

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CIVIL AND ARCHITECTURAL WORKS OF
POWER HOUSE AREA FOR UNIT-1 &
UNIT-2 (EXCLUDING TG FOUNDATION
AND TRANSFORMER YARD)
INCLUDING CCR, BUNKER FLOORS,
MACHINE ROOM, ETC. AT 2X800 MW
NTPC LARA STPP STAGE II, RAIGARH,
CHHATTISGARH STATE, INDIA.



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Chapter - I: PROJECT INFORMATION

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 & Lhaxhang 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.

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Chapter - I: PROJECT INFORMATION

1.2	Other contractors would be working in this area and their structures are to be protected. The material brought and stacked for construction should not make hindrance to other contractors.																
1.3	The information given herein is for general guidance and shall not be contractually binding on BHEL/Owner. All relevant site data /information as may be necessary shall have to be obtained /collected by the Bidder.																
1.4	The contractor, in the event of this work awarded to him, shall establish an office at site and keep posted an authorized, responsible officer with valid Power of Attorney for the purpose of the contract. Any order or instructions of the 'Engineer' or his duly authorized representative, communicated to the contractor's representative at site office will be deemed to have been communicated to the contractor at his legal address.																
1.5	No claim will be entertained by BHEL on ground of lack of knowledge and the contractor's rates shall be deemed to have taken this into account.																
1.6	Bidders may fix up their site visit in consultation with below mentioned contact person:																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Name:</td> <td style="width: 40%;">Sh. Abdul Munaf</td> <td style="width: 35%;">Sh. Tapas Kumar Saha</td> </tr> <tr> <td>Designation:</td> <td>Sr. DGM</td> <td>General Manager (Construction Manager)</td> </tr> <tr> <td>Location:</td> <td>BHEL Lara</td> <td>BHEL Lara</td> </tr> <tr> <td>Email:</td> <td>munaf@bhel.in</td> <td>Tapaskumar.saha@bhel.in</td> </tr> <tr> <td>Ph. No.</td> <td>8884711993</td> <td>9410395817</td> </tr> </table>	Name:	Sh. Abdul Munaf	Sh. Tapas Kumar Saha	Designation:	Sr. DGM	General Manager (Construction Manager)	Location:	BHEL Lara	BHEL Lara	Email:	munaf@bhel.in	Tapaskumar.saha@bhel.in	Ph. No.	8884711993	9410395817	
Name:	Sh. Abdul Munaf	Sh. Tapas Kumar Saha															
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Chapter – II: SCOPE OF WORKS

2.0	Scope of Works:
2.1	<p>Civil & Architectural Works of Power House Area for Unit-1 & Unit-2 including CCR, Bunker Floors, Machine Room, etc. - excluding Supply of Cement, Reinforcement Steel (TMT) & Earthing Mats/Rod 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.</p> <p>Exclusion:</p> <ol style="list-style-type: none"> 1. TG Foundation consists of Raft, Column and Deck for Unit-1&2 and Transformer Yard for Unit-1 & 2 are not in the scope of this tender. 2. Erection of shop fabricated steel structure.
2.2	<p>The brief scope of work is as follows:</p> <p>Civil and Architectural works for following Major Buildings/Structures covered under this scope of work:</p> <ol style="list-style-type: none"> 1. Main Power House Building including CCR 2. DG Foundations 3. Compressor House 4. CPU Regeneration area 5. CST Tanks and pump-house 6. CW Duct buried pipe encasement 7. O&M stores 8. Miscellaneous foundations, pits and trenches in above areas 9. Mill & Bunker Building superstructure RCC/Architectural works 10. Boiler superstructure RCC/Architectural works 11. Paving for above areas and all other misc. civil and architectural and minor structural steel work required for completion of the scope as a whole.
2.3	<p>BHEL at its discretion may include other area works limited to 15% of awarded contract value, which are not mentioned in above scope of works. Contractor shall execute such works as desired and as directed by BHEL Engineer. The item rates & contract conditions shall remain unchanged for such works.</p>
2.4	<p>The work under this contract shall be carried out as per BOQ Cum Rate Schedule and in compliance of tender conditions including technical specifications and approved drawings/ documents.</p>
2.5	GENERAL

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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

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	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	<ul style="list-style-type: none"> • 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 – 03 heads • Experienced Foreman / Supervisors – 06 heads • Planning & Billing Engineers – 01 head • Stores, Gate Pass – 01 head • Accounts & Administration – 01 head • Quality Control Engineer – 02 head • Safety Engineer – As per HSE Plan • Surveyor – 1 head capable to handle total station

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	<ul style="list-style-type: none"> • 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. <p>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.</p>
2.6.2	Deputation of above man-power shall be jointly decided at site in line with construction Schedule.
2.6.3	Engineer/ supervisor for other functions like store & purchase, material management, planning, finance, administration etc. are 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,

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	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	<p>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.</p> <p>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.</p>
2.8.3	<p>Minimum Testing Facilities to be arranged by contractor at site are as under:</p> <ol style="list-style-type: none"> 1. Soil Works: <ol style="list-style-type: none"> 1a. Facilities for HDD 1b. Field Compaction Test (Core Cutter / Sand Replacement Method). 1c. Atterberg Limit Test of Soil.

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	<p>1d. Grain Size Distribution Test.</p> <p>2. Road Works:</p> <p>2a. Facilities for mechanical strength of aggregates.</p> <p>2a(i). Impact and Abrasion Value.</p> <p>2a(ii). Crushing Value.</p> <p>2a(iii). Water Absorption</p> <p>3. Concreting Works:</p> <p>3a. Facilities for sieve Analysis for both fine and coarse aggregates.</p> <p>3b. Facilities for workability test of concrete by Slump cone / BV.</p> <p>3c. Facilities for Cube Strength.</p>
2.8.4	Mix design for all concreting shall be carried out from NCCBM / IITs / NITs / other reputed laboratories approved by CUSTOMER/BHEL. Contractor has to ensure adding of high grade PCE based admixture to minimize the cement content in line with ASTM C 494 as advised by BHEL time to time without any additional cost.
2.8.5	In case of change of brand of cement in a particular design mix, contractor has to re-design the concrete mix with new brand of cement before actual usage at site, cost incurred will be borne by contractor.
2.8.6	The following specifications of PCE-type high performance super plasticizer shall be used for concrete works as per BOQ item.
2.8.7	<p>"High performance super plasticizer PCE-based water reducing admixture of Type-G/F as per ASTM C-494 of approved make FOSROC/SIKA/BASF or Equivalent having minimum water reduction capability of 30%.</p> <p>The performance compliance of the Super-plasticizer should be ensured based on the following tests:</p> <p>a) Marsh cone test for optimum dosage of admixture with specific brand of cement.</p> <p>b) Slump retention test of concrete.</p> <p>c) Water reduction capability test by doing trial mix.</p> <p>d) Rheological properties of fresh concrete on trial mix."</p>
2.8.8	In case ambient temperature is greater than 32 Degree Celsius, Placement temperature should be controlled with necessary temperature correction of concrete by introducing Chiller Plant along with Batching Plant
2.9	HEIRARCHY:
2.9.1	<p>In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows:</p> <ol style="list-style-type: none"> 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)

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

Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
3.1	Establishment:			
3.1.1	For Construction Purpose:			
a	Open space for office (as per availability within project premises)	Yes		Location will be finalized after joint survey with owner.
b	Open space for storage (as per availability within project premises)	Yes		Location will be finalized after joint survey with owner.
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipment, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc.		Yes	
f	Firefighting equipment like buckets, extinguishers etc.		Yes	
g	Fencing of storage area, office, canteen etc of the bidder		Yes	
3.1.2	For living purpose of the bidder:			
a	Open space for labour colony		Yes	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			

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

Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
a	Single point source (Chargeable)	Yes	For 1 st 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 1 st 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:			

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

Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
3.3.1	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			

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

Sl. No	Description PART I	Scope		Remarks
		BHEL	Bidder	
a	Téléphone, fax, internet, intranet, e-mail etc.		Yes	
3.6	Demobilization of all the above facilities		Yes	
3.7	Erection Facilities			
3.7.1	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	Preparation of site erection schedules and other input requirements as per Form-14.	Yes	Yes	In consultation with BHEL
e	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

3.8	Land/Open Space:
3.8.1	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 plant, 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.
3.9	Labour and Staff Colony: Following are in the Bidder's scope of work for labour & staff colony:

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

3.9.1	<p>Labour colony is to be developed by bidder for all the labourers required to be deployed for the works. All labour colony set-up is to be developed as per attached drawing and in compliance of statutory requirements.</p> <p>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.</p> <p>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.</p>
3.9.2	<p>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.</p> <p>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.</p>
3.9.3	<p>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.</p>
3.9.4	<p>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).</p>
3.9.5	<p>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.</p>
3.9.6	<p>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.</p>
3.9.7	<p>Development and maintenance of above facilities for construction workers deployed by the Contractor shall solely rest with the Contractor.</p>

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

3.10	<p>Installation of necessary amenities- and temporary infrastructure for construction activities at Project site locations.</p> <p>Following are the minimum amenities to be provided by the bidder within the quoted price including removal/disposal of the same in environment friendly manner after its intended use/completion of scope of work:</p> <ol style="list-style-type: none">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.
3.11	Construction Power:
3.11.1	<p>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.</p> <p>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.</p>
3.11.2	<p>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.</p> <p>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.</p> <p>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.</p>
3.11.3	<p>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.</p>

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

3.11.4	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.
3.11.5	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.
3.11.6	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.
3.11.7	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.
3.11.8	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.
3.11.9	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.
3.11.10	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.
3.11.11	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.
3.12	Construction water:
3.12.1	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.

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

3.12.2	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.
3.12.3	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.

