

# VOLUME - IA

**Part-I (BOP-1A):** Balance Civil and Architecture Works of Service Water Tank, Boiler Fill, DM, CPU & SW Pump House, CPU Regen, PT Plant, Chemical House, Clarified Water Tank & Pump House, DM Tank & Pump House, Chemical Lab, Pipe & Cable Rack, Pipe Pedestal/ Sleepers, Leveling & Grading and Any Other Misc. Building/ Foundation/ Structure/ System, etc.

**Part-II (Non-plant Building):** Balance Civil and Architecture Works of Non-Plant Buildings consisting of O&M Workshop, Fire station, Drill tower, Admin building, Gate complex, Service building, Canteen, Primary health center with rest room, O&M Worker's building & rest room, Gas cylinder shed, CISF Building, all parkings, PCRI Lab, FQA Lab, Leveling & Grading and Other Miscellaneous Foundations/ Structures etc.

at 2x660 MW NTPC Talcher TPS



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

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## Chapter - I: Project Information

Sl. No.	Description	Details
1	Project Title	2x660 MW Talcher Thermal Power Station
2	Customer	National Thermal Power Corporation Limited (NTPC Limited)
3	Location	The proposed site is at a distance of about 4 km from Talcher town and about 25 km from district headquarters Angul in Odisha state, India.
4	Nearest Railway Station	Talcher is on Talcher-Cuttack section of North Eastern Railway (renamed East Coast Railway) at about 2 Km. However, a small railway station named 'Talcher Thermal' is located near project boundary.
5	Nearest Airport	Bhubaneswar (Approx. 150Km by road)
6	Access by Road/Major Cities	The area is accessible by NH-23 (renamed NH-149) at about 1 km.
7	Temperature	Mean of daily minimum temperature = 15.1°C Mean of daily maximum temperature = 39.8°C
8	Seismic Zone	The project site lies in zone III as defined in IS: 1893.
9	Wind Speed	Design wind speed is 50 m/sec as per IS: 875 Part III

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## Chapter - I: Project Information

1.0	INSTRUCTIONS TO BIDDERS		
1.1	The Bidder shall visit project site and acquire full knowledge and information about conditions prevailing at site and in & around the plant premises, together with site conditions, transportation routes, various distances, all the statutory, obligatory, mandatory requirements of various authorities and all information that may be necessary for preparing the bid and entering into the Contract. All costs for and associated with site visits shall be borne by the bidder.		
1.2	Other contractors would be working in this area and their structures are to be protected. The material brought and stacked for construction should not make hindrance to other contractors.		
1.3	The information given herein is for general guidance and shall not be contractually binding on BHEL/Owner. All relevant site data /information as may be necessary shall have to be obtained /collected by the Bidder.		
1.4	The contractor, in the event of this work awarded to him, shall establish an office at site and keep posted an authorized, responsible officer with valid Power of Attorney for the purpose of the contract. Any order or instructions of the 'Engineer' or his duly authorized representative, communicated to the contractor's representative at site office will be deemed to have been communicated to the contractor at his legal address.		
1.5	No claim will be entertained by BHEL on ground of lack of knowledge and the contractor's rates shall be deemed to have taken this into account.		
1.6	Bidders may fix up their site visit in consultation with below mentioned contact person:		
	Name:	Sh. Rajib Nath	Sh. Rohit Agrawal
	Designation:	AGM	Sr. Manager
	Location:	BHEL Site Office: 2x660 MW Talcher TPS	PSWR HQ, Nagpur
	Email:	rajibnath@bhel.in	rohitagr@bhel.in
	Ph. No.	+91-6370737678	+91-9974066147

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## Chapter – II: Scope of Work and Technical Specifications

<b>2.0</b>	<b>Scope of Works:</b>
<b>2.1</b>	<p>The Balance scope of work comprises of construction of Civil, Structural and Architectural works 'as is where is basis' in conformity with the approved mechanical/ electrical layout including supply of all materials for buildings, equipment and facilities for the project listed below <b>except Cement, Ready Mix Concrete (RMC), Structural Steel, Reinforcement Steel (TMT), Foundation Bolts and Earthing Rod that shall be issued by BHEL free of cost as per Schedule of Items. Before commencement of any major foundations, the bidders have to check with mechanical/electrical drawings jointly with concerned BHEL Engineers.</b></p> <p><b>BHEL at its discretion, may decide to execute the scope of production of Ready-Mix Concrete (RMC) at Batching Plant as per site requirement, BOQ cum Rate Schedule and instruction of Site-in-Charge.</b></p>
<b>2.2</b>	<p><b>The brief scope of work is as follows:</b></p> <p>Civil and architectural works of all buildings/structures &amp; associated works for the following areas.</p>
<b>2.2.1</b>	<p><b>Part-I - Balance scope of work for BOP-1A area:</b></p> <ol style="list-style-type: none"> <li>1. DM &amp; CS Tank and Pump House including Misc. Foundation</li> <li>2. Chemical House</li> <li>3. Pre-Treatment Plant (Clarifier, Aerator, Sludge pit, Sludge Thickener, Chemical House, etc.)</li> <li>4. Service Water Tank</li> <li>5. Clarified Water Tank &amp; Pump House</li> <li>6. Boiler Fill, DM, CPU &amp; SW Pump House</li> <li>7. CPU Regeneration Building</li> <li>8. Chemical Lab</li> <li>9. Pipe &amp; Cable Rack and Pipe Pedestal / Sleepers</li> <li>10. Any Other Miscellaneous Building / Foundations / Structure / System etc. required to complete the scope of work.</li> </ol>
<b>2.2.2</b>	<p><b>Part-II - Balance Scope of Work for Non-plant Building:</b></p> <ol style="list-style-type: none"> <li>1. Service Building</li> <li>2. O&amp;M Workshop Building</li> <li>3. Fire Station Building</li> <li>4. Drill Tower</li> <li>5. Admin Building</li> <li>6. Gate Complex</li> <li>7. Canteen Building</li> </ol>

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	<ol style="list-style-type: none"> <li>8. Primary Health Center with Rest Room</li> <li>9. O&amp;M Worker's Building &amp; Rest Room,</li> <li>10. Gas Cylinder Shed,</li> <li>11. CISF Building</li> <li>12. All Parking</li> <li>13. PCRI Lab</li> <li>14. FQA Lab,</li> <li>15. Any Other Miscellaneous Foundations / Structure/ System etc. and leveling grading required to complete the scope of work.</li> </ol>
2.2.3	VOID
2.2.4	<p><b>Civil, Structural and Architectural works related to following services:</b></p> <ol style="list-style-type: none"> <li>1. Storm Water drain system under this contract of scope of work</li> <li>2. Crane movement road, main road approach roads, drains culverts</li> <li>3. ERC/IRC</li> <li>4. Sanitary and plumbing system in the buildings (for the buildings within the scope of this contract only)</li> <li>5. RCC Electrical/Instrumentation cable trenches and pipe trenches</li> <li>6. Pipe way Bridges</li> <li>7. Pipe way Sleepers</li> <li>8. Crossings (Culverts, bridges, sleeves as per applicable) of underground services below approach road for all services in the corridor including drains, fire water lines, cooling water lines, waste sewers.</li> <li>9. Hard stand required for erection of heavy equipment.</li> <li>10. Strengthening of existing roads for crane movement if required.</li> <li>11. All approach roads from existing main roads as per detailed engineering requirement for maintenance and operation.</li> <li>12. Maintenance and erection approach roads/ by strengthening of roads.</li> <li>13. Any temporary activities required to complete the work.</li> <li>14. Structural platforms, monorail beams, walkways, crossovers, handrails etc. for miscellaneous equipment, piping etc.</li> <li>15. Micro grading &amp; disposal of surplus and unserviceable material beyond project complex's compound wall. Contractor to assess the lead by physically visiting the Plant site.</li> <li>16. The sub-grade for roads &amp; pavements and soil improvement/ preparation below foundation level of drains, culverts, pipe way bridges, manholes, etc. shall be carried out as per Geo- Technical recommendation.</li> </ol>

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	<p>17. Excavation for rock (Soft/Hard) may require blasting which require approval of statutory authority of local bodies. Supervision by authorized person shall be ensured as required.</p> <p>18. Sprinkling of water in roads/ passage/ construction areas on regular basis in order to suppress dust. BHEL at its discretion, may arrange for sprinkling of water for common areas where multiple agencies are involved as well as agency/ies who are not performing the sprinkling of water in their areas, the cost incurred towards it shall be recovered from the agencies proportionately with respect to awarded contract value.</p>
2.2.5	<b>EXCAVATION IN HARD ROCK (Clause 2.2.4.17 is further elaborated):</b>
2.2.5.1	Excavation in rock shall be carried out by mechanical means and if blasting is required for founding of some of the structures under this package, control blasting only shall be carried out.
2.2.5.2	Controlled blasting shall be done by a specialized agency duly approved by Engineer. All controlled blasting shall be done by using time delay detonators (i.e. excel type).
2.2.5.2.1	Contractor shall engage an agency expert in blasting such as, NIRM (National Institute of Rock Mechanics), CMPDIL, Central Institute of Mining and Fuel Research Dhanbad, Dept. of Mining of Govt. Institutions etc. to design detailed blasting scheme and get the same approved from Engineer before carrying out the blasting operation. All blasting shall be done as per the approved blasting scheme & initial blasting operations shall be done under the supervision & guidance of the representative of the blasting expert.
2.2.5.2.2	All the statutory laws, (Explosives Act etc.) rules, regulations, Indian Standards, etc. pertaining to the acquisition, transport, storage, handling and use of explosives, etc. shall be strictly followed.
2.2.5.2.3	The Contractor shall obtain Licenses from Competent Authorities for undertaking blasting work as well as for procuring, transporting to site and storing the explosives as per explosives act. The Contractor shall be responsible for the safe transport, use, custody and proper accounting of the explosive Materials.
2.2.5.2.4	The Contractor shall be responsible and liable for any accident and injury / damage which may occur to any person or property of the project or public on account of any operations connected with the storage, transportation, handling or use of explosive and blasting operations.
2.2.5.2.5	For controlled rock blasting specialized agency, equipped with sensors to assess the impact of the blast on the adjoining existing structures, shall be employed.
2.3	BHEL at its discretion may include other area works limited to 15% of awarded contract value, which are not mentioned in above scope of works. Contractor shall execute such works as desired and as directed by BHEL Engineer. The item rates & contract conditions shall remain unchanged for such works.

