH	11			0.0029037755
c	150x150mm P or S Type.	EACH	11			0.0030404937
A2214	Providing and fixing C.I. floor traps with stainless steel grating etc all complete.	EACH	42			0.0103600290
B2216	Providing and installing approved brand single tap water efficient water cooler of 80 L cooling capacity all complete.	EACH	3			0.0201043676
A2217	Providing and installing approved brand single tap water efficient water cooler of 150 L cooling capacity all complete.	EACH	6			0.0691301525
2219	Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS: 10592) all complete as per specification.	EACH	6			0.0095006406
2221	Providing, laying spun CI pipes with conforming to IS 1536 complete for following.(Excavation,backfilling,concrete to be paid seperately)					
c	150mm dia	RM	275			0.1363006776
d	200mm dia	RM	490			0.3561112612
2223	Providing and fixing vertical wall mounted water geysers/heaters(minimum 5 star rating) of required capacity including all connections & fittings(angular stop cock and brass connection pipes, etc.) all complete as per specification.					
b	25 Litres	Each	4			0.0078685141
A2224	Providing and fixing suitable water meter (Maximum Working Pressure 16 bar; Maximum Liquid Temperature 60°C; Connection Flanges according to ISO, BS 10, American Water works Association (AWWA) or others; Register water consumption in cum) on 50 mm domestic water inlet pipe	Nos.	2			0.0030417788
A2225	Supply, laying and jointing sand cast iron pipe conforming to IS: 1729 including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.					
b	160mm dia pipes	RM	21			0.0061380821
2300	STRUCTURAL WORKS: Structural steel works including all labour, material (unless otherwise specified in BOQ/contract specification), equipments unless otherwise specified, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
2307	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel having minimum galvanisation conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.					
a	Minimum galvanisation of 610 g/sqm	MT	1			0.0188037049
A2329	Design, supply, fabrication, erection of stoplog gates, Sluice gates etc. in CW / RW / CLW Pumps, etc. with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, with electrically operated hoisting arrangements, all materials such as structural steel, cast steel, stainless steel, brass used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fastners etc., cleaning, shot blasting, MS structural parts shall be galvanised to minimum coating of Sealed Zinc spray (250 Micron) as per BS 5493. Over zinc coating one coat of zinc Phosphate Epoxy primer having minimum 30 micron DFT and three coats of coal tar Epoxy paint having minimum 75 micron DFT / coat shall be provided. Total DFT of epoxy paint including primer shall be minimum 250 microns, erection along with a second stage concreting to true plumb and levels, submission of drawings / fabrication drawings for engineers approval etc all complete. The leakage through rubber seal shall not be more than 5 lit/min/metre length of seal under maximum head. (only weight of structural steel including embedments shall be considered for payment purpose, SS component shall be paid separately under relevant BOQ item). (supply of structural steel is in the scope of contractor only)	MT	69			1.3557268866
2330	SS component mentioned under ST No. 2329/A2329	MT	20			1.1788051961

PART-B

PROJECT: 2X800 MW NTPC LARA TPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURE WORKS OF WATER SYSTEM PACKAGE (DM, PT, ETC.), CWPH, RWPH - EXCLUDING RMC AT 2X800 MW NTPC LARA STPP STAGE II, RAIGARH, CHHATTISGARH STATE, INDIA

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
2331	Supplying, fabricating, erecting in position and testing / examining bolted and / or welded structural steel work for stationary screens made out of rolled sections and / or plates including cutting, straightening if required, edge preparation, bolting / welding of joints, cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc as 750 gms./sqm. followed by application of an etching primer and dipping in black bitumen as per BS 3416 etc all complete.	MT	88			1.5956286755
2/A113	Earth work in stripping of top soil upto a maximum depth of 0.30m below ground level so as to exclude all debris, grass, vegetation, bushes, trees having girth upto 300 mm including roots and organic materials etc for leveling and grading including dressing to specified levels & grades and compacting the graded/stripped surface by manual/mechanical means, disposal of stripped materials within a lead upto 1km etc all complete as per specification, drawing and as directed by the engineer-in-charge.	SQM	317955			0.9450050581
	TOTAL AMOUNT					