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

4.1 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.

Sl. No.	Description of T&P	Quantity
1a	Concrete Batching Plant (30 Cum/Hr.) with two Nos. of Silos of 100 MT capacity each	1 No.
1b	Concrete Batching Plant (60 Cum/Hr.) with two Nos. of Silos of 150 MT capacity each.	1 No.
2	Concrete Transit Mixer	06 Nos.
3	Concrete Mixer	As per Requirement
4	Concrete Pumps of Suitable Capacity	As per Requirement
5	Hydraulic Excavator /Poclain	05 Nos.
6	JCB	As per Requirement
7	Dumper	10 Nos.
8	Concrete Boom placer min. 35m long	02 Nos
10	Vibrators (electrical/diesel)	As per requirement
11	Self-priming Dewatering pump of various capacity (Diesel/Electric) From 2 HP to 15 HP	As per requirement
12	Curing / dewatering pump – 1.5 / 2 HP	As per requirement
13	De-watering pump (diesel operated) – 20 HP & 30 HP	As per Requirement
14	Hydraulic Excavator /Poclain with rock breaker arrangement	As per Requirement
15	Pneumatic rock breaker with jack hammer	As per Requirement
16	Ply Shuttering board with adequate supporting structure – (Old steel shuttering plates will not be allowed).	As per requirement

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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17	Farana crane (Required Capacity) *Note- Hydra is not allowed at project site Age of Farana/crane shall be less than 15 years during the period of deployment	As per requirement
18	Trailer (20MT Capacity)	02 Nos.
19	Tractor mounted grader/ loader	As per requirement
20	Reinforcement bending machine	As per requirement.
21	Reinforcement cutting machine	As per requirement.
22	Plate compactor	As per requirement.
23	Earth Compactor- 3MT Capacity	As per requirement.
24	Total Station	As per Requirement
25	Auto level & staff	As per Requirement
26	Road roller/Vibro roller	As per Requirement
27	Water Tanker with sprinkler attachment	As per Requirement
28	All equipments for area Lightning like LED/Halogen bulbs and Portable light Towers etc.	As per requirement
29	Computer with printing/photocopy & CD writing facility	As per Requirement
30	Man lift crane of Minimum 20m reach	As per requirement
31	DG Set of 125 KVA Capacity	As per Requirement
32	Dozer	As per requirement
33	MS Scaffolding Pipes.	As per requirement
34	Motorized External Platform (Sky Climber)	As per requirement
35	Electrical Winches with Building Hoist	As per Requirement
36	Construction Cable and Water Pipe Line	As per Requirement

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

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

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.

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Chapter – VI: TIME SCHEDULE

6	Time Schedule and Mobilization:	
6.1	Initial Mobilization and Time Schedule:	
	<p>After issue of LOA (through Fax/courier/email) the contractor shall report to the Construction Manager/Site In-Charge of BHEL at site within seven (07) days from date of LOA and submit detailed mobilization plan to start work within 15 days from date of LOA; unless instructed by BHEL to differ start of work in writing.</p> <p>The contractor has to subsequently augment his resources in such a manner that the entire works are completed within the contract period of Twenty Eight (28) Months from the date of start of work in a manner required by BHEL to match with the project schedule.</p> <p>Date of Start of work shall be considered as 15 days after date of LOA or as instructed by BHEL in writing.</p>	
6.2	Schedule of Completion:	
	<p>The entire work under the scope of this contract shall be carried out in such a manner that the following listed major milestones are achieved as per completion schedule given against each activity & released for erection by other agency.</p>	
S. No.	Activity	Schedule of completion from date of start of work
6.2.1	Unit-1	
6.2.1.1	Main Power House Building including CCR	24 Months
6.2.1.2	Operating Floor (TG Floor)	14 Months
6.2.1.3	Power House AB Bay – Roof Slab including Parapet Wall	16 Months
6.2.1.4	Power House BC Bay – RCC Floor Slabs of all Floors above Ground Level	15 Months
6.2.1.5	Power House AB Bay – Balance RCC Floor Slabs of all Floors above Ground Level	15 Months
6.2.1.6	Power House Ground Floor - Equipment Foundations	Progressively from 16 th to 20 th Month
6.2.1.7	CW pit and Oil Canal	19 Months
6.2.1.8	Common Control Room- Handover for Panel Erection with brickwork plaster	15 Months

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Chapter – VI: TIME SCHEDULE

6.2.1.9	Architectural works of Common Control Room	22 Months
6.2.1.10	Power House – Architectural works of Various Rooms/ Different Floors	Handing Over Progressively from 20 th to 24 th Month
6.2.1.11	DG Foundations	12 Months
6.2.1.12	Compressor House Building	20 Months
6.2.1.13	Compressor House Building readiness for equipment erection	18 Months
6.2.1.14	Compressor House Building Architectural Works	22 Months
6.2.1.15	CST Tanks Foundations and pump-house	14 Months
6.2.1.16	CW Piping Encasement	18 Months
6.2.1.17	O&M stores with Architectural Works	21 Months
6.2.1.18	Mill & Bunker Building superstructure RCC/Architectural works	
6.2.1.18.1	Feeder Floor RCC Slab	15 Months
6.2.1.18.2	Tippler Floor RCC Slab	17 Months
6.2.1.18.3	Bunker Roof Slab	20 Months
6.2.1.18.4	Bunker Building Architectural works	24 Months
6.2.1.19	Boiler superstructure RCC/Architectural works: Boiler Lift Machine Room	20 Months
6.2.1.20	Paving and Drainage with all finishing complete for above areas	25 Months
6.2.2	Unit-2	
6.2.2.1	Main Power House Building	26 Months
6.2.2.2	Operating Floor (TG Floor)	15 Months
6.2.2.3	Power House AB Bay – Roof Slab including Parapet Wall	17 Months

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Chapter – VI: TIME SCHEDULE

6.2.2.4	Power House BC Bay – RCC Floor Slabs of all Floors above Ground Level	17 Months
6.2.2.5	Power House AB Bay – Balance RCC Floor Slabs of all Floors above Ground Level	19 Months
6.2.2.6	Power House Ground Floor - Equipment Foundations	Progressively from 20 th to 24 th Month
6.2.2.7	CW pit and Oil Canal	20 Months
6.2.2.8	Power House – Architectural works of Various Rooms/ Different Floors	Handing Over Progressively from 20 th to 24 th Month
6.2.2.9	CW Piping Encasement	20 Months
6.2.2.10	Mill & Bunker Building superstructure RCC/Architectural works	
6.2.2.10.1	Feeder Floor RCC Slab	17 Months
6.2.2.10.2	Tippler Floor RCC Slab	19 Months
6.2.2.10.3	Bunker Roof Slab	22 Months
6.2.2.10.4	Bunker Building Architectural works	25 Months
6.2.2.11	Boiler superstructure RCC/Architectural works: Boiler Lift Machine Room	26 Months
6.2.2.12	Paving and Drainage with all finishing complete for above areas, misc. foundations, areas not mentioned above but in scope of this package	27 Months
6.2.3	Handing Over of Systems, Reconciliation, etc.	28 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.	

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Chapter – VI: TIME SCHEDULE

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	Unit-1: Operating Floor (TG Floor)	14 Months
M2	Unit-2: Power House Ground Floor - Equipment Foundations	24 th Month
6.6	<u>Provision of Penalty in case of slippage of Intermediate Milestones:</u> <u>In case of slippage of Two Major Intermediate Milestones, mentioned as M1 & M2 above, delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to F-14.</u>	
6.6.1	In case of slippage of these identified Intermediate Milestones, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones.	
6.6.2	<u>In case delay in achieving M1 Milestone is solely attributable to the contractor, 0.5% per week of executable contract value*, limited to maximum 2% of executable contract value, will be withheld.</u>	
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.	

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Chapter – VI: TIME SCHEDULE

	*Executable Contract Value - Value of work for which inputs/ fronts were made available to contractor and were scheduled for execution till the date of achievement of that milestone.
6.7	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.

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Chapter – VII: TERMS OF PAYMENT

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

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Chapter – VII: TERMS OF PAYMENT

7.2	<p>SECURED RECOVERABLE ADVANCES:</p> <p>Interest Free Secured Mobilization Advance as per GCC Clause No. 2.13.1 will be payable under exceptional circumstances on certification of BHEL Construction Manager at Site. Interest Free Mobilization Advance shall be disbursed in specifically mentioned stages of major resource mobilization as specified hereunder:</p> <ol style="list-style-type: none">1. For Mobilization of 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% <p>Note:</p> <ol style="list-style-type: none">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.
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TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

8.0	TAXES & DUTIES
8.1	<p>The contractor shall pay all (save the specific exclusions as enumerated in this clause) taxes, fees, license, charges, deposits, duties, tools, royalty, commissions, other charges, etc. which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes/duties, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.</p> <p>However, provisions regarding GST on output supply (goods/service) and TDS/TCS as per Income Tax Act shall be as per following clauses.</p>
8.2	GST (Goods and Services Tax)
8.2.1	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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