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2.4	The work under this contract shall be carried out as per BOQ Cum Rate Schedule and in compliance of tender conditions including technical specifications and approved drawings/ documents.
2.5	<b>GENERAL</b>
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



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	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.
2.5.11.1	<p><b>Royalty &amp; other fees:</b></p> <p>Royalty challan and statutory documents shall be submitted along with RA Bills for processing of Bills. In the event of non-availability of royalty/statutory documents along with RA Bill, BHEL site at its discretion may opt to withhold relevant amount from the running RA Bills and process the bill further to maintain proper cash flow and continuity of work.</p> <p>The Contractor shall pay and indemnify the Employer against any default in payment of Royalties or Seignorage Fee or Cess or other charges by the Contractor or the agency from which the Contractor purchases soil/earth, sand, stone/aggregates, metals, minerals or minor minerals.</p> <p>In the event of there being a statutory increase in the rates of royalty charges/fresh levy of royalty on materials, the same shall be reimbursed to the Contractor upon submission of original challan by him of having made the payments at revised rates. In the event of there being a decrease in such rates, the same shall be recovered from the Contractor. The base date for calculating the increase or decrease shall be the rate as on seven (7) days prior to the date of Techno-commercial (Envelope-I) bid opening. The total reimbursement (positive or negative) as specified above, to be paid or recovered, shall however be calculated on the quantity of materials actually accepted for payment), whichever is less, and on the basis of documentary evidence of Govt. Notification. However, the Contractor will settle claims, if any, on account of over charge by the State Authorities.</p>
2.5.12	Carrying out topographic survey of the entire and establish levels and coordinates at suitable intervals from existing grid levels and coordinates furnished by the owner established bench marks, setting out the locations and levels of proposed structures, constructions and marking of reference pillars and other identification works etc., The contractor shall provide the owner/BHEL such a assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used.
2.5.13	Arranging for joint checking (with BHEL / BHEL's Customer / Consultant) of all site construction activities Preparation of joint protocols for each & every activity and maintaining quality records for audit/inspection as per approved FQP by BHEL.
2.5.14	Medical/First aid center/medicine purchased for emergency/Doctor purpose along with ambulance services with fuel and operator (round the clock) shall be arranged by BHEL for handling medical emergencies. Cost against these facilities shall be distributed / shared among the vendors working in 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,

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	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.
2.5.17	<ol style="list-style-type: none"> <li>1. In certain cases, Crushed Stone Sand/M-Sand may be added to Natural sand in order to achieve the required grading with prior approval of the Customer/Consultant and subsequent design mix report from reputed institute like IITs/NITs/Any Other Government Institutes. Crushed Stone Sand/M-sand alone may be used only with the prior approval of the BHEL Engineer/Customer/Consultant for filling and Concreting works.</li> <li>2. The bidder shall quote his price considering only River Sand usage. If crushed stone sand/M-sand (arranged by contractor) is used in place of river sand, suitable rebate/compensation (rate shall be mutually decided based on market rate with applicable BHEL overhead) of M-Sand consumed shall be applicable for all items/ works where M-Sand is used in place of River sand.</li> </ol> <p>In case, BHEL at its discretion and subject to availability, may issue the crushed stone sand/M-sand free of cost for usage in place of river sand, suitable rebate (rate shall be mutually decided based on market rate with applicable BHEL overhead) of crushed stone sand/M-Sand consumed shall be applicable for all items/ works where M-Sand is used in place of River sand.</p> <p>Measurement for the rebate/compensation shall be calculated based on quantity of M-Sand consumed in the particular item, not on the quantity of the particular item.</p>
2.6	<b>Tentative Technical Staff Requirement:</b>
2.6.1	<ul style="list-style-type: none"> <li>• <b>Project Manager</b> – 01 Head with 15 Years' experience in Industrial Foundation, Building &amp; Power Plant Civil &amp; Architectural Works etc.</li> <li>• <b>Asst. Project Managers</b> – 01 Heads with 12 Years' experience in Industrial Foundation, Building &amp; Power Plant Civil &amp; Architectural Works</li> <li>• Experienced Civil Engineers – 03 heads</li> <li>• Experienced Foreman / Supervisors – 06 heads</li> <li>• Planning &amp; Billing Engineers – 01 head</li> <li>• Stores, Gate Pass – 01 head</li> <li>• Accounts &amp; Administration – 01 head</li> <li>• Quality Control Engineer – 02 head</li> <li>• Safety Engineer – As per HSE Plan</li> </ul>

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	<ul style="list-style-type: none"> <li>• Surveyor – 1 head capable to handle total station</li> <li>• Operator, Licensed Electrician, Mechanic - As per requirement</li> <li>• Experienced Carpenters &amp; Helpers – lot for similar nature of work</li> <li>• Experienced Bar Benders &amp; Helpers – lot for similar nature of work</li> <li>• Security Guards (Round the Clock) – As per requirement.</li> </ul> <p><b>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.</b></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.
<b>2.7</b>	<b>Supervisors / Engineer and Computer for exclusive use of BHEL:</b>
2.7.1	The successful bidder(s) will have to provide two supervisors (Diploma in Civil Engineering) acceptable to BHEL Site with sufficient computer knowledge (knowledge of MS office) to whom works will be assigned in consultation and acceptance of BHEL for original contract period. In case, the contractor fails to provide supervisors from 3rd month from LOI date till completion of site works or as decided by BHEL, deduction of Rs. 25,000/- per supervisor per month.
2.7.2	VOID
2.7.3	The bidder will have to provide <b>Two (02) No. of Laptops</b> (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-

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	cell battery capable of providing 6 hours or more backup in standard business environment, ACPI Compliant, OEM AC Adaptor suitable for 230V supply, Should come pre-installed with Windows 11 Professional Edition or latest version with 64bit latest service pack, OEM carry bag to be supplied with OS Certification from Microsoft and required software like MS Office 2010 Professional, AutoCAD 2011, ADOBE PDF CREATOR (version 8.0) <b>each with one laser jet printer compatible for A4 and A3 size printing with power backup at places, as per instruction of BHEL.</b>
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.
<b>2.8</b>	<b>Field Quality Assurance:</b>
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><b>Setting Up of Laboratory Works:</b> The contractor shall set up laboratory in the close vicinity of the work site as per required field QA &amp; 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. <b>Bidder shall tie up only with BHEL / Customer approved third party Lab for advance testing which are not feasible at site laboratory set-up.</b></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 4.5m x 4.5m) 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> <p>1. Soil Works:</p>

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	<p>1a. Facilities for HDD</p> <p>1b. Field Compaction Test (Core Cutter / Sand Replacement Method).</p> <p>1c. Atterberg Limit Test of Soil.</p> <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.
2.8.6.1	<p>High performance super plasticizer PCE-based water reducing admixture of Type-G/F as per ASTM C-494 of approved make FOSROC/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>
2.8.7	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	<b>HEIRARCHY:</b>
2.9.1	In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows:

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	<ol style="list-style-type: none"><li>1. Items Description in BOQ Cum Rate Schedule</li><li>2. Technical Conditions of Contract (TCC)</li><li>3. Technical Specifications for Customer (Section-C)</li><li>4. IS Standard</li><li>5. BHEL's Standard Specification (Section-D)</li></ol>
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## Chapter – III: Facilities in the scope of Contractor/BHEL (Scope Matrix)

Sl. No	Description  PART I	Scope		Remarks
		BHEL	Bidder	
<b>3.1</b>	<b>Establishment:</b>			
<b>3.1.1</b>	<b>For Construction Purpose:</b>			
a	Open space for office (as per availability)	Yes		Location will be finalized after joint survey with owner
b	Open space for storage (as per availability)	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	
<b>3.1.2</b>	<b>For living purpose of the bidder:</b>			
a	Open space for labour colony (as per availability)	Yes		As per availability outside project area within 5Km, Necessary levelling/dressing of land shall be done by the contractor.
b	Labour Colony with internal roads, sanitation, complying with statutory requirements		Yes	Construction Plan shall be approved by BHEL
<b>3.2</b>	<b>Electricity:</b>			
<b>3.2.1</b>	<b>Electricity for construction purposes 3 Phase 415/440 V</b>			



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Sl. No	Description  PART I	Scope		Remarks
		BHEL	Bidder	
a	Single point source	Yes		Free of cost at one point near the site at a distance of approx. 500 meter. Further distribution and Metering is in scope of bidder.
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	<b>Electricity for office, stores, canteen etc. of the bidder.( Chargeable )</b>			
a	Single point source	Yes		Single point as above for construction purpose, no separate point shall be given.
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	<b>Electricity for living accommodation of the bidder's staff, engineers, supervisors etc .( Chargeable )</b>			
a	Single point source		Yes	Single point as above for construction purpose, no separate point shall be given.
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – III: Facilities in the scope of Contractor/BHEL (Scope Matrix)

Sl. No	Description  PART I	Scope		Remarks
		BHEL	Bidder	
<b>3.3</b>	<b>Water Supply:</b>			
<b>3.3.1</b>	<b>For construction purposes: (free)</b>			
a	Making the water available at single point	Yes		Free of cost at one point near the plant boundary. Further distribution and Metering is in scope of bidder.
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
<b>3.3.2</b>	<b>Water supply for bidder's office, stores, canteen etc. ( Chargeable)</b>			
a	Making the water available at single point		Yes	Single point as above for construction purpose, no separate point shall be given
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	Contractor has to make his own arrangements for distribution.
<b>3.3.3</b>	<b>Water supply for Living Purpose( Chargeable)</b>			
a	Making the water available at single point		Yes	Single point as above for construction purpose, no separate point shall be given
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	Contractor has to make his own arrangements for distribution.
<b>3.4</b>	<b>Lighting</b>			

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – III: Facilities in the scope of Contractor/BHEL (Scope Matrix)

Sl. No	Description <b>PART I</b>	Scope		Remarks
		BHEL	Bidder	
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	<b>Communication facilities for site operations of the bidder</b>			
a	Téléphone, fax, internet, intranet, e-mail etc		Yes	
3.6	<b>Compressed air wherever required for the work</b>		Yes	
3.7	<b>Demobilization of all the above facilities</b>		Yes	
3.8	<b>Transportation</b>			
a	For site personnel of the bidder		Yes	
b	For bidder's equipments and consumables (T&P, Consumables etc)		Yes	

Sl. No	Description <b>PART II</b>	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.9	<b>Erection Facilities</b>			
3.9.1	Engineering works for construction:			

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – III: Facilities in the scope of Contractor/BHEL (Scope Matrix)

Sl. No	Description PART II	Scope / to be taken care by		Remarks
		BHEL	Bidder	
<b>3.9</b>	<b>Erection Facilities</b>			
a	Providing the erection/constructions drawings for all the equipments covered under this scope	Yes		
b	Drawings for construction methods		Yes	In consultation with BHEL
c	As-built drawings where ever deviations observed and executed and also based on the decisions taken at site.		Yes	Changes are to be marked in drawing & handover to BHEL on completion of work.
d	Shipping lists etc. for reference and planning the activities			Not Applicable
e	Preparation of site erection schedules and other input requirements	Yes	Yes	In consultation with BHEL
f	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly erection schedules based on SI No. e		Yes	In consultation with BHEL
h	Daily erection / work plan based on SI No. g		Yes	In consultation with BHEL
i	Periodic visit of the senior official of the bidder to site to review the progress so that works is completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	
j	Preparation of preassembly bay		Yes	
k	Laying of racks for gantry crane if provided by BHEL or brought by the contractor /bidder himself		Yes	

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – III: Facilities in the scope of Contractor/BHEL (Scope Matrix)

<b>3.10</b>	<b>Land/Open Space:</b>
3.10.1	Availability of land within plant boundary is very limited and the contractor has to plan and use the existing land considering the use of land by other Civil /mechanical/ electrical contractors and the storage of plant machineries and materials. The existing land shall be shared by all erection 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.
<b>3.11</b>	<b>Labour and Staff Colony:</b> <b>Following are in the Bidder's scope of work for labour &amp; staff colony:</b>
3.11.1	Labour colony is to be developed by bidder for all the labourers required to be deployed for the works. All labour colony set-up is to be developed as per attached drawing and in compliance of statutory requirements.  Contractor shall construct/arrange Labour Hutment as per minimum specifications mentioned in the attached drawing.  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.  Contractor as per work requirement shall assess labour colony requirement, and labour hutments more than the quantity as per BOQ Cum Rate Schedule, if required shall be constructed by contractor as per requirement without any cost implication to BHEL.
3.11.2	VOID
3.11.3	VOID
3.11.4	Development of Bidder's temporary staff colony and labour colony ( <b>workers accommodation</b> ) having adequate no. of rest rooms along with toilets & fencing etc. ( <b>Workers accommodations Drawing enclosed for ready reference</b> ).
3.11.5	All Civil and Structural work associated with drinking and service water for Bidder's labour and other personnel at the work site/colony/offices including pump houses, pipes, overhead tank, tube wells etc.
3.11.6	Providing and maintaining facilities for safety, welfare, drinking water and sanitation, hygiene, biennial health check-up etc. for construction workers at their workplaces as well as at labour & staff colonies.
3.11.7	Development and maintenance of above facilities for construction workers deployed by the Contractor shall solely rest with the Contractor.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – III: Facilities in the scope of Contractor/BHEL (Scope Matrix)

3.12	<p><b>Installation of necessary amenities- and temporary infrastructure for construction activities at Project site locations.</b></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"> <li>i. Labour rest sheds near work spot. (Minimum 02 Nos. Rest shed shall be constructed by contractor as per approved drawings within 03 months from the date of start of work).</li> <li>ii. Canteen facility creation.</li> <li>iii. Drinking water facility.</li> <li>iv. Labour Bio toilets near work spot in sufficient nos. with regular cleaning &amp; maintenance arrangement.</li> <li>v. Labour colony should have all hygienic condition, dining hall, toilets, proper sewerage system, good drinking water arrangements.</li> </ol>
3.13	<b>Construction Power:</b>
3.13.1	Construction power (three phase, 415 V/ 440 V) will be provided free of cost 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. Contractor shall be responsible for fulfilment of all requirements including statutory requirements in this regard. Contractor shall deploy and install required energy meter, cables, fuses, distribution boards, switchboards, bus bars, earthing arrangements, protection devices and any other installation as specified by statutory authority/act. Contractor shall also obtain approvals of appropriate authority and pay necessary fees, levies etc towards the clearance of such installations, prior to use. Sufficient power factor compensation equipments like capacitor shall be provided by contractor for reactive loads like welding machines etc. In case of any fine/penalty on account of low power factor, same shall be shared by contractor proportionately according to power consumption.
3.13.2	Contractor shall make necessary arrangements for onward distribution of construction power taking due care of surrounding construction activities like movement of cranes & vehicles, civil work, fabrication/construction/assembly/ erection etc. and safety of personnel. It may become necessary to relocate some of the installations to facilitate work by other agencies or by him.
3.13.3	It shall be the responsibility of the Contractor to provide, maintain the complete installation on the load side of the supply with due regard to the safety requirements at site. All cabling and installations shall comply in all respects with the appropriate statutory requirements. The installation and maintenance of this shall be done by licensed and experienced electrician.
3.13.4	While reasonable efforts will be made to ensure continuous electric power supply, interruptions cannot be ruled out and no claim from the Contractor shall be entertained on this account such as idle labor, extension of time etc. The Contractor shall adjust his

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – III: Facilities in the scope of Contractor/BHEL (Scope Matrix)

	working shift accordingly and deploy additional manpower, if necessary, so as to achieve the target.
3.13.5	Contractor to note that till construction power is made available by BHEL (approx. within 3 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 balance work within the quoted rate. Nothing extra shall be paid on this account of DG set up and running for construction and office maintenance etc.
3.13.6	Contractor shall be well equipped with back-up power supply arrangement like DG set and diesel operated welding machine etc. to tackle situations arising due to failure of supplied power, so as to ensure continuity and completion of critical processes like Operation of Batching Plant, Concreting, etc. that are underway at the time of power failure or important activities planned in immediate future.
3.13.7	BHEL is not responsible for any loss or damage to the Contractor's equipment as a result of variations in voltage or frequency or interruptions in power supply.
3.13.8	Contractor is advised to maintain the calibrated energy measuring instruments and use their system as efficiently as possible to maintain the HT side input energy meter reading and LT side outgoing energy meter reading to sub-contractors as equal.
3.13.9	The bidder will have to Procure & install General mobile illumination system during construction right from start of his work. This system will include temporary pole lighting, portable lighting towers with DG back-up, within the quoted price. The illumination should be such that minimum illumination requirement as specified by Indian standards for general illumination is maintained.
3.13.10	Contractor to arrange energy meter for office.
3.13.11	<p><b>General:</b></p> <p>If any other voltage level (other than normally available) is required, the same shall be arranged by the contractor from power supply as above. Contractor will have to provide at his own cost necessary calibrated energy meters (tamper proof, suitably housed in a weather proof box with lock &amp; key arrangement) at point of power supply along with calibration certificate from authorized/ accredited agency for working out the power consumption. In case of recalibration required for any reason the necessary charges including replacement by calibrated meters is to be borne by the contractor. Supply of electricity shall be governed by Indian Electricity Act and Installation Rules and other Rules and Regulation as applicable. The contractor shall ensure usage of electricity in an efficient manner and the same may be audited by BHEL time to time. In case of any major deviation from normally accepted norms is observed, BHEL will reserve the right to impose penalty as deemed fit for such cases.</p>

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – III: Facilities in the scope of Contractor/BHEL (Scope Matrix)

	Contractor to arrange calibrated energy meter (tamper proof, suitably housed in a weather proof box with lock & key arrangement) for office and this construction power at office is chargeable as per applicable tariff rates.
<b>3.14</b>	<b>Construction water:</b>
3.14.1	Construction water will be provided free of cost at one point within the plant boundary. Bidder has to make arrangement of further distribution of water at his own cost. No extra payment shall be made under this account. The agency should also construct a sump of suitable size for storage of construction water as per their site requirement for use in batching plant and construction purposes.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – IV: T&Ps and MMEs to be deployed by Contractor

### 4.0 Tools and Plants:

Nos. of T&Ps to be deployed at site shall be decided w.r.t. monthly plan and review format (F-14) based on site requirement. Below given Nos are tentative for planning purposes by the bidder.