8.2.8	<p>Subject to other provisions of the contract, GST amount claimed in the invoice shall be released on fulfilment of all the following conditions by the Contractor: -</p> <ol style="list-style-type: none">a. Supply of goods and/or services have been received by BHEL.b. Original Tax Invoice has been submitted to BHEL.c. Contractor/ Vendor has submitted all the documents required for processing of bill as per contract/ purchase order/ work order.d. In cases where e-invoicing provision is applicable, vendor/contractor is required to submit invoice in compliance with e-invoicing provisions of GST Act and Rules made thereunder.e. Contractor has filed all the relevant GST return (e.g. GSTR-1, GSTR-3B, etc.) pertaining to the invoice submitted and submit the proof of such return along with immediate subsequent invoice. In case of final invoice/ bill, contractor has to submit proof of such return within fifteen days from the due date of relevant return.f. Respective invoice has appeared in BHEL's GSTR - 2A for the month corresponding to the month of invoice and in GSTR-2B of the month in which such invoices has been reported by the contractor along with status of ITC availability as "YES" in GSTR-2B. Alternatively, BG of appropriate value may be furnished which shall be valid at least one month beyond the due date of confirmation of relevant payment of GST on GSTN portal or sufficient security is available to adjust the financial impact in case of any default by the contractor.g. Contractor has to submit an undertaking confirming the payment of all due GST in respect of invoices pertaining to BHEL.
8.2.9	<p>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.</p>
8.2.10	<p>TDS as applicable under GST law shall be deducted from contractor's bill.</p>
8.2.11	<p>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.</p>
8.2.12	<p>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.</p>
8.2.13	<p>In case declaration of any invoice is delayed by the vendor in his GST return or any invoice is subsequently amended/alterd/deleted on GSTN portal which results in any adverse financial implication on BHEL, the financial impact thereof including interest/penalty shall be recovered from the Contactor's due payment.</p>

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

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

8.4 BOCW Act & Cess Act

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

Annexure-I:

Bidder may please note that the sub-contractor/bidder of BHEL engaging building or construction worker in connection with building or other construction work, are required to follow the procedures enumerated below:

1.	It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under the Building and other Construction Workers’ (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers’ Welfare Cess Act, 1996 and the rules made thereunder.
2.	It shall be sole responsibility of the contractor engaging Building Workers in connection with the building or other construction works in the capacity of employer to apply and obtain registration certificate specifying the scope of work under the relevant provisions of the Building and Other

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

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

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VIII: TAXES AND DUTIES

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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IX: MATERIALS

9.0	MATERIAL
9.1	Material to be issued by BHEL (Free of Cost) as per BOQ cum Rate Schedule: <ol style="list-style-type: none"> 1. Cement 2. 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

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IX: MATERIALS

	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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IX: MATERIALS

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	Contractor 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/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 Cement:
9.4.1	VOID
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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IX: MATERIALS

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	VOID		
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	VOID		
9.9.1	VOID		
9.9.2	VOID		
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
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.		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

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

<u>CONTENTS</u>	
Description	Remarks
PART A: Instructions to the Bidders	Instructions
PART B: % weightage for amount of individual items of Schedule of quantity	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”.

<u>Part A:</u>	<u>Instructions to the Bidders</u>
1.	<u>Bidders shall quote Total Price for the entire scope of work in Rupees in VOL II PRICE BID at BHEL E-procurement Portal.</u> Any other entry elsewhere in the offer of the bidder shall be treated as Null and Void. The total value shall be automatically calculated on E-portal
2.	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 ‘ <u>Item rate contract</u> ’. Payment shall be made for the actual quantities of work executed at the Unit rate arrived at as per serial no. 5 above.
<u>PART B:</u>	% weightage 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-XI: TECHNICAL SPECIFICATIONS AND DRAWINGS

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).

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, from 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 & ARCHITECTURAL WORKS FOR POWER HOUSE AREA OF UNIT-1 & UNIT-2; EXCLUDING TG FOUNDATION AND TRANSFORMER YARD; INCLUDING CCR, BUNKER FLOORS, MACHINE ROOMS, ETC.

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	123997			1.0110341646
b	Depth exceeding 2 m but not exceeding 4 m	CUM	102527			1.0470807315
c	Depth exceeding 4 m but not exceeding 6 m	CUM	79379			1.0133381546
d	Depth exceeding 6 m but not exceeding 8 m	CUM	7525			0.1202294136
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/statutory 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.					
b	Depth exceeding 2 m but not exceeding 4 m	CUM	4533			0.1455997249
c	Depth exceeding 4 m but not exceeding 6 m	CUM	9102			0.3508385156
d	Depth exceeding 6 m but not exceeding 8 m	CUM	4793			0.2218289616
e	Depth exceeding 8 m but not exceeding 10 m	CUM	318			0.0169032238
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.					
d	Depth exceeding 6 m but not exceeding 8 m	CUM	100			0.0073294397
e	Depth exceeding 8 m but not exceeding 10 m	CUM	100			0.0084288557
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	129561			0.9176791738
b	at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	142492			1.1266265990
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.					
a	Carriage for stacking/ backfilling of serviceable material/ earth	CUM	1551			0.0015328966
b	Carriage for disposal of serviceable/unserviceable material/ earth	CUM	83991			0.0830108463
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	153			0.0175714405
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	114851			13.8950976636
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	6500			0.1734515463
b	Depth exceeding 2 m but not exceeding 4 m	SQM	400			0.0133424266
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.					
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) (Cement shall be issued by BHEL free of cost)	CUM	7694			2.4883433951
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 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) (Cement shall be issued by BHEL free of cost)	CUM	75			0.0242572729
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 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) (Cement shall be issued by BHEL free of cost)	CUM	10			0.0032343031
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). (Cement shall be issued by BHEL free of cost)	CUM	21640			6.6798485065
205	Providing and laying 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. (Cement shall be issued by BHEL free of cost)					
b	M 25 Grade	CUM	36272			12.6574838305
c	M 30 Grade	CUM	150			0.0527396475

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

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURAL WORKS FOR POWER HOUSE AREA OF UNIT-1 & UNIT-2; EXCLUDING TG FOUNDATION AND TRANSFORMER YARD; INCLUDING CCR, BUNKER FLOORS, MACHINE ROOMS, ETC.

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
206	Providing and laying 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. (Cement shall be issued by BHEL free of cost)					
b	M 25 Grade	CUM	10655			3.8400629910
c	M 30 Grade	CUM	17			0.0061717783
207	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works of grade mentioned below in machine foundations for TG, Gas Turbine, ID/FD/PA fans, BFP, Mills, Crusher House, CHP-AHP civil works, FGD,etc at all elevations below/above finished floor level (except top decks supported over vibration isolation system and TG deck) but including TG foundation Columns with addition of suitable plasticizer conforming to IS 9103(latest) to achieve a slump more than 125mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing all complete. (Cement shall be issued by BHEL free of cost)					
a	M 30 Grade	CUM	2440			0.9654118698
A209	Extra over St. No. 205 to 208 for controlling of temperature of fresh concrete to less than 25 degree centigrade using ice, including all related arrangements for providing, storing and mixing of ice with water, cooling of aggregates etc. All complete as per specification, drawing and instruction of engineer in charge.	CUM	2440			0.2321088072
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	1001			0.0286815721
211	Providing and encasing of structural steel member with concrete using nominal 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. (Cement shall be issued by BHEL free of cost)					
Ac	M 30	CUM	590			0.1906621648
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. (Cement shall be issued by BHEL free of cost)					
a	1:2:4	CUM	433			0.1399806360
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, chajias, 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 precast 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. (Cement shall be issued by BHEL free of cost)					
c	M30	CUM	44			0.0273346789
214	Providing and laying 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 conforming 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. (Cement shall be issued by BHEL free of cost)					
b	M30	CUM	955			0.3902832750
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	153			0.0129784798
b	Reinforced cement concrete of all grades	CUM	250			0.0322513219
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	1252			0.0075278856
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	200			0.0000990206
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	130			0.0030975329
219	Providing and applying curing compound (water based) of approved make where ever required as per manufacturer's specification.	SQM	100			0.0011201050
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	969			0.0289701145
b	Height exceeding 20m from FFL but not exceeding 30m	CUM	2800			0.1505882276
c	Height exceeding 30m from FFL but not exceeding 40m	CUM	800			0.0573889067
d	Height exceeding 40m from FFL but not exceeding 50m	CUM	15			0.0012551764
e	Height exceeding 50m from FFL but not exceeding 60m	CUM	610			0.0547113617
f	Height exceeding 60m from FFL	CUM	15			0.0014787856
300	FORMWORK: Providing, fixing and removing formwork at all elevations for all structures, as per specifications and including all labour, material, scaffoldings and centering 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	1459			0.0749824611

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

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURAL WORKS FOR POWER HOUSE AREA OF UNIT-1 & UNIT-2; EXCLUDING TG FOUNDATION AND TRANSFORMER YARD; INCLUDING CCR, BUNKER FLOORS, MACHINE ROOMS, ETC.

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
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	60749			3.1220918591
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	369			0.0228237033
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	19186			1.1867088640
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	150			0.0030638165
b	Pockets of depths more than 150mm and upto 300 mm depth	Each	150			0.0050528264
c	Pockets of depths more than 300mm and upto 600 mm depth	Each	350			0.0208413646
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	350			0.0324583354
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	250			0.0332942961
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	12			0.0741680789
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 conforming 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	6565			5.6774125558
405	Providing & fixing of Rebar in existing concrete surface by inserting reinforcement 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 be conducted 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			0.0024732906
b	16mm Reinforcement bar	Nos.	70			0.0038800106
c	20mm Reinforcement bar	Nos.	70			0.0054250966
406	Supply and fixing reinforcement bar couplers (of approved manufacturer's as per the relevant IS code) in position for steel reinforcements of TMT steel of grade Fe-500D or 500EQR or any other Grade conforming to IS:1786 including , labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer. (Agency has to supply reinforcement bar couplers).					
a	12mm dia	Nos.	200			0.0010871607
b	16mm dia	Nos.	500			0.0037474100
c	20mm dia	Nos.	1000			0.0093067544
d	25mm dia	Nos.	1000			0.0128482627
e	28mm dia	Nos.	500			0.0099656397
f	32mm dia	Nos.	1500			0.0344679355
407	Transportation from BHEL yard, straightening, cutting, bending, welding / binding in position of old cut piece TMT steel reinforcements conforming 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	100			0.1049604229
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 separately in the relevant Item No 401-403]	MT	100			0.0231433450
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	18184			0.2111623092
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 polyester (120-150 gsm), polymerised mastic base preparation, primer, making of fillets, cleaning & preparation of surface, vacuum 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	18184			1.6413751128

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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)
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	18184			0.5002000800
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). (Cement for mortar shall be issued by BHEL free of cost)	SQM	4510			0.2482638767
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	18325			0.2550647817
513	Providing and mixing water proofing compound conforming to IS:2645 in concrete or cement mortar all complete.	KG	4000			0.0378859028
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	5000			0.2726137789
B514	Providing and applying Food grade epoxy coating complying to FDA Title 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	300			0.0185805645
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	42			0.0082362305
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 Danconcrete 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	SQM	180			0.0097992711
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 conforming 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	108			0.0052768474
b	20 mm wide joints.	SQM	108			0.0077381956
c	25 mm wide joints	SQM	1011			0.0881357465
d	50 mm wide joints	SQM	140			0.0233607771
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:					
a	12mm X 25mm	RM	300			0.0056087608
b	20mmX25mm	RM	500			0.0139601316
c	25mmX25mm	RM	2448			0.0824621266
d	50mmX25mm	RM	100			0.0062347018
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 separately):					
a	25mmX25mm groov size	RM	1621			0.0566068099
b	50mmX25mm groove size	RM	400			0.0255647483
Ac	20mmX25mm groove size	RM	1737			0.0464660385
604	Supplying and filling in position hot applied bitumin sealing compund (Grade A) conforming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete.					
a	10mm X 40mm	RM	100			0.0004035672
b	12mm X 25mm	RM	100			0.0003706230
c	20mmX25mm	RM	100			0.0004447476
A605	Supply and installation of Polystyrene flexible board conforming 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	150			0.0270184139
610	Providing and fixing PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following: (Bulb or Kicker type)					
d	230 mm wide and 6 mm thick	RM	783			0.0132846095
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	160			0.0079856894
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	50			0.4050126551
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	29			0.2866867446
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	122			0.2409912394
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	90			0.1936801476

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

BOQ CUM RATE SCHEDULE

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704	Supplying, fabricating, erecting and installing following items in concrete/brickwall for all kind of works, including setting material in concrete, layout, scaffolding, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete.					
a	MS pipes of all diameters	kg	400			0.0026684853
b	PVC pipes / conduits of all diameters	kg	1000			0.0313794108
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	100			0.0004529836
ii	10mm Dia	Nos	100			0.0005024000
iii	12mm Dia	Nos	100			0.0005682885
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	100			0.0016883935
ii	HST M10	Nos	100			0.0022319738
iii	HST M12	Nos	100			0.0034673837
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			0.0132346989
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			0.0128299786
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	52			0.1865517173
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	5			0.0196998459
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.					
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 continuous pressed steel chanel with min 18G, shop and final painting etc all complete.	SQM	192			0.1258101883
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	39			0.0247778746
A906	Providing and fixing 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 2 mm wall thickness as per IS:1285, IS:733 and anodized(15 micron coating thickness) and electro color dyed 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 toughened glass of 8/10 mm 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. (Glazing shall be paid separately)	KG	100			0.0036403411
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	389			0.2976037322
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 execution Minimum ratings shall be 2 Hrs. All hardware fittings shall be fire rated.	SQM	100			0.1436040438
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)					
b	fixed type	SQM	800			0.1184675709

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

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909	Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door frames, windows, ventilators, 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-metallic protection etc. including preparation 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/stainless steel screws, providing and fixing hinges/pivots, and making provision for fixing 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	30502			1.4319339354
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. 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 coping 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 manufacturer of ACP.	SQM	8352			2.3656063136
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	12664			0.1679254756
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	529			0.2684708731
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	27			0.0036914047
Ab	4 mm thick plain or tinted float glass	SQM	83			0.0119150341
d	6 mm thick wired glass	SQM	450			0.0766448286
Ae	3mm thick Polycarbonate sheet with profile matching with metal sheeting shall be provided. The Polycarbonate sheets shall be fire and u/v resistant, and suitable for continuous use up to a temperature of 1000C. Suitable aluminium beading shall be used. The open ends of the sheet shall be sealed as per manufacturer's recommendations .	SQM	413			0.0702408756
h(a)	6 mm thick clear reflective toughened safety glass of Saint Gobain(India) or Asahi (India) or equivalent 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	1568			0.3883285271
Ah	6 mm thick clear toughened glass conforming to IS 5437	SQM	2679			0.5405782987
AhB	8 mm thick clear toughened glass	SQM	700			0.1723232053
AhC	8 mm thick clear toughened fire resistant glass	SQM	400			0.1578359655
l(a)	composite double glazing, 25 mm thick 2 hr fire rated, with one outer 6 mm thick tinted heat-reflecting type toughened glass and one inner 11mm thick clear toughened glass hermetically sealed and separated by 8 mm thick gap for thermal insulation (only single elevation area to be measured) with suitable frame of min 1.6mm galvanised steel sheet. The glass to be used should be from the manufacturers of glass like Glavebel (Belgium), Saint Gobain (France) or Fort (USA) Or equivalent. The glass should be free from distortion and thermal stress.	SQM	100			0.0430581522

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)
I(b)	composite double glazing of fire resistant glass MIN.30 mm thick Hermetically sealed double glazed unit of one Fire resistant glass of min.14mm thick (outer side) clear, toughened, interlayered glass with 120 minute fire rated for both integrity & radiation control (EW 120) with symmetrical (Bi-Directional) fire protection and 6 mm thick toughened tinted glass (Inner side) with 10 mm air gap etc all complete as per specification.	SQM	100			0.0475056277
I(c)	One outer 6mm thick tinted heat-reflecting type toughened glass and one inner 6mm thick plain float glass hermetically sealed and separated 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	110			0.0423449088
I(d)	Fire rated glass min.14mm thick fire resistant clear, toughened, interlayered clear 120 min fire rated for Integrity, Radiation control (EW 120) and partially insulation (EI 20) Non Wired Toughened Interlayered glass complying to BS476 Part22 or (EN-1634-1 :1999) with a light transmission of 86% according to EN410 standards and sound reduction of >=37 dB and manufactured in UL & TUV audited Facility and including UL-EU Certification and compliant to class 1(B)1 category of Impact Resistance as per EN 12600. The glass shall be tested and certified for no formation of bubbles or yellowing after 5000 hours of exposure to UV radiation by TUV Rheinland as per EN 12543-4 The glass shall provide bidirectional (Symmetrical) fire protection. as per specification and instruction of engineer in charge.	SQM	200			0.1043180098
m	6 mm thick clear toughened safety glass	SQM	40			0.0081965327
o	10 mm thick clear toughened safety glass	SQM	40			0.0137015191
p	12 mm thick toughened safety glass	SQM	32			0.0134752263
917	Providing and fixing 12 mm thick BWP particle board, decorative veneer (prelaminated) on both sides, as panels in aluminium framed door shutter, fixed with necessary snap-on-beading etc. all complete (excluding aluminium works).	SQM	100			0.0145284201
919	Providing and fixing 1 mm thk. MS sheet sliding shutters with frame and diagonal braces of 50X50X6 angle iron, 3 mm MS gusset plates at junction and corners, 25 mm dia pulley, 50X50X6 angle and T-iron guide at the top and bottom respectively including painting etc. all complete.	SQM	50			0.0209278433
A920	Providing and erecting Roof skylight structure with 4mm thick embossed clear translucent polycarbonate IR sheet, both side UV coated, minimum 55% light transmission, solar control, approved make, texture and shade, fixed to powder coated Aluminium section with 60mm width top & bottom with EPDM rubber gasket in approved shape like dome, pyramidal etc, sealing of joints with sealant, screws with pvc cap, self tapping screws, EPDM rubber gasket etc as per drawing, standards, specification, instruction of engineer in charge etc all complete.(Structural Steel will be paid separately)	SQM	1664			0.6926412762
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	350			0.4356796463
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 : within 1-9 seconds after door stopped in opening, controller : 8 Bit micro computer, Motor (Dortexor equivalent) : DC12V, 35W brushless 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	100			0.1362492370
A923	Providing and fixing Electrically operated, self operable/closing, G.I. framed with fire resistant glass, sliding doors with Fire resistant glazed door system shall be of uniform profile 50X50 mm with 14mm EI 20 glass for Interior application. FIRE RESISTANT GLAZED DOOR SYSTEM shall have 120 minutes of integrity and radiation control (EW 120) with symmetrical (Bi-Directional) fire protection. The frames shall be cold rolled profiles as per EN standard EN 10327 / Indian Standard IS 513. The door frames are cold rolled from 1.6 mm steel sheet to form a profile of 50 mm x 50 mm on all sides. The door shutter shall have the top rail, side rail and bottom rail dimensions of 50 mm x 50 mm. The glass must be minimum 14mm clear,120 min fire rated for Integrity, Radiation control (EW 120) and partially insulation (EI 20) Non Wired Toughened Interlayered glass with a light transmission of 86% and a sound reduction of 38 dB and manufactured in UL & TUV audited Facility and including UL-EU Certification and compliant to class 1(B)1 category of Impact Resistance as per EN 12600. The glass shall be tested and certified for no formation of bubbles or yellowing after 5000 hours of exposure to UV radiation by TUV Rheinland as per EN 12543-4. The shutters shall be fixed to the frame using Weld-on hinges of dimensions 179mm X 20mm. The profiles shall have grooves to incorporate Fire Resistant gaskets. The glass shall be held in its place with the help of 1.5 mm cold rolled steel beading and Kerafix 2000 ceramic tape with cross section of 4 x 15 mm as per the test evidence. Beading shall be clipped on using Stainless Steel selftapping screws fixed at a distance of 70 mm from the edges and 150 mm c/c henceforth. The glass panes are to be supported on non-combustible 6 mm Calcium Silicate setting blocks. The door shall be fitted with offset pull handle and door closer of Dorma (TS 73V, TS 83V, TS93V), Geze (TS 2000NV) or equivalent. The inactive leaf (in case of double leaf only)shall be fixed to the frame using a tower bolt at meeting edge at top or as per the tested evidence. The doors shall be manufactured in a TUV audited facility. The maximum glazing size shall be as per the test certification. The profile has to be fixed to the supporting construction by means of M10 or bigger steel bolts at every 150 mm from the edges and every 500 mm (approx.) c/c. The doors shall offer C4 level of wind resistance when tested as per EN12211 and shall provide class 4 level of air permeability as per EN 1026. The door shall also be subjected to durability tests as per EN 12400 for C5 classification (200,000 cycles) all complete as per specification. The door shall have water tightness level of 8A when tested as per EN 1027. Fire Rated Door shall be of Makes- shaktimat, Nauvair, ASI	SQM	100			0.1502093686