Sl. No.	Description of T&P	Quantity
1	Concrete Transit Mixer	04 Nos.
2	Batching Plant (30 Cum/Hr) with Sufficient Capacity of Silos.	01 No. As per Requirement
3	Concrete Mixer	As per Requirement
4	Concrete Pump of Suitable Capacity with Sufficient lift in order to pour concrete at roof of Transfer Points	As per Requirement
5	Hydraulic Excavator /Poclain	As per Requirement
6	JCB	02 Nos.
7	Dumper	As per requirement
8	Concrete Boom placer min. 35m long	02 Nos.
9	Vibrators (electrical/diesel)	As per requirement
10	Self-priming Dewatering pump of various capacity (Diesel/Electric) From 2 HP to 7.5 HP	As per requirement
11	Curing / dewatering pump – 1.5 / 2 HP	As per requirement
12	De-watering pump (diesel operated) – 20 HP & 30 HP	04 Nos. each
13	Hydraulic Excavator /Poclain with rock breaker arrangement.	02 Nos.
14	Pneumatic rock breaker with jack hammer	02 Nos.
15	Ply Shuttering board with adequate supporting structure – (Old steel shuttering plates will not be allowed).	As per requirement
16	Farana crane (Required Capacity) *Note- Hydra is not allowed at project site	As per requirement
17	Trailer (20MT Capacity)	As per requirement
18	Tractor mounted grader/ loader	As per requirement



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – IV: T&Ps and MMEs to be deployed by Contractor

19	Scaffolding Pipes, Clamps / Swivel Couplers (One/Two Way), Props, Jacks, Screw Heads, MS Pipes, Wooden Battens, Planks, Bullies, H Frames, Tie Rods with Nuts, Adjustable Achro Span (Considering Individual Areas)	Scaffolding Pipes with clamps– Min. 1500 Nos. for execution purpose for safety related other than Scaffolding Pipes – 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	02 Nos.
25	Auto level & staff	02 Nos.
26	Road roller/Vibro roller	01 Nos.
27	Water Tanker with sprinkler attachment	01 Nos.
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

4.1	<b>Measuring and Monitoring Equipment (MMEs):</b> To be finalized as per site requirement.
4.2	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.
4.3	The contractor shall arrange crane operator, diesel, petrol and other consumables including electrical / water / air connections required for the tools and plants,

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – IV: T&Ps and MMEs to be deployed by Contractor

	equipment etc. Preventive and routine maintenance of T & P are also to be arranged by the contractor at his cost without any delay. Required number of experienced mechanics and helpers for routine maintenance of the above T&Ps shall be provided by the contractor within his quoted rate.
4.4	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.
4.5	All manpower hired/deployed by Contractor for this project shall be monitored through Integrated Online Project Monitoring system by BLE beacons & LoRa backhaul. Every personnel entering in to NTPC site premises for carry out any work shall be tracked. [Separate tagging for visitors]. Geo-fencing /BLE beacon-based zoning of the erection area shall be done to track workforce deployment and safety purposes. Work force monitoring Dash board (planned vs actual deployment) shall be made available. BLE beacons & LoRa backhaul shall be provided by BHEL on chargeable basis to contractor. BHEL will provide Tags free of cost for maximum 300 workers, additional tags as required shall be provided by BHEL on chargeable basis @ Rs. 1000/- per tag. In case of damage or missing of issued worker tag, Rs. 1000/- per tag will be charged for issuing new worker tag.
4.6	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 Talcher Project site proportionately based on contract value.
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

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### **5. 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.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VI: Time Schedule

<b>6</b>	<b>Time Schedule and Mobilization:</b>	
<b>6.1</b>	<b>Initial Mobilization and Time Schedule:</b> <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 <b>Twenty Two (22) Months</b> 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>	
<b>6.2</b>	<b>Schedule of Completion:</b> <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 &amp; released for erection by other agency.</p>	
	<b>Activity</b>	<b>Schedule completion from date of start of work</b>
	<b>Part-I - Balance Scope of Work for BOP-1A:</b>	
<b>6.2.1</b>	DM & CS Tank and Pump House including Misc. Foundation	8 <sup>th</sup> Months
<b>6.2.2</b>	Chemical House	10 <sup>th</sup> Months
<b>6.2.3</b>	Pre-Treatment Plant (Clarifier, Aerator, Sludge pit, Sludge Thickener, Chemical House, etc.)	12 <sup>th</sup> Months
<b>6.2.4</b>	Service Water Tank	13 <sup>th</sup> Months
<b>6.2.5</b>	Clarified Water Tank & Pump House	14 <sup>th</sup> Months
<b>6.2.6</b>	Boiler Fill, DM, CPU & SW Pump House	14 <sup>th</sup> Months
<b>6.2.7</b>	CPU Regeneration Building	18 <sup>th</sup> Months
<b>6.2.8</b>	Pipe & Cable Rack and Pipe Pedestal/ Sleepers	18 <sup>th</sup> Months
<b>6.2.9</b>	Any other structures as per system requirement	18 <sup>th</sup> Months
	<b>Part-II - Balance Scope of Work for Non-plant Building:</b>	
<b>6.2.10</b>	Gate complex	10 <sup>th</sup> Months
<b>6.2.11</b>	O&M Workshop	12 <sup>th</sup> Months
<b>6.2.12</b>	Fire station	12 <sup>th</sup> Months
<b>6.2.13</b>	Drill tower	14 <sup>th</sup> Months
<b>6.2.14</b>	Primary health center with rest room	15 <sup>th</sup> Months
<b>6.2.15</b>	O&M Worker's building & rest room	15 <sup>th</sup> Months
<b>6.2.16</b>	CISF Building	15 <sup>th</sup> Months
<b>6.2.17</b>	FQA Lab	16 <sup>th</sup> Months

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VI: Time Schedule

6.2.18	Canteen Building	18 <sup>th</sup> Months
6.2.19	Gas cylinder shed	18 <sup>th</sup> Months
6.2.20	PCR Lab	18 <sup>th</sup> Months
6.2.21	Service building	20 <sup>th</sup> Months
6.2.22	All Parking	22 <sup>nd</sup> Months
6.2.23	Any other structures as per system requirement	22 <sup>nd</sup> Months
6.3	The above schedule is only tentative. The above schedule shall be advanced, if there are requirements to advance the project schedule and the civil works in the scope of the contractor is to be advanced to meet the project requirement. No extra payment whatsoever shall be paid on this account.	
6.4	In order to meet the above schedule in general, and any other intermediate targets set, to meet customer/ project schedule requirements, Contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL Engineer.	
6.5	<b>Intermediate milestones:</b>	
6.5.1	Two Major Intermediate Milestones are identified as M1 and M2 above.	
<b>Milestones</b>	<b>Activity</b>	<b>Schedule of completion from start of work</b>
<b>M1</b>	DM & CS Tank and Pump House including Misc. Foundation	8 <sup>th</sup> Months
<b>M2</b>	Service building	20 <sup>th</sup> Months
6.6	<b><u>Provision of Penalty in case of slippage of Intermediate Milestones:</u></b> <u>In case of slippage of Two Major Intermediate Milestones, mentioned as M1 &amp; 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.	

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VI: Time Schedule

<b>6.6.5</b>	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.
<b>6.6.6</b>	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.
<b>6.6.7</b>	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.
<b>6.7</b>	Common activities shall be completed in Phase wise manner/ Instruction of Engineer within the Contractual time.
<b>6.8</b>	Above milestone dates has to be completed in parallel.
<b>6.9</b>	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.
<b>*</b>	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.
<b>6.10</b>	<b>COMPLETION OF WORK AND COMMENCEMENT OF GUARANTEE PERIOD</b>
<b>6.10.1</b>	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.
<b>6.10.2</b>	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.
<b>6.10.3</b>	The Engineer shall certify to the contractor the date on which the work is completed and the date thereof for commencement of Guarantee Period. Guarantee Period shall be as given in GCC.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VII: TERMS OF PAYMENT

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

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VII: TERMS OF PAYMENT

7.2

### SECURED RECOVERABLE ADVANCES:

**Interest Free Secured Mobilization Advance as per GCC Clause No. 2.13.1** will be payable under exceptional circumstances on certification of BHEL Construction Manager at Site. Interest Free Mobilization Advance shall be disbursed in specifically mentioned stages of major resource mobilization as specified hereunder:

1. For Mobilization of Batching Plant, Excavator & Dumper, Transit Mixers, Boom Placer/Concrete Pump- 2.0%
2. For Mobilization of other required T&Ps and resources at site to start the work - 1.5%
3. For Installation and Erection of Site Infrastructure by contractor i.e. site office, stores etc. - 1.5%

Note:

1. BHEL Site-CM shall be the deciding authority for assessing the admissibility of advance payment to contractor.
2. In case contractor do not fulfil the agreed conditions of payment of 1st mobilization advance, BHEL Construction Manager will have the authority to not allow the 2nd mobilization advance to contractor.



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VIII: Taxes and Duties

<b>8.0</b>	<b>TAXES &amp; DUTIES</b>
<b>8.1</b>	<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 &amp; services consumed and output goods &amp; 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 <b>GST</b> on output supply (goods/service) and TDS/TCS as per Income Tax Act shall be as per following clauses.</p>
<b>8.2</b>	<b>GST (Goods and Services Tax)</b>
<b>8.2.1</b>	GST as applicable on output supply (goods/services) are excluded from contractor's scope; therefore, contractor's price/rates shall be <b>exclusive</b> 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.
<b>8.2.2</b>	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.
<b>8.2.3</b>	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.
<b>8.2.4</b>	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.
<b>8.2.5</b>	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.
<b>8.2.6</b>	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.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VIII: Taxes and Duties

<b>8.2.7</b>	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.
<b>8.2.8</b>	<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"> <li>a. Supply of goods and/or services have been received by BHEL.</li> <li>b. Original Tax Invoice has been submitted to BHEL.</li> <li>c. Contractor/ Vendor has submitted all the documents required for processing of bill as per contract/ purchase order/ work order.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>g. Contractor has to submit an undertaking confirming the payment of all due GST in respect of invoices pertaining to BHEL.</li> </ol>
<b>8.2.9</b>	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.
<b>8.2.10</b>	TDS as applicable under GST law shall be deducted from contractor's bill.
<b>8.2.11</b>	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.
<b>8.2.12</b>	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

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VIII: Taxes and Duties

	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.
<b>8.2.13</b>	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.
<b>8.2.14</b>	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.
<b>8.2.15</b>	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.
<b>8.2.16</b>	<p><b><u>Variation in Taxes &amp; Duties:</u></b></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>
<b>8.3</b>	<p><b><u>Income Tax:</u></b></p> <p><b>TDS/TCS</b> 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.

<b>Annexure-I:</b>
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:

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VIII: Taxes and Duties

1.	It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.
2.	It shall be sole responsibility of the contractor engaging Building Workers in connection with the building or other construction works in the capacity of employer to apply and obtain registration certificate specifying the scope of work under the relevant provisions of the Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 from the appropriate Authorities.
3.	It shall be responsibility of the contractor to furnish a copy of such Registration Certificate within a period of one month from the date of commencement of Work.
4.	It is responsibility of the contractor to register under the Building and other Construction Workers' Welfare Cess Act, 1996 and deposit the required Cess for the purposes of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 at such rate as the Central Government may, by notification in the Official Gazette, from time to time specify. However, before registering and deposit of Cess under the Building and other Construction Workers' Welfare Cess Act, 1996, the contractor will seek written prior approval from the Construction Manager.
5.	It shall be sole responsibility of the contractor as employer to get registered every Building Worker, who is between the age of 18 to 60 years of age and who has been engaged in any building or other construction work for not less than ninety days during the preceding twelve months as Beneficiary under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996.
6.	It shall be sole responsibility of the contractor as employer to maintain all the registers, records, notices and submit returns under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.
7.	It shall be sole responsibility of the contractor as employer to provide notice of poisoning or occupation notifiable diseases, to report of accident and dangerous occurrences to the concerned authorities under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the rules made thereunder and to make payment of all statutory payments & compensation under the Employees' Compensation Act, 1923.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VIII: Taxes and Duties

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"> <li>i) Number of Building Workers employed during preceding one month.</li> <li>ii) Number of Building workers registered as Beneficiary during preceding one month.</li> <li>iii) Disbursement of Wages made to the Building Workers for preceding wage month.</li> <li>iv) Remittance of Contribution of Beneficiaries made during the preceding month.</li> </ul>
9.	<p><b>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.</b> However, BHEL shall not reimburse the Fee paid towards the registration of establishment, fees paid towards registration of Beneficiaries and Contribution of Beneficiaries remitted.</p>
10.	<p>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.</p>
11.	<p><b>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.</b></p>
12.	<p>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.</p>

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IX: MATERIALS

9.0	MATERIAL
9.1	<p>Material to be issued by BHEL (Free of Cost) as per BOQ cum Rate Schedule:</p> <ol style="list-style-type: none"> <li>1. Ready Mix Concrete (RMC)</li> <li>2. Cement</li> <li>3. Reinforcement Steel and MS Round Bar (Earthing Rod)</li> </ol>
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	<p><b>HANDLING OF MATERIAL ISSUED BY BHEL:</b></p> <p><b>Refer Chapter-VI "Material Handling, Storage &amp; Preservation" of SCC</b></p>
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.



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IX: MATERIALS

9.3.3	The theoretical weight of each bag of cement for issued purposes will be considered as 50kg, the contractor shall be accountable for the cement issued to the contractor on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement.
9.3.4	The empty cement bags duly accounted for against issue shall be the contractor's property and the same shall be disposed as per statutory regulation prevailing in the project.
9.3.5	The contractor shall satisfy himself of the quality and quantity of supplied cement at the time of taking delivery from BHEL stores. No claims whatsoever will be entertained by BHEL because of quality or quantity after the materials are taken by the contractor from BHEL stores.
9.3.6	Contractor will be responsible for sampling and testing of cement as per Indian Standard / Specification / approved quality plan in the testing laboratory established by the contractor.
9.3.7	Contractor will be responsible for unloading the cement as soon as the arrival of cement in the weather proof cement storage sheds/ Silo's having dense impervious bituminous or concrete floors which shall be kept swept clean at all times. The storage arrangements shall be fully completed and approved by the owner before any cement is delivered to site. The construction of cement storage sheds as per the requirement of BHEL, unloading of cement bags, stacking properly in the storage sheds, removal of the sheds after the completion of the work are in the scope of bidder. Though the cement is unloaded directly at the contractor storage shed, it will be deemed to be considered that the cement was issued from BHEL stores. Necessary documents are to be submitted by the contractor to the BHEL stores for having received cement.
9.3.8	The contractor shall in no case be entitled for any compensation on account of any delay in supply or non-supply thereof for all or any such materials. However, in case of non-availability of any specific material / section(s) which delays the completion of work, such cases shall be recorded separately in monthly planning format (F14) and shall be considered for time extension of contract.
9.3.9	Contractor will have to make his own arrangement at his own cost for procurement of any other materials except as mentioned above, as required for the works and of such quality as acceptable to BHEL.
9.3.10	Contractor shall also carryout in complete association with BHEL, the material management functions and execution like day-to-day update of materials, issued to contractor, accounting for surplus/scrap material returned etc. These functions shall also be carried out through computerized system utilizing suitable software. Contractor shall engage experienced software personnel to associate on dedicated basis for efficient discharge of the same in time.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IX: MATERIALS

9.3.11	The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL.
9.3.12	BHEL reserves the right to recover from the contractor any loss of material issued by BHEL arising out of damage/ theft or any other causes during verification/stacking or at any time under the custody of the contractor.
9.3.13	BHEL issued materials, shall not be under any circumstances whatsoever, and shall be taken out of the project site unless otherwise permitted by BHEL for outside job.
9.3.14	"BHEL/BHEL's agency for providing RMC" shall carry out design mix as per IS 456/10262 latest revision and specification, using the OPC and/or OPC with Fly Ash and/or PPC (as the case may be) and get the design mix proportions approved by BHEL's Customer/Consultant. The design mix proportion shall be used for concreting at this project.
9.3.15	Before commencement of work, Contractor has to satisfy/ensure the above design mix proportion through conducting trial mix. Contractor shall not be absolved from the responsibility of quality of concrete works as per relevant specification, standard and to ensure satisfactory performance as per terms and conditions of contract. Any issue raised regarding design mix after successful completion of trial mix shall not be entertained and contractor shall not be entitled for any cost or damages.
<b>9.4</b>	<b>Issue of Ready Mix Concrete and Cement:</b>
9.4.1	Ready Mix Concrete (Design Mix/Nominal Mix) of required grade shall be issued by BHEL at Batching Plant of BHEL's RMC / Other Agency as per relevant BOQ Items. Transportation of Concrete through Transit Mixer from the Batching Plant to Pouring Point & Concrete Pouring through Concrete Pump/ Suitable Boom Placer or other means as per site requirement shall be in the scope of contractor.
9.4.2	Cement as received from the manufacturer/ stockiest will be issued free of cost to the contractor. The theoretical weight of each bag of cement for issued purposes will be considered as 50 kg, the contractor shall be accountable for the cement issued to the contractor on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement.
9.4.3	In case cement is issued through bulkers being supplied from manufacturer/stockiest; the same shall be emptied in cement silos of batching plant and necessary assistance shall be provided by contractor.
9.4.4	In case BHEL supplies cement through Bulker, Bidder has to store cement in Silos of Suitable capacities as decided by Engineer in charge. Silos Capacities shall be finalized mutually.



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IX: MATERIALS

9.4.5	The empty cement bags duly accounted for against issue shall be the contractor's property and the same shall be disposed as per statutory regulation prevailing in the project.
9.4.6	No cement will be issued on free basis for bought out item like Hume pipe, Interlocking Paver block, Fly ash brick etc. However, cement for mortar for fixing of these items if required will be issued on free basis.
9.4.7	One month shall be the limit for the maximum quantity of BHEL issued cement that would be with the contractor at any point of time when work is in progress (excluding what has already been incorporated in the works).
9.5	<b>Issue of Reinforcement Steel and MS Round Bar (Earthing Rod):</b> <b>Refer Chapter-VI "Material Handling, Storage &amp; Preservation" of SCC</b>
9.6	<b>Return of Cement, Reinforcement Steel and MS Round Bar (Earthing Rod):</b> <b>Refer Chapter-VI "Material Handling, Storage &amp; Preservation" of SCC</b>
9.7	<b>Return of Ready Mix Concrete:</b> Under no circumstances, Ready Mix Concrete will be taken back. Contractor has to plan accordingly for proper use of Ready Mix Concrete.
9.8	<b>Consumption and Wastage of Cement, Reinforcement Steel and MS Round Bar (Earthing Rod):</b> <b>Refer Chapter-VI "Material Handling, Storage &amp; Preservation" of SCC</b>
9.9	<b>Consumption and Wastage of Ready Mix Concrete:</b>
9.9.1	<b>Ready Mix Concrete (RMC) Consumption:</b> The theoretical consumption of various grade of based on approved construction drawing shall be considered. Quantity shall be calculated considering the volume of concrete as per approved drawing. No extra cost shall be payable to you for any deviation in quantity of Ready Mix Concrete received from the Batching Plant and actual use at site. Requirement of RMC shall be provided at least one week in advance. Weekly concrete plan shall be provided to BHEL on regular basis
9.9.2	<b>Ready Mix Concrete (RMC) Wastage:</b> <ol style="list-style-type: none"> <li><b>Allowable wastage:</b> One and half percent (+1.5%) of theoretical consumption of cement unless specified otherwise in the technical specification.</li> <li>For RMC issued by BHEL to the contractor free of cost, and which is not accounted for by the contractor to BHEL, then recovery for such material shall be affected at penal rates.</li> </ol>

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IX: MATERIALS

		Sl. No.	RMC consumption	Basis of issue & penal recovery
		1	Theoretical consumption (without considering any wastage or loss).	Free
		2	Actual consumption being Limited to one and half percent (+1.5%) of aforesaid theoretical consumption towards allowable wastage.	Free
		3	Actual consumption beyond one and half percent (+1.5%) of Sl. No. (1) above.	Penal Rate
9.10	<b>Recovery of Materials (Penal Rates):</b> If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA Bills as per following penal rates (excluding GST):			
9.10.1	Sl. No.	Materials	Penal Rate (Rs.)	
	1	Cement (PPC)	5,000/- per MT	
	2	Cement (OPC)	7,000/- per MT	
	3	Reinforcement Steel / Earthing Rod	65,000/- per MT	
	4	RMC – M7.5 (1 part cement, 4 part sand, 8 parts of aggregate by volume)	4,500/- per Cum	
	5	RMC – M10 (1 part cement, 3 part sand, 6 parts of aggregate by volume)	5,000/- per Cum	
	6	RMC – M15 ((1 part cement, 2 part sand, 4 parts of aggregate by volume)	5,500/- per Cum	
	7	RMC – M20	6,000/- per Cum	
	8	RMC – M25	6,500/- per Cum	
	9	RMC – M30	7,000/- per Cum	
	10	RMC – M35	7,500/- per Cum	
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”:**

<b>CONTENTS</b>	
<b>Description</b>	<b>Remarks</b>
<b>PART A:</b> Instructions to the Bidders	Instructions
<b>PART B:</b> % weightage for amount of individual items of Schedule of quantity	Refer Latest Chapter-XI of Vol-IA TCC (BILL OF QUANTITIES AND % WEIGHTAGE OF INDIVIDUAL ITEMS)
<b>PART C:</b> 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”.