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)
	or equivalent, all complete as per specification.(item includes the cost of glazing) 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.					
A924	Providing and fixing of fully glazed door with steel frame of 120 minutes of integrity and radiation control (EW 120) with symmetrical (Bi-Directional) fire protection. The frames shall be cold rolled profiles As per EN standard EN 10327/Indian Standard (IS 513). The frames are cold rolled from 1.5 mm steel sheet to form a profile of 50 mm x 50 mm on all sides. The glass shall be held in its place with the help of 1.5 mm cold rolled steel beading and Kerafix 2000 ceramic tape with cross section of 4 x 15 mm as per the test evidence. Beading shall be clipped on using Stainless Steel selftapping screws fixed at a distance of 70 mm from the edges and 150 mm c/c henceforth. The glass panes are to be supported on non-combustible 5 mm Calcium Silicate setting blocks. The maximum glazing size shall be as per the test certification. The profile has to be fixed to the supporting construction by means of M10 or bigger steel bolts at every 150 mm from the edges and every 500 mm (approx.) c/c. The Partitions shall offer C4 level of wind resistance when tested as per EN12211 and shall provide class 4 level of air permeability as per EN 1026. all complete as per specification and approved by Engineer incharge.	SQM	100			0.1172321610
A925	Providing and fixing 3M privacy film on glass door, partiton etc.having Project / Purchaser's Logo and other detail design as per details and direction all complete as per specification and approved by Engineer incharge	SQM	120			0.0182325993
A926	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 1.6 mm galvanized steel sheet (zinc coating not less than 120 gm/sqm) pressed to form a suitable profile & 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 min. 30 micron of approved shade and color.The glass panels shall be interlayered minimum 14mm thick, 120 minute fire rating and partially insulated (EW120), with min.30 minute full insulation, Non Wired Toughened Interlayered glasshaving a sound reduction of greater than 37dB, light transmission of 87% 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).all complete as per specification. Design,Shop drawings for the item with all construction and anchoring details along with fire rating test reports shall be got approved before execution.	SQM	200			0.1458442537
A927	Providing & fixing minimum 30mm thick Hermetically sealed double glass (DGU) consisting of Fire resistant glass of minimum 14mm thick, clear, toughened,interlayered borosilicate glass,120 minutes fire rated for both integrity & radiation control ,remain transparent under both fire and non fire condition and 6mm thick toughened tinted glass with 10mm gap. The partitions shall be 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 1.6 mm galvanized steel sheet (zinc coating not less than 120 gm/sqm) pressed to form a suitable profile to accommodate the glass & fixed to the supporting construction by means of M 10 X 120 or bigger steel bolts at 150 mm from the edges & every 500mm c/c.The frame shall be finished with etch primer for scratch resistance and shall be powder coated of min. 30 micron 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 87% and compliant to class 2(B)2 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 1.6 mm 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) all complete as per specification.Fire Rated Door shall be of Makes- shaktimat,Navvair,ASI or equivalent Design,Shop drawings for the item with all construction and anchoring details along with fire rating test reports shall be got approved before execution.	SQM	100			0.0734657072
A928	Providing and fixing of fully glazed steel door with 120 minutes fire rating, of integrity and radiation control (EW 120) fabricated with 1.6 mm thick galvanized steel sheet. The door frames are manufactured from 1.6 mm galvanized steel sheet (zinc coating not less than 120 gm/sqm) pressed to form a profile of 35 mm x 60 mm on the vertical sides and 50 x 60 mm on the horizontal side. The door shutter would have a top rail and side rail 60 mm x 60 mm and a bottom rail of 110 mm x 60 mm. The frame shall be finished with approved fire resistant primer or Power coating of min. 30 micron as per approved shade.The sections have a special insulating infill.The test is conducted in IFTS as per EN 1634-1: 1999.The glass panels shall be interlayered minimum 14mm thick, 120 minute fire rating and partially insulated (EW120), with 30 minute full insulation, Non Wired Toughened Interlayered glass, with a light transmission of 86% and a sound reduction of 37 dB and manufactured in UL & TUV audited Facility and including UL-EU Certification. The glass should be compliant to class 1(B)I category of Impact Resistance as per EN 12600. The glass should be held in its place with the help of 1.6 mm GI beading and a special ceramic tape with cross section of 5 x 20 mm as per the test evidence. The shutters should be fixed to the frame using Dorma SS Ball Bearing Hinges of size 100 mm x 89 mm and 3 mm thickness or equivalent. Beading should be attached using 4 mm x 35 mm SS screws at a distance of 75 mm from the edges and 150 mm c/c henceforth. The door should be fitted with Dorma Mortise Sash lock 952F and door closer TS 68 of Dorma make or equivalent. The inactive leaf should be fixed to the frame using 1200mm long tower bolt.all complete as per specification and Design,Shop drawings, along with hardwares for the item with all construction and anchoring details along with fire rating test reports shall be got approved before execution.	SQM	75			0.2118110229
A929	Providing and fixing frameless fully glazed (single/ double leaf) doors and Mullion-less glass partiton with 12mm thk toughened float glass fixed with Dorma make stainless steel patch fittings including cutting, making holes, cutouts in the glass of required shape and size to accommodate fittings and fixing the fittings in floors, soffits, jams including necessary fixtures, screws, ss handels 1000mm long C Shape (both side),sealant wherever required and SS cover over patch fittings.The glass panels shall be easily removed and refitted (during breakage) without using any special tools. The junction of glass to glass shall be properly secured using extruded PVC or sealant.Shop drawings for the item with all construction and anchoring details shall be got approved before execution.	SQM	50			0.0542468476
A930	Providing and fixing motorized curtain (operated with remote control also) mechanism at all heights.	SQM	40			0.0930411884

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A931	Provide & Install SS Logo/Signature ICON of NTPC as per Guidelines of "Client" complete in all aspects. Logo to be fabricated in Stainless steel finish as per approved Pantone Shades of Client Guidelines along with proper provision of fixing arrangement of Logo on Partition Surface/Glass Surface/Acrylic Surface etc.Shop drawings for the item with all construction and anchoring details shall be got approved before execution, all complete as per specification and approved by Engineer incharge.	SQM	15			0.0199876964
A932	Providing,fixing & Installation of manually operated,frameless Vertical Roller venetian blinds with premium fabric quality with 5% openness factor HARDWARE; TOP TUBE : Made of extruded aluminium with 38 mm Dia. and wall thickness of 1.2 mm with spline adoptable to accommodate. CLUTCH MECHANISM : Moulded plastic having self-lubrication with Glass fibre reinforcement, having a minimum lifting capacity of 8 lbs weight capacity - 8 lbs Head adoptability - 38 mm OPERATING CHAIN : PLASTIC / STEEL ball chain adoptable to the clutch pitch for smooth operation of blinds. LOCKING MEMBER : Plastic/ steel stop locks for limit setting adoptable to the steel chain. Bonding (Fabric > Tube) : 30/36 mm wide double sided adhesive tape of 3M for strong holding capacity. SPRING BOOSTERS: provided as per the requirement Bottom Bar : aluminium extruded circular section with powder coated finish, having a Min. weight to be 365 gms / Rmt for a perfect fall of fabric to avoid warpage / floating. Ends are covered with end caps to give a perfect finish,installation at site at all height complete s per approved sample and instruction of engineer incharge.	SQM	50			0.0201083547
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.					
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	134			0.0590553923
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	7647			4.4521407020
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	349			0.2279101432
A1002	Providing and laying Autoclaved Areated concrete blocks in cement mortar 1:6 (1 part cement 6 parts coarse sand) with suitable plasticizer,confirming to (IS: 2185 Pt- 3) in walls, chambers etc. in thickness 100mm to 300mm having oven dry density of 550kg/m3 to 650kg/m3, of minimum 30kg/sqm of compressive strength (other parameters as per specification), at all depths, places and positions below/above plinth including raking out joints in line with specification and as per approval of engineer in-charge, curing, scaffolding etc.complete excluding plastering and painting all complete as per specification and drawing. AAC masonry work shall conform to IS 60411.S - 1905.All other structural requirements like stiffening of masonry, joint reinforcement etc. Note: Cemet for making of AAC blocks is in the scope of contractor. (Cement for mortar shall be issued by BHEL free of cost)	CUM	3071			1.5552639972
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	348			0.0249928359
A1003	Providing factory made composite modular light weight aerated concrete panels of minimum 2 hours of fire rating, consisting of two fiber reinforced cement sheets(min. 4 mm thick) on either side of light weight concrete core, having min. compressive strength of 35 Kg/Cm2 and density in the range of 700-900 Kg/Cu.M. to provide external wall and internal partition at all levels. The panels shall be fixed in position through tongue and groove jointing system by screwing the panels to top & bottom U channels(channels min. 1.25 mm thick and galvanized to min. grade 180 as per IS:277), fixing U profiled top & bottom channels to concrete/primary steel members which are placed at max vertical spacing of 4.5 M with the help of galvanized steel expansion fasteners, filling the joints from both faces with silicon acrylic paste and making the same water tight by covering with fiber glass tape(min. 50 mm wide & min. 0.5 mm thick) or by any other suitable material, so as to ensure that entire construction done is weather proof and panel surfaces are fush for painting, creating opening for doors/windows/ventilators/ducts/pipes/fans/AC etc. and finishing the opening with same U profiled galvanized steel channel which is used at top & bottom. The wall must be capable of sustaining wind pressure of 4.5 M height within limiting deflection of span/250.	SQM	4000			0.6196815929
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	104			0.0169931617
A1006	Providing and encasing of structural steel member with masonry 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 seperately)	CUM	50			0.0227686040
1007	Providing and laying 75 mm thick bed of dry brick aggregate including of excavation, disposal of surplus earth spreading of earth, ramming, watering etc. complete in all respects as directed by the engineer.	SQM	10			0.0001457784
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	5			0.0009904446
1009	Supply and placing in position mild steel wire fabric(Chicken Wire Mesh) of square mesh 25 mm size and wire diameter of 2 mm for encasing of steel sections in concrete including cutting, bending, fixing etc. complete.	SQM	20			0.0003525036
A1009	Supply and placing in position GI of 0.9 mm welded wire mesh/ chicken wire mesh for encasing of steel sections in concrete/ brick/ plaster at the junction of RCC and brickworks including cutting, bending, fixing etc. complete.	SQM	1000			0.0319559354