<b>Part A:</b>	<b><u>Instructions to the Bidders</u></b>
1.	<b><u>Bidders shall quote Total Price (Except for BOQ ST No. A) for the entire scope of work in Rupees in VOL II PRICE BID at BHEL E-procurement Portal.</u></b> 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.	For the convenience of bidders, BHEL has issued an excel sheet with all requisite formulae as detailed above. <b><i>However, this excel sheet shall not form part of contract document. Further, this sheet should not be uploaded at the e-Portal.</i></b>
7.	Bidders to note that this is an ‘ <b><u>Item rate contract</u></b> ’. Payment shall be made for the actual quantities of work executed at the Unit rate arrived at as per serial no. 5 above.
<b><u>PART B:</u></b>	% weightage for amount of individual items of BOQ CUM RATE SCHEDULE w.r.t. the total price (as quoted by the bidder in “Part C of Vol-II-Price Bid”)- attached separately.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-XI: TECHNICAL SPECIFICATIONS AND DRAWINGS

### 11. Following technical Specifications and Drawings shall be integral part of this tender:

SL. NO.	Document	Uploaded as
1.	(Section - C) Detailed Technical Specification-	<b>VOLUME I E - Technical Specifications (Part-1)</b>
2.	Section-D (General Specification of BHEL)	
3.	Workers Accommodation Floor plan and Elevations & Plot Plan	
4.	Approved BOI Vendor List	
5.	Minimum Wage Circular issued by NTPC Talcher	<b>VOLUME I E - Technical Specifications (Part-2 &amp; Part-3)</b>
6.	NTPC Talcher Geo Tech data	

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-XI: TECHNICAL SPECIFICATIONS AND DRAWINGS

<b>ANNEXURE – A</b> <b>LIST OF EQUIPMENTS FOR CIVIL SITE LABORATORY</b> <b>CONCRETE TESTING EQUIPMENT</b>			
<b>SL NO.</b>	<b>NAME OF TEST</b>	<b>NAME OF EQUIPMENT</b>	<b>SIZE OF EQUIPMENT</b>
1	Concrete Compressive test	Digital Compressive Testing Machine with 2000 KN capacity.	2000KN capacity
2	Concrete Cube casting	Concrete testing Mould	Minimum 125 sets desired considering major concerting activity.
3	Workability of concrete	Slump cone	Standard, at least 04 Nos.
4	Course aggregate Sieve analysis (Concrete & Road Works)	Sieve set	450mm dia GI Frames Size: 125 mm, 90 mm, 75 mm, 63 mm, 53 mm, 40 mm, 20 mm, 16 mm, 12.5 mm, 10 mm, 4.75 mm, Pan and cover
5	Fine aggregate sieve analysis	Sieve set	Minimum 200 mm dia Brass sieves; Size 4.75 mm, 2.36 mm, 1.18 mm 600 micron, 300 micron, 150 micron, 75 micron, 75 micron, Pan and cover
<b>Soil Testing Equipment (Levelling &amp; Grading)</b>			
1	Compaction of filling test	Core cutter apparatus	Rammer, 6 Nos. of standard core cutter mould, dolly
2	Proctor density test	Standard proctor Compaction apparatus	Standard
3	Moisture Content	Rapid moisture meter	Standard, at least 02 Nos.
<b>Process Control Accessories</b>			
1	Electronic balance	1 Nos.	600gx0.01g, 10g and 10 kg
2	Physical balance	5 kg capacity	Weights up to 5 kg
3	Thermometer	Temperature range 0° C to 150° C. 2 Nos.	Digital

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-XI: TECHNICAL SPECIFICATIONS AND DRAWINGS

4	Measuring jars	2 Nos. set of each size	100ml, 200ml, 500ml & 1000 ml
5	Spatula	2 Nos. each size	100mm & 200 mm with long blade wooden handle
6	Venire calipers	2 Nos. each	12" and 6" Sizes
7	Digital pH meter	01 Nos.	.01 mm least count
8	Digital micrometer	01 Nos.	0.01 mm least count
9	GI tray	02 Nos. each	600x450x50mm, 450x300x40mm, 300x250x40mm
10	Rebound hammer test	01 Nos.	Digital Rebound hammer
11	Screw Gauge	02 Nos.	0.1 mm-10mm, Least count 0.05

<b>PREAMBLE FOR BOQ CUM RATE SCHEDULE</b>	
<b>1</b>	<b>Preamble for the Schedule of Quantities/BOQ Cum Rate Schedule:</b>
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: 2X660 MW NTPC TALCHER TPS, ODISHA, INDIA						
BOQ CUM RATE SCHEDULE						
<b>SCOPE OF WORK:-</b> <b>Part-I (BOP-1A):</b> Balance Civil and Architecture Works of Service Water Tank, Boiler Fill, DM, CPU & SW Pump House, CPU Regen, PT Plant, Chemical House, Clarified Water Tank & Pump House, DM Tank & Pump House, Chemical Lab, Pipe & Cable Rack, Pipe Pedestal/ Sleepers, Leveling & Grading and Any Other Misc. Building/ Foundation/ Structure/ System, etc. <b>Part-II (Non-plant Building):</b> Balance Civil and Architecture Works of Non-Plant Buildings consisting of O&M Workshop, Fire station, Drill tower, Admin building, Gate complex, Service building, Canteen, Primary health center with rest room, O&M Worker's building & rest room, Gas cylinder shed, CISF Building, all parkings, PCRI Lab, FQA Lab, Leveling & Grading and Other Miscellaneous Foundations/ Structures etc. <b>at 2x660 MW NTPC Talcher TPS</b>						
ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
Part-I (BOP-1A)	Balance Civil and Architecture Works of Service Water Tank, Boiler Fill, DM, CPU & SW Pump House, CPU Regen, PT Plant, Chemical House, Clarified Water Tank & Pump House, DM Tank & Pump House, Chemical Lab, Pipe & Cable Rack, Pipe Pedestal/ Sleepers, Leveling & Grading and Any Other Misc. Building/ Foundation/ Structure/ System, etc.					
100	EARTH WORK: Earth work In excavation, backfilling and disposal including all labour, matrial, 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), shoring & strutting (wherever required), 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	26876			0.3670687276
b	Depth exceeding 2 m but not exceeding 4 m	CUM	28993			0.4959341204
c	Depth exceeding 4 m but not exceeding 6 m	CUM	475			0.0101446076
103	Earth work in excavation in soft rock (rock without any recovery of excavated materials in the form of hard stone/boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc but does not require chiselling or blasting including setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.					
b	Depth exceeding 2 m but not exceeding 4 m	CUM	2558			0.0622766410
c	Depth exceeding 4 m but not exceeding 6 m	CUM	119			0.0034706343
104	Earth work in excavation upto any depth below ground level in hard rock requiring blasting (but excluding controlled blasting) including wedging, line drilling, pre shearing etc as required for grading, 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 1 Km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.					
c	Depth exceeding 4 m but not exceeding 6 m	CUM	50			0.0028574619
d	Depth exceeding 6 m but not exceeding 8 m	CUM	150			0.0102828630
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), shoring & strutting (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 1 Km, 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	5400			0.2255459596
b	Depth exceeding 2 m but not exceeding 4 m	CUM	8100			0.4059855683
c	Depth exceeding 4 m but not exceeding 6 m	CUM	12150			0.7314186716
d	Depth exceeding 6 m but not exceeding 8 m	CUM	9253			0.6686607802
A105	Extra over item no. 104 and 105 for breaking of the rock boulders into the size of 150mm - 700mm and stcked at designated location within a lead upto 1 Km including spreading / levelling of the rock pices etc. all complete.	CUM	17551			0.6502288976
106	Earth work in excavation upto any depth below ground level in hard rock requiring chiselling including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, stacking/disposal of surplus excavated material within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.					
a	Depth from ground level but not exceeding 2 m	CUM	300			0.0744716929
b	Depth exceeding 2 m but not exceeding 4 m	CUM	600			0.1735952117
c	Depth exceeding 4 m but not exceeding 6 m	CUM	142			0.0492935498
d	Depth exceeding 6 m but not exceeding 8 m	CUM	300			0.1249853749
A106	Providing scaffolding pipes (6m Length) with clamps and barricading the excavated pit of required height as per safety norms. The scaffolding pipes with clamps will be under control of BHEL and can be used any where by BHEL during entire duration of contract period.	Nos	1500			0.0200885976
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 300 mm 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	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	48710			0.6136088407
A108	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 earth directly from excavation within a lead upto 1Km 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	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	25000			0.1491616567
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	19439			0.0257791703
b	Carriage for disposal of serviceable/unserviceable material/ earth	CUM	33738			0.0447411669
A111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 300 mm 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	80			0.0196420270



ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
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, tank foundation etc. in layers not exceeding 300mm compacted thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-IV) including spreading, watering, ramming/compaction by mechanical means, dressing, royalty (if any) etc. all complete.	CUM	1010			0.2479805905
200	CONCRETE WORK: Providing and placing concrete work including cost of labour, materials (unless otherwise specified in BOQ/contract specification) and equipment for handling, transportation, batching, mixing, placing, vibrating and curing (excluding cost of centering, shuttering and reinforcement) with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.					
RMC-201	Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 40 mm graded aggregate by volume) as mass filling course, lean concrete, levelling course, mud mat under and around foundations/floors, at any depth below finished floor level etc. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	1202			0.2108608053
RMC-202	Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	142			0.0249103447
RMC-203	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	50			0.0087712481
RMC-204	Concrete of grade M20 (1 part cement, 1.5 part sand, 3 parts of 20 mm graded aggregate by volume) under floors, paving, plinth protection, pipe encasing etc complete. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	108			0.0189458960
RMC-AA204	Providing and laying Design Mix Concrete of grade M20 under floors, paving, plinth protection, pipe encasing etc complete with 12 mm nominal size graded aggregate at any depth below finished floor level for the following grades. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)	CUM	220			0.0385934918
E204	Extra over item no. RMC-201, 202, 203, 204, AA204 & 212 for providing Ready Mix Concrete (RMC) at Batching Plant (Cement shall be issued by BHEL free of cost).	CUM	519			0.1452239423
RMC-205	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under floors etc at all level below finished floor level, 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 for the following. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
Aa	M 20 Grade	CUM	861			0.1510408930
a	M 25 Grade	CUM	7974			1.3988386533
RMC-206	Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in superstructure at all level above finished floor level, 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 for the following. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
a	M 25 Grade	CUM	1864			0.3269921306
E206	Extra over item no. RMC-205, 206, 211 & 213 for providing Ready Mix Concrete (RMC) at Batching Plant (Cement shall be issued by BHEL free of cost).					
Aa	M 20 Grade	CUM	259			0.0803042705
a	M 25 Grade	CUM	2956			0.9297669800
b	M 30 Grade	CUM	2			0.0005734037
RMC-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. (Payment of welded wire mesh, chicken wire mesh shall be made separately). (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
a	M 20	CUM	1			0.0001754250
b	M 25 - (Design Mix)	CUM	9			0.0015788247
RMC-A212	Screed concrete conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size on including preparation of surface, batching, mixing, leveling on roof / floor at all level or thickness, drains etc complete as per following. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
a	01:02:04	CUM	7			0.0012279747
RMC-213	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in precast works like roof slabs/trench covers, fins, lintels, chajjas, 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 following grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc.complete with graded aggregate (20/12.5/10 mm) and as per specification and drawing for following grades. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
a	M25	CUM	6			0.0025458488
b	M30	CUM	6			0.0025458488

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
RMC-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 for following grades. Watertightness is to be ensured including structural grouting if required. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency as per TCC)					
b	M30	CUM	13372			2.5585493521
E214	Extra over item no. 214 for providing Ready Mix Concrete (RMC) at Batching Plant (Cement shall be issued by BHEL free of cost).					
b	M 30 Grade	CUM	4012			1.7237798510
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	25			0.0034574415
b	Reinforced cement concrete of all grades	CUM	25			0.0050950047
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	100			0.0008618753
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	50			0.0000331536
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	10			0.0003699398
219	Providing and applying curing compound (water based) of approved make where ever required as per manufacturer's specification.	SQM	10			0.0001604469
220	Providing & laying Plum cement concrete 1:3:6 with 75% graded metal of maximum size 40 mm and 25% plums of maximum size 150 mm. (RMC shall not be provided for this item however, cement shall be provided by BHEL free of cost)	CUM	24			0.0106543791
222	Cutting of groove of 10mm X 40mm size with groove cutting machine in concrete paving all complete.	RM	25			0.0001856483
223	Cutting of existing concrete/ RCC slab (total thickness upto 250mm including floor finsh & deck sheet if any) inside control room/ pump house or anywhere inside boundary using power tools of (DD2E of HILTI/ BOSCH make or equivalent) with low noise and dust including cutting reinforcements, removing the rubbish within a lead of 1 km, including making good the broken edges/ surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/ supporting at all level, all complete and as directed by Engineer (measurements shall be taken as per cutting surface area).	SQM	25			0.0081281452
300	FORMWORK: Providing, fixing and removing formwork at all elevations for all structures, as per specifications and including all labour, material, scaffoldings and centereing etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.					
301	Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.including chamfering of edges as per drawing, specification and instruction of engineer in charge..	SQM	13589			0.9928497254
A301	Fairface form work with good quality water proof ply wood with film face of required thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	9104			0.7119540088
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 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.	SQM	7046			0.6306373856
A302	Fairface form work with good quality water proof ply wood with film face of required thickness and smooth surface above finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	21138			1.9872060712
B302	One time payment shall be made for purchase and mobilization of ply wood of approx. size 2.4m x 1.2m x 12mm thick with required battens as per specification for execution of Item No. 301, A301, 302 & A302. The purchased materials shall be the property of contractor however, it shall be handed over to BHEL store for making payment. Issue of these materials shall be as per instruction of BHEL Site-in-Charge. Contractor shall arrange formwork material as per requirement for the complete scope of work however, payment in this BOQ shall be restricted to this quantity only.	Nos.	1965			0.4648236012
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	45			0.0014320227
b	Pockets of depths more than 150mm and upto 300 mm depth	Each	25			0.0013425434
c	Pockets of depths more than 300mm and upto 600 mm depth	Each	40			0.0038452973
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	10			0.0015102699
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	11			0.0023993324
f	Pockets of depths more than 1500mm and upto 2000 mm depth	Each	11			0.0031679966
A305	Extra over item no.301 and 302 for curved form work for foundations, footings, Columns, beams, walls, trenches, domes, arches etc as per specification.					
a	Extra for Curve Shuttering for Item No. 301/301A	SQM	1913			0.0314458847
b	Extra for Curve Shuttering for Item No. 302/ 302A	SQM	8874			0.1753189303
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 for the following:					
403	Transportation, straightening, cutting, bending, placing in position at all level, binding in position of steel reinforcements of TMT steel of grade Fe-500D or 500EQR 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. (TMT steel shall be issued by BHEL free of cost)	MT	2679			3.5714379405

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
405	Providing & fixing of Rebar in existing concrete surface by inserting 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.	10			0.0005383388
b	16mm Reinforcement bar	Nos.	10			0.0008459593
c	20mm Reinforcement bar	Nos.	10			0.0011854119
Ad	25mm Reinforcement bar	Nos.	10			0.0016097189
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 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.	10			0.0000914968
b	16mm dia	Nos.	10			0.0001272933
c	20mm dia	Nos.	10			0.0001604469
d	25mm dia	Nos.	10			0.0002240876
e	28mm dia	Nos.	10			0.0003447501
f	32mm dia	Nos.	10			0.0003977959
g	36mm dia	Nos.	10			0.0005158038
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.(Material used for roof treatment shall be CFC & HCFC free. The contractor shall submit documentary proof to GRIHA consultant in support of same).					
511	Providing and applying two coats of bitumen grade 85/25 as per IS 702 ( @ 1.7kg/sqm)with 1% antistripping compound conforming to IS 6241 in foundation, wall, column etc on concrete surfaces exposed to soil / ash including surface preparation etc. all complete.	SQM	14677			0.2938679676
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	50			0.0011403183
513	Providing and mixing water proofing compound conforming to IS:2645 in concrete or cement mortar all complete.	KG	6686			0.1010669505
517	Providing and laying foam concrete blocks in the toilets/sunken slab etc. after water proofing complete as directed by engineer in charge.	CUM	10			0.0029409830
A517	Providing and laying Cinder / foam concrete blocks in the toilets/sunken slab etc. after water proofing complete as directed by engineer in charge.	CUM	10			0.0029409830
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	25			0.0019292793
b	20 mm wide joints.	SQM	25			0.0028541288
c	25 mm wide joints	SQM	1057			0.1466286384
d	50 mm wide joints	SQM	50			0.0133391875
A601	Supplying & installation of engineering grade polystyrene foam backer rod (circular cross section) at 12 mm depth with minimum density of 22 kg/cum and compressive strength of 0.40 kg/sqm having dia. 25% more than the expansion joint width 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	10			0.0011085097
b	20 mm wide joints.	SQM	10			0.0015487210
c	25 mm wide joints	SQM	2146			0.4385354440
Ad	50 mm wide joints	SQM	25			0.0078497022
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	10			0.0003049658
b	20mmX25mm	RM	10			0.0004561273
c	25mmX25mm	RM	100			0.0055027880
d	50mmX25mm	RM	10			0.0010183343
603	Providing and applying polysulphide based sealant conforming to IS:12118 in joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves:					
a	25mmX25mm	RM	15			0.0008254182
b	50mmX25mm	RM	15			0.0015275015
Ac	20mmX25mm	RM	15			0.0006841910
A603	Providing and applying polysulphide based sealant with VOC content limited to 250 grams per litre as prescribed by GRIHA, 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			0.0132066911
c	25mmX25mm	RM	3450			0.2342182524
d	50mmX25mm	RM	70			0.0086134559
A604	Supplying and filling in position hot applied bitumin sealing compound (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.(The sealant should have VOC content limited to 250 grams per litre as prescribed by GRIHA. All necessary documentation (certificates, manufacturer declarations ) to be provided by the contractor to green building consultant.					
a	10mm X 40mm	RM	10			0.0000609979
b	12mm X 25mm	RM	25			0.0001392215
c	25mmX25mm	RM	25			0.0001690715
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	100			0.0294894689
b	50mm thick	SQM	25			0.0051248547