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)
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. (Cement shall be issued by BHEL free of cost)	SQM	5			0.0004242892
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	2000			0.1360598075
b	Height exceeding 20m from FFL but not exceeding 30m	CUM	2000			0.2449405977
c	Height exceeding 30m from FFL but not exceeding 40m	CUM	2000			0.3264776494
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	1000			0.0046121969
b	Height exceeding 20m from FFL but not exceeding 30m	SQM	1000			0.0083184265
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	586			0.0155407973
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	54			0.0012897679
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	39961			1.0400237079
1202	Providing 12mm thick plaster internal/external surfaces of building/boundary wall in cement mortar as applicable above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 1206) 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	42504			0.8961682994
b	Cement Mortar 1:4	SQM	1800			0.0379517913
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	9105			0.1687168380
1208	Providing and laying encasement to box type steel beams at all levels with lath plaster 50 mm nominal thickness with cement plaster (1:4) over chicken wire mesh including all labour, materials, equipment, handling, transporting, mixing, placing, leveling, curing and cleaning, finishing the exposed surfaces etc including centering and shuttering all complete as per specification, drawing and instructions of engineer in charge (chicken wire mesh to be paid separately) (Cement shall be issued by BHEL free of cost)	SQM	100			0.0044639477
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	500			0.0037062296
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	500			0.0015813246
1302	Two or more coats of Exterior masonry paint (water or solvent base) of special resins, adhesives and additives mixed with fine, hard stone aggregate and suitable pigment. The paint shall be applied on a coat of primer over dried, prepared plaster surface as manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellent, alkali resistant and extremely durable with color fastness as per specification.	SQM	414			0.0087493704
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	283			0.0025359176
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	40020			0.3131230746
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	2575			0.0284185451
1306	Providing and applying 2 or more coats of acid/alkali resistant paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying bitumen primer confirming to IS 158 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	100			0.0021858519
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	3395			0.0645909345
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	2131			0.0566899118
1307	Providing and applying two coats of Epoxy coating with suitable pigments of approved shade as per specification and direction of Engineer. The epoxy paint 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 150 micron thickness over epoxy primer.	SQM	100			0.0020458388

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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)
1308	Providing and applying 2 or more coats of Chlorinated Rubber paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying chlorinated rubber zinc phosphate primer conforming to IS 158 complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, inclusive of intermediate coat of Titanium dioxide / micaceous iron oxide complete as per specifications.	SQM	100			0.0018769994
1309	Two or more coats of fire resistant transparent paint (@3.5 sqm per litre per coat) as per IS 162 on all woodwork over french polish as per IS 348 or flat oil paint as per IS 137 of approved grade and manufacture to give an even shade as per specifications. French polish payment will be made separately.	SQM	150			0.0043807634
A1311	Two or more coats of synthetic enamel paint of approved make made from synthetic resins and drying oil with rutile titanium dioxide and other selected pigments to give smooth, hard, durable & glossy finish to all interior and exterior surfaces complete. Note: The paint should have VOC content limit less than 150 grams per litre. All necessary documentation (certificates, manufacturer declarations) should be provided by the contractor to engineer in charge.	SQM	100			0.0006506492
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	540			0.0351350568
1314	Providing and applying resin bonded granular textured finish, for external applications shall consist of crushed stone/quartz chips of .5 mm to 2.5 mm size and of approved natural color/shade and bonded with synthetic resins, adhesives and additives altogether in a single pack mix, applied on cured and dried plaster surface with a dry film nominal thickness of 2.5 mm. The final finish shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/drawing/approval of engineer in charge.	SQM	100			0.0044903031
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 & repellent and extremely durable with color fastness as per the specifications/manufacturer's specifications, instructions and satisfaction of Engineer-in-charge	SQM	235			0.0051483647
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	42600			0.5297869522
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 repellent and extremely durable with color fastness as per specification	SQM	12421			0.1749332969
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	40579			2.0386639030
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	15			0.0007536000
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	1000			0.0439805915
1403	Providing and laying precast polished heavy duty cement concrete tiles (Carborundum topping pigment content is 3.5 kg per 50 Kg of Cement) of size 300X300X25 thick of approved shade as per IS 1237, including minimum 20mm cement mortar bedding of 1:3 (1 cement : 3 sand) jointed with neat cement slurry@4.4 kg/sqm,labour,materials, etc. all complete with pigment to match the shade of the tiles including rubbing, curing, grinding and polishing complete with laying as per IS 1443 etc.(inclusive of cost of cement for tiles manufacturing) all complete for following: (Cement shall be issued by BHEL free of cost)					
a	Laid in floors	SQM	13119			1.1939408710
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	2544			0.1746882880

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1412	Providing and laying 18-20mm thick polished Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 30 mm thick of 1 cement : 2 sand : 4 stone aggregate by volume and brought to proper level. The granite stone slabs/tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry @3.3kg/sqm spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete. (Cement shall be issued by BHEL free of cost)	SQM	2489			0.4712850648
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	332			0.0318554554
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/mm ² , Breaking strength more than 7500N, Moh's scale more than 6, Abrasion resistance less than 144 mm ³ 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	15547			1.8003283830
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	1103			0.1164163375
b	9.0 mm (min.) thick tiles In dado	SQM	55			0.0062185591
1417	Providing and laying vitrified ceramic tiles of matt finish of size 600x600mm 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	3915			0.3756449034
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	1629			0.1674385594
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	150			0.0171104268
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	150			0.0188214694
c	10 mm thick tiles In skirting and dado upto specific height	SQM	20			0.0026235988
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	72			0.0216740308
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	430			0.0331131027
b	600X600 mm	SQM	54			0.0042206543
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	300			0.0277720140
1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles conforming 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			0.0256569923
b	38mm thick	SQM	100			0.0289662435

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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)
A1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles conforming 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 deep6mm wide with epoxy/Furane mortar etc. all complete for following thicknesses. The tiles should be abrasion resistant & durable.					
a	20mm thick	SQM	2105			0.4950730466
b	38mm thick	SQM	283			0.0901719161
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	210			0.0566954299
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	297			0.0972893578
A1425	Providing and laying polished Marble slabs (rajnagar plain white or equivalent approved shade/color /design) 20 mm thk in staircase landing/skirting and corridors over minimum 30 mm thick underbed of 1 cement : 1.5 sand : 3 stone aggregates by volume mixed with sufficient water to form a stiff workable mass. The marble slabs shall be laid over under-bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including moulded marble nosing, pigments, curing, grinding, making corners, granite polishing etc. complete. (Cement shall be issued by BHEL free of cost)	SQM	1574			0.3863143149
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)					
a	5mm thick	SQM	17			0.0012391161
b	7mm thick	SQM	180			0.0137426994
A1428	Providing and laying 2 mm thick antistatic PVC flooring / skirting of approved shade, as per IS:3462 and laying as per IS:5318 all complete.	SQM	200			0.0088158849
A1429	Providing and fixing Removable type flooring system (raised access floor) consisting 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. Cementitious 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 cementitious 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	300			0.1137318330
A1431	Providing and fixing, laying min.11mm wooden panel flooring and skirting of pergo, greenlam or equivalent multi-layered engineered wooden planks treated with VOC free lacquers and stains to provide extra strengthening, longevity and durability to planks. In all planks each layers are arranged at cross grain to each other for provide the balancing and stability to all three layers. Top layer of flooring is made up of about 3.0 mm thick thermosetting re-polish able natural veneer setting on a core of about 10 mm thick pine wood that produce natural characteristic of wood with 2.0mm thick bottom ply based veneer balancing layer. The planks are joint to each other through plankloc system with glue less technology system and laid on 2mm thick dual barrier underlay protecting sheet having anti-bacterial, Anti-termite, fire-resistant, noise reduction, high wear and abrasion resistance, water resistant properties. The system includes all accessories like beading, Quadrant, Veneered/solid wood skirting, end profile etc.as per as per manufacturer specification and approved by Engineer incharge.	SQM	100			0.0159614956
A1432	Providing and laying Decorative/designer pre-polished, plain and pigmented, high wearing resistance concrete tiles of 20mm thickness (minimum) in various non-standard interlocking patterns of approved color, shade all complete as per specification.	SQM	200			0.0129800397
A1433	Providing and laying Tactile, tac liner & tac button fully vitrified unglazed porcelain tile (for guiding band/s for visually impaired persons), size 300x300 15mm thick having Tile body 10mm thick plus profile 4.5mm thick. Low water absorption below 0.5%. MOR > 38N/cm ² , MOH Hardness >7 & Breaking strength > 4000 N. Tile conforming RNIB (The royal national institute for the blind, UK) , DETR (Department of the environment, transport and the regions, UK), & ADA (American With Disabilities Act, USA) , high stain and chemical resistance. Confirming IS 4457: 2007. Tile will be laid on 20mm thick cement & sand mortar with cement slurry having 4mm spacer & pointing with 3X4mm stainless epoxy grout / polymer based SP- 100 of Laticrete or approved equivalent in approved colour.	SQM	50			0.0060617444
A1434	Providing and fixing carpet flooring over cement concrete floor. The carpet shall be of tile/roll form, machine/hand made tupeled un-cut loop pile and lay with under lay of 10mm thick and shall be laid as per manufacturer's recommendations, in matching grains, treated with anti fungus and anti-termite before laying etc all complete as per specification,(Cement concrete flooring to be paid separately)	SQM	100			0.0083843150
A1435	Providing and fixing Glass mosaic tiles at finished plain wall surface of size 24 mm x 24 mm x 3.8 mm thick (minimum) in decorative murals and pattern of approved colour, shade, design , fixing in customize design, as per direction of Engineer-in- Charge. The glass mosaic tiles to be fixed on the vertical wall surface with the help of approved adhesive applied at the rate of 2.5 kg per sqm and grouting of the same. The rate is inclusive of all operation, material and required pattern approved by Engineer-in- Charge..	SQM	390			0.0895523910

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

BOQ CUM RATE SCHEDULE

SCOPE OF WORK:- CIVIL & ARCHITECTURAL WORKS FOR POWER HOUSE AREA OF UNIT-1 & UNIT-2; EXCLUDING TG FOUNDATION AND TRANSFORMER YARD; INCLUDING CCR, BUNKER FLOORS, MACHINE ROOMS, ETC.

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
A1436	Providing and fixing Rubber flooring over cement concrete floor min. 4mm thick conform to IS 809, consist of 100% virgin elastomer reinforcing agents, resins, curing agents, anti-oxidants and pigments. The rubber flooring shall be of tile/roll form, machine/hand made tupled un-cut loop pile and lay with suitable under lay and shall be laid as per manufacturer's recommendations, in matching grains, treated with anti fungus and anti-termite before laying etc all complete as per specifications. Rubber flooring shall have excellent abrasion resistance, comply to class-I fire rating, acid & alkali resistant and shall be of anti static grade. (Cement concrete flooring to be paid separately)	SQM	500			0.1079336427
1500	ROOFING / SIDE CLADDING: Roofing / side cladding work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding, lags, hooks, washers, corner pieces etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
1512	Providing and fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS 8183 having a density of 32 kg/cum glass wool or 48 kg/cum for rock wool, for cladding/under deck insulation including wrapping in black polythene black supported over weld mesh 75X75X1.6 MM dia to hold in position and application of glue & tying with lacing wire, for glass/rock wool as per manufacturer's recommendation.					
Ac	Mineral wool/rock wool insulation (density 48 kg/cum) bound in polythene bags laying on top of false ceiling panels at all height and levels as per instruction from engineer in-charge.	SQM	700			0.0416250767
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	4000			0.2263270890
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.					
1601	Providing and fixing glass fibre reinforced gypsum plaster board (GRG) ceiling (having gypsum core mixed with glass fibre) system consisting of metal supporting grid system forming panels of specified size, suspended from RCC slab/structural steel or catwalkway grid above with 4 mm (minimum) galvanised wires (rods) with special height adjustment clips, including preparation of working drawing, providing openings for AC ducts, return air grills, light fixtures etc (but excluding the cost of catwalkway grid) all complete as per drawings, specification and instructions of the engineer.					
aa	12.5mm thick GRG board conforming to IS: 2095 with galvanised light gauge steel load bearing supporting GI frame (minimum 0.8mm thk and grid size of 600x1200mm.) and finished flat (seamless).	SQM	200			0.0172627940
b	12 mm thick GRG board in profile (dome ,curved profiled etc.) with galvanised light gauge steel load bearing supporting GI frame and finished smooth (seamless).	SQM	60			0.0077682573
A1601	Providing and fixing 12.5 mm thick tapered/square edge glass fibre reinforced gypsum board conforming to IS:2095 having fine texture finish including 50mm thick mineral wool insulation (density 48 kg/cum) conforming to IS:8183 bound in polythene bags on top of panels. , including providing and fixing of frame work at all levels, for all kind of work, consisting of light weight galvanised steel member (minimum 0.8 mm thick and galvanised as per IS : 277) having maximum grid size of 1200 mm x 600 mm for supporting panels of specified size, suspended from RCC slab/ structural steel or catwalkway grid above, with 4 mm (minimum) galvanised wires (rods), with special height adjustment clips, providing angle section of minimum 25 mm width along the perimeter of ceiling, supporting grid system (minimum 0.8 mm thick and galvanised as per IS : 277), expansion fasteners for suspension arrangement from RCC, providing openings for AC ducts, return air grills, light fixtures, etc., all complete. (but excluding the cost of catwalkway grid) all complete as per drawings, specification and instructions of the engineer. (Mineral wool insulataion to be paid separately).	SQM	150			0.0193465186
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 (density 48kg/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 be provided 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 insulataion to be paid separately.	SQM	450			0.0692323694
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	1705			0.5709677344
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 manufacturer'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	405			0.0894276146

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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)
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 pre-painted 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	1705			0.1297526283
A1609	Providing and fixing stainless Steel false ceiling system in lineal/tile shape, approved colour Luxalon hunter douglas or approved equivalent, lineal pattern (closed type) of 100 mm nominal width , bright finish at all level, for all kind of works, consisting of 0.5 mm thick stainless steel sheet, along with galvanised supporting steel members exposed faces of galvanised member to be pre-painted with regular modified polyester coating / super polyester coating minimum 20 DFT 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 catwalkway 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	300			0.1244057743
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	2676			0.4099386461
B1704	Providing and fixing galvanised MS down take pipes of 200 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	1800			0.4244374164
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 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	600			0.0579160149
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	17278			3.0765675488
1807	Anti termite chemical treatment of soil with Chlorpyrifos/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	17062			0.2318641960
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	200			0.1998563734
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)	NO	65			0.0598140163
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)	NO	100			0.0723456022
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.)	NO	500			0.0340149519
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.)	NO	200			0.0085160921
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.	NO	65			0.1410899847
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.	NO	65			0.1020901540
1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	200			0.0018284066
1821	Sprinkling of water by water tanker fitted with perforated GI pipe (portable tanker minimum 3000 litre capacity) for roads and miscellaneous area within plant boundary, for dust supression and reduction of suspended material at site for day to day work, as directed by BHEL site engineer (water for this purpose shall be provided by BHEL free of cost and utilisation of machine will be in terms of Tank-hour put in actual use for water sprinkling).	TANK-HR	1000			0.0611116084
1823	Providing and laying cinder filling in the toilets,roads,etc complete as directed by engineer in charge.	CUM	100			0.0191241449

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1844	Providing engineering services for Rain water harvesting including preparation of Rain water harvesting scheme, collection of required data, submitting to ground water board and getting approval from Customer and Ground water board at start & completion of work etc. complete as per statutory norms. The Engineering firm/person should be approved/accepted by ground water board and shall have similar experience of rain water harvesting for complete power plant. The scope shall include rain water harvesting for entire plant including Coal handling plant, ash handling plant inside plant boundary. The scope shall include preparation of rain water calculations, calculations for ground recharge/collection, economical design of rain water harvesting with different options under discussion with BHEL and submit design, drawings, report to Ground water board, obtain approval from Ground water board & Customer and on completion of work get the completion approval for rain water harvesting from Ground water board. This includes visits to site with/without ground water board officials and rate of this item shall include all expenses of consultancy, site visits etc. required from start of work till final obtaining of completion approval from ground water board. Payment for execution of rain water harvesting ponds shall be paid separately. Payment for execution of ground water recharge scheme shall be paid separately as per BOQ item 1845 & 1846.	LS	1			0.0923558654
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	414			0.0207842886
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	414			0.0206479982
1851	Providing and fixing GI strips minimum 1.5mm thk and 150mm wide including fixing accessories etc. all complete.	Kg	500			0.0090184921
1852	Providing and fixing aluminium strips minimum 18 SWG thk and 300mm wide over expansion joints with minimum lap of 50mm length including brass / aluminium screws, rawl plugs etc. all complete.	Kg	1000			0.0377211815
1853	Providing, laying and fixing rails and guide rails in concrete for transformer, rail track(52 kg/m) including cutting of rails, joining of rails, anchoring lugs etc all complete.	MT				
A1861	Providing engineering consultancy services for Architectural design & drawings of CCR (Central control room in powerhouse building) in harmony with the overall plant and presented in the form of presentation drawings, including 3-D perspective rendered views, panoramic views, walkthrough, with color schemes, lighting design, as per specification including preparation of integrated services drawings in co-ordination with electrical, HVAC & fire systems etc. and taking approval on drawings from BHEL/customer (All complete). Perspective coloured views shall be submitted in Hard Copy in Laminated A-1 Size (Two Numbers) as required in the desired format. Structural design & drawing, of buildings & foundations are in scope of BHEL, and not included in scope of bidder. The scope of bidder shall include coordination with respect to HVAC, electrical & fire fighting systems & space requirements for electrical facilities in consultation with BHEL/customer. Engineering services of acoustic design, interior architecture, PA system, planning for firefighting system as per inputs provided by BHEL, external & internal finishes, plumbing & sanitation, water supply system, false ceiling, internal partitions, reception, glazing, etc. are also included in this item. Any addition/changes in design as per customer requirement during detailed engineering stage, no extra payment is admissible. All design and drawings shall be submitted in soft and hard copies along with 3-D model. Bidder shall also provide BOQ & specification of finishing items in a generalized fashion in consultation with BHEL Civil design wing, during detailed engineering stage for further sub-contracting of finishing works.	LS	1			0.2371986959
A1863	Conducting electrical resistivity test at various locations complete as per specification, drawings and as directed by the engineer-in-charge.	EACH	10			0.0044512888
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 galvanised 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. Concertina 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. 2007)	RM	194			0.0426132399
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	5			0.0418787475
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 stiffeners, 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	1			0.0097989417
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	100			0.0063747150
2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.	NOS	100			0.0018119345
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	50			0.0025861247
b	50mm nominal bore.	NOS	50			0.0098832790
2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrosive 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	150			0.0059670297
b	20 mm nominal bore.	RM	50			0.0021743214
c	25 mm nominal bore.	RM	40			0.0018811174
d	50 mm nominal bore.	RM	20			0.0015763830

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)
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	75			0.0022793312
b	20 mm nominal bore.	RM	40			0.0013638925
c	25 mm nominal bore.	RM	40			0.0015055528
d	50 mm nominal bore.	RM	20			0.0013886007
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	50			0.0082435057
2108	Providing and fixing 25 mm diameter stainless steel towel rails (600mm X 25mm) with C.P. mounting brackets all complete.	NOS	50			0.0054069772
2110	Providing and fixing C.P. Soap holder mounted with C.P. screws etc all complete.	NOS	100			0.0083678429
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	100			0.0190088399
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. all complete.	NOS	50			0.0051887215
A2113	Providing and fixing rotating type chromium plated brass shower rose with 15 or 20 mm inlet all complete.	NOS	40			0.0035349195
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	8			0.0028028979
b	1000 litres capacity	NOS	4			0.0028028979
c	2000 litres capacity	NOS	4			0.0056057958
d	5000 litres capacity	NOS	8			0.0280283203
2115	Providing and installing approved brand single tap water cooler of 150 L cooling capacity all complete.	NOS	8			0.0536385318
A2116	Providing and fixing glass shelves 600mmx127mmx4 mm with chromium plated brackets all complete.	EACH	8			0.0004519953
A2117	Providing and fixing metal storing cabinets all complete.	EACH	8			0.0097205343
A2118	Providing and fixing electric operated hand dryer with photo voltaic control etc all complete.	EACH	8			0.0032403977
A2120	Providing and fixing grab bars, barrier-free access and appropriate fittings and fixtures for toilets for handicapped etc. all complete.	EACH	50			0.0081001707
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.					
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-voltaic 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	100			0.0629729593
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 necessary union complete including painting the fittings, cutting and making good the wall where required etc. all complete.	EACH	3			0.0014842214
A2203	Providing and fixing stainless steel kitchen sink/Eye wash sink of 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	3			0.0023413488
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	50			0.0481027425
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	50			0.0302840141
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 LPP (litres per flush) or less at 45 psi.	EACH	100			0.0605680281
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 simplo, varmora or equivalent 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 LPP (litres per flush) or less at 45 psi.	EACH	100			0.1637741690
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	250			0.0074742297
b	110mm dia pipes	RM	150			0.0059793838
c	160mm dia pipes	RM	150			0.0092532200
d	200mm dia pipes	RM	150			0.0113657708
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	250			0.0168427546
b	300mm dia	RM	250			0.0290115419
c	450mm dia	RM	150			0.0289085911
d	600mm dia	RM	60			0.0157539467
e	900mm dia	RM	40			0.0184454930
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	540			0.0244166408
b	250mm dia	RM	40			0.0023719870
c	300mm dia	RM	40			0.0029188617
d	450mm dia	RM	40			0.0043156985
e	500mm dia	RM	40			0.0050536500
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 mortar shall be issued by BHEL free of cost)					
a	450mm dia	RM	40			0.0087994127

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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)
b	600mm dia	RM	15			0.0043597614
c	900mm dia	RM	15			0.0080412829
2211	Providing and fixing C.I Manhole heavy duty cover of size 600mmx450mm including frame from reputed manufacture etc.all complete.	EACH	70			0.0626393987
A2211	Providing and fixing C.I Manhole heavy duty cover of size 600mmx600mm including frame from reputed manufacture conforming to IS:4111 etc all complete as per specification.	EACH	80			0.0715878842
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	45			0.0060819228
b	150x100mm P or S Type.	EACH	20			0.0032186545
c	150x150mm P or S Type.	EACH	20			0.0033701981
A2214	Providing and fixing C.I. floor traps with stainless steel grating etc all complete.	EACH	80			0.0113723597
A2216	Providing and installing approved brand single tap water efficient water cooler of 50 L cooling capacity all complete.	EACH	4			0.0116993315
B2216	Providing and installing approved brand single tap water efficient water cooler of 80 L cooling capacity all complete.	EACH	4			0.0155991087
A2217	Providing and installing approved brand single tap water efficient water cooler of 150 L cooling capacity all complete.	EACH	6			0.0402289988
2219	Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS: 10592) all complete as per specification.	EACH	13			0.0119788636
2221	Providing, laying spun CI pipes with conforming to IS 1536 complete for following.(Excavation,backfilling,concrete to be paid separately)					
c	150mm dia	RM	160			0.0461483240
d	200mm dia	RM	275			0.1163035446
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	10			0.0016340355
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.	5			0.0044062952
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	80			0.0134346706
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.					
B2301	Supply, fabrication (Site Welded as per specification), transportation from fabrication yard and erection of Medium and High Tensile structural steel (Grade designation E350 Quality B0 (Fully killed), conforming to IS 2062. Plates beyond 40mm thickness shall be vacuum degassed & furnace normalised. Plates beyond 40mm thickness shall be vacuum degassed & furnace normalised and shall also be 100% ultrasonically tested as per ASTM -A578 level BS2.)with rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), connection design & preparation of fabrication drgs (Modelling in 3D software like TEKLA and model submission is mandatory), collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20o C for welding over 20 mm and upto 40 mm & 66o C for welding over 40 mm and upto 63 mm & 110o C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.(Rate shall be exclusive of surface preparation and primer) Payment Terms; a) Fabrication - 60% b) Erection - 40%	MT	50			0.1170344954
A2302	Extra over ST NO. B2301 for blast cleaning of steel structures to near white metal surface(Sa 2 1/2) and applying coat of two component moisture curing zinc (ethyl) Silicate primer (solid by volume Minimum 60+/- 2% & zinc dust % on dry film minimum 80 %). Zinc dust composition and properties shall be Type-II as perASTM D520-00. Primer of minimum 70 micron DFT shall be applied over shot blast cleaned surface including touch-up painting etc all complete. Primer coat shall be applied in Shop immediately after blast cleaning by airless spray technique.	MT	50			0.0211443860
A2305	Providing and applying (with airless spray technique) intermediate coat of two component polyamide cured epoxy with MIO Content (containing lamellar MIO minimum 30% on pigment, solid by volume minimum 80% ±2%) of minimum 100 micron DFT to be applied after an interval of minimum 24 hours (from the application of primer coat by airless spray technique.) and of approved make including protection and cleaning, scaffolding etc.all complete as per specification for all structures.	MT	50			0.0135297971
2313	Dismantling of steel structure, lowering of material and carriage of the dismantled material up to field fabrication shop / projects storage including temporary dismantling, cutting, re-welding, supporting, and restoring to correct position all temporarily dismantled members, re-alignment of all adjacent connected members to their correct positions (weight of such adjacent members and temporarily dismantled members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	9			0.0063613725

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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)
2314	Addition to, alterations in and/or modification of "Erection Marks" including cutting of parts, gauging of welds, cutting, grinding, fabrication, welding, drilling holes, straightening, removal of bends, raising to the required level, painting, transportation, return of unutilised steel pieces to the project store, temporarily dismantling, cutting, re-welding, supporting and restoring to correct position of all the temporarily dismantled members, realignment of adjacent connected members (weight of such temporarily dismantled and adjacent members not payable) etc all complete for the following:					
a	In erected position	MT	3			0.0056206208
b	In fabrication yard	MT	3			0.0044776195
2315	Re-erection of dismantled fabricated structural steel members including carriage of modified "Erection Marks" from the field fabrication shop to erection site, lifting to required position, aligning in position, tack welding, final welding and touch up painting including temporary dismantling and re-erection of temporarily dismantled members, cutting, rewelding, supporting and restoring to the correct position of all temporarily dismantled members, re-alignment of adjacent connected members (weight of such temporarily dismantled members and adjacent members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	11			0.0118790425
2328	Supply, fixing lightning arrester and air terminal over roof of power house building, pump house and other structures including all materials, labour, electrodes etc complete (all materials to be supplied by the contractor).	EACH	3			0.0013752583
	LEVELING & GRADING: Levelling & grading works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. as per specification, drawings and as directed by engineer - in - charge for the following:					
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	53404			0.0923661605
	TOTAL					100