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A610	Providing and fixing ribbed PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following: (Bulb or Kicker type)					
b	230 mm wide and 8 mm thick	RM	10			0.0003633209
Ab	230 mm wide and 10 mm thick	RM	546			0.0248863066
d	230 mm wide and 6 mm thick	RM	136			0.0036894947
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	10			0.0008022107
A615	Providing and fixing 300 mm wide Stainless steel strips (316 GRADE) over expansion joints with minimum lap of 50mm length including stainless steel screws, rawl plugs etc. all complete	Kg	50			0.0040110534
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. Payment Terms: a) On receipt of material site - 60% b) Execution as per item description - 40%	MT	2			0.0333366470
A701	Extra over item no. 701 and 703A for preparation of Steel surfaces by Manual Cleaning and provided with Chlorinated Rubber based paint with Primer Coat of Zinc Phosphate of Minimum 50 Micron Dry Film Thickness (DFT). etc. all complete as per specification.	SQM	10			0.0002492543
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. Payment Terms: a) On receipt of material site - 60% b) Execution as per item description - 40%	MT	2			0.0317064459
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.	MT				
A	Mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc.	MT	23			0.0650709598
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	12			0.0370962191
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. Payment Terms: a) On receipt of material at site - 60% b) Execution as per item description - 40%					
a	MS pipes of all diameters	kg	125			0.0013093308
b	PVC pipes / conduits of all diameters	kg	385			0.0191948016
d	Expansion anchor fasteners (galvanised) of HILTI make(HRD Universal Fastners) or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:					
i	8mm Dia	Nos	10			0.0000689500
ii	10mm Dia	Nos	10			0.0000782354
iii	12mm Dia	Nos	10			0.0000888422
iv	14mm Dia	Nos	10			0.0001140407
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	HST3 M8	Nos	10			0.0002214329
ii	HST3 M10	Nos	10			0.0003222033
iii	HST3 M12	Nos	10			0.0005184466
iv	HST3 M16	Nos	10			0.0009268493
v	HST3 M20	Nos	10			0.0018894950
vi	HST3 M24	Nos	10			0.0031345834
f	Chemical Expansion fasteners (galvanised)of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with anchoring rod,nuts,washers,chemicals all complete,etc:					
i	HAS-E5.8 M8	Nos	10			0.0004614366
ii	HAS-E5.8 M10	Nos	10			0.0005396720
iii	HAS-E5.8 M12	Nos	10			0.0006682867
iv	HAS-E5.8 M16	Nos	10			0.0011164619
v	HAS-E5.8 M20	Nos	10			0.0018563532
vi	HAS-E5.8 M24	Nos	10			0.0024967838
705	Placing, locking and releasing of Vibration Isolation spring modules over the foundation at all elevations including providing all assistance under the supervision of the supplier, transportation from BHEL store, necessary staging, platforms, leveling, alignment etc. all complete.	Nos	10			0.0021518095
706	Supply and installation of approved 25mm thick vibration damping resilient pads on/around foundation of vibrating equipment and at other locations all complete.	SQM	20			0.0048397634
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.					
801	Providing & grouting with cement slurry mix of approved ratio using pressure pump for water retaining concrete structures as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at maximum 500 mm centre to centre spacing, cutting of nipples after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing. (Cement shall be issued by BHEL free of cost as per TCC)	SQM	5			0.0004117121
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 as per TCC)	CUM	5			0.0139796358
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 as per TCC)	CUM	5			0.0135825065

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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 ConbextraGP-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	10			0.0560498124
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			0.0307504321
806	Providing Chemical (epoxy) injection grouting with pressure pump for water retaining concrete structures conforming to IS:6494, including fixing nozzles, cost of approved chemical, admixture, curing etc. all complete. Payment shall be made as per the consumption of chemical grout.	Kg	5			0.0010766835
1000	BRICKWORK: Brickwork masonry including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding etc. at all levels as per specification, drawings and as directed by engineer - in - charge.					
1001	Providing brick work in cement mortar 1:6 (1 part cement 6 parts coarse sand) in walls, chambers etc. in thickness varying from 230mm to 460mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting. (Cement shall be issued by BHEL free of cost as per TCC)					
a	Using fly ash lime bricks conforming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	30			0.0221770304
1002	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc. in thickness 230mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting. (Cement shall be issued by BHEL free of cost as per TCC)					
a	Using fly ash lime bricks conforming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	1324			1.2178429696
1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm at all heights, 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. (Cement shall be issued by BHEL free of cost as per TCC)					
a	Using fly ash lime bricks conforming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	SQM	303			0.0341741301
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	10			0.0023138020
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 separately) (Cement shall be issued by BHEL free of cost as per TCC)	CUM	3			0.0022280168
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	2			0.0000464079
1008	Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar 1:6 etc. complete.	CUM	3			0.0007959764
1009	Supply and placing in position mild steel wire fabric 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	5			0.0001392274
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	175			0.0091888536
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 all 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 as per TCC)	SQM	15			0.0018159023
A1013	Providing and fixing 190mm x 190 mm x 80 mm glass bricks of approved make and design with white CM 1:2 ( 1 white cement : 2 sand). Two numbers of 5 mm thick GI wires to be passed through PVC spacers in each joint horizontal as well as vertical by drilling holes in surrounding surface (brick or RCC) and filling the same with Hilti or equivalent chemical (rebaring). The PVC concealed spacer (with provision for passing the 2 no. GI wires in horizontal and vertical direction) shall be provided to maintain grooves/spaces for GI wire and white cement mortar at the junction of two glass bricks. The sample of the glass brick shall be got approved by Architect. The glass bricks shall be fixed with placing GI wires vertically as well as horizontally after passing through the spacer and having minimum lap length of + 200 mm as per the site conditions at all the places, heights and shapes, etc. complete, as per the details and drawing to the satisfaction of Engineer-in-charge. Joints along the periphery of glass bricks to be filled with approved make and color weather silicone sealant of DOW corning 789 or equivalent.	SQM	5			0.0059025247
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, before starting of masonry work. (Cement shall be issued by BHEL free of cost as per TCC)					
b	50mm thick	SQM	441			0.0188290066
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 as per TCC)	SQM	9224			0.3510161607
1202	Providing 12mm thick plaster inside the building/boundary wall in cement mortar 1:6 on walls finished to a smooth finish as per specification all complete. (Cement shall be issued by BHEL free of cost as per TCC)	SQM	9571			0.2956995854

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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 as per TCC)	SQM	4592			0.1236025847
1207	Forming groove of uniform size from 12X12 mm upto 25X15 mm in plastered surface as per approved pattern, using wooden battens nailed to the under layer, including removal of wooden battens, repair of the edges of plaster panel and finishing the groove etc. complete as per specification, drawing and the instructions of engineer in charge.	RM	250			0.0012597774
A1207	Providing drip coarse 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	250			0.0037790373
B1207	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	200			0.0024396794
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 as per TCC)	SQM	50			0.0032154852
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	50			0.0002340219
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	7093			0.0905736468
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	1653			0.0298653610
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	480			0.0206787787
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	120			0.0037551572
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	50			0.0021540394
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			0.0035973414
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 confirming 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	22			0.0005688377
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	30			0.0032300327
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	15			0.0019630936
1316	Providing and applying 2 mm thick plaster of paris 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	709			0.0099126383
1317	Providing and applying 2 mm thick white cement 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	3192			0.0423209821
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	3192			0.0651761200

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A1319	Providing and applying two or more coats of Premium Acrylic Smooth Paint with Silicone additives weather coat paint of approved brand and manufacture and required shade over one coat of primer after necessary cleaning/ washing, preparing the surface using coir brush/ wire brush, sand paper, including filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellant and extremely durable with color fastness as per specification.(The sealant should have VOC content limit less than 250 grams per litre as prescribed by GRIHA. All necessary documentation (certificates, manufacturer declarations ) to be provided by the contractor for green building documentation ).	SQM	9625			0.2233382413
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 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 as per TCC)	SQM	484			0.0361694515
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 as per TCC)	SQM	24			0.0017603684
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 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. (Quoted item rate shall be inclusive of providing glass joint strips). (Cement shall be issued by BHEL free of cost as per TCC)	SQM	48			0.0030910515
A1402	Providing and laying 25 mm thick heavy duty cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates ) flooring with non 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 well graded) and top layer of non metallic concrete of mix 1:2 (1 cement hardner mix with approved quality hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete as per specification. (Quoted item rate shall be inclusive of providing glass joint strips). (Cement shall be issued by BHEL free of cost as per TCC)	SQM	2			0.0001497450
A1403	Providing and laying precast polished heavy duty cement concrete tiles (Carborundum/quartz chips topping pigment content is 3.5 kg per 50 Kg of white Cement) of size 300X300X25mm 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 for mortar shall be issued by BHEL free of cost as per TCC)					
a	Laid in floors	SQM	1303			0.1909140071
b	Laid in skirting	SQM	130			0.0267279610
A1404	Providing and laying interlocking M35 Grade concrete blocks in paving with approved specified colours, pattern, sample, different texture, 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)					
Ab	80mm	SQM	50			0.0056486166
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 as per TCC) Payment Terms: a) On receipt of material site - 50% b) Execution as per item description - 50%	SQM	100			0.0421523704
A1412	Providing and laying 20mm thick Mirror polished (6 layers of polish)/Flame finish (making top surface rough by burning / shot blasting)Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 30mm thk of 1 cement : 1.5 sand : 3 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 spread over the surface with fine joint finished including pigments, curing, grinding, moulding, cornice, granite polishing etc. all complete.(Cement shall be issued by BHEL free of cost as per TCC) Payment Terms: a) On receipt of material site - 50% b) Execution as per item description - 50%	SQM	25			0.0085922365
1414	Providing and laying polished Granite stone 18-20mm thk in skirting and dado with 6mm thick projection from adjacent plaster minimum 12 mm thick cement mortar bedding of 1:3 (1 cement : 3 sand) with thick cement slurry @3.3kg/sqm spread over the surface with fine joint finished including cutting brickwall upto the required depth, edging, finishing etc. all complete. including mortar ,cement slurry ,pigments, curing, grinding,moulding, granite polishing etc. all complete.	SQM	15			0.0063765679

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D1416	Providing and laying matt finish vitrified ceramic tiles of polished variety of size 600x600 / 800x800 from reputed / approved manufacturer, 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.					
a	9.0 mm (min.) thick tiles In flooring	SQM	1198			0.2374811319
b	9.0 mm (min.) thick tiles In dado	SQM	60			0.0125094739
E1416	Providing and laying digitally glazed vitrified ceramic (with recycle content )tiles and matt finished of size 600x600/800x800/1000x1000 from reputed / approved manufacturer, complete 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 of 0.7kg of organic coated filler of desired shade (0.1 kg hardner and 0.3 kg resin per kg) or approved equivalent in approved colour to match colour of tile etc. all complete for following.					
a	9.00 mm (min.) thick tiles In flooring	SQM	115			0.0263038455
b	9.00 mm (min.) thick tiles In dado	SQM	20			0.0047708133
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					
b	9.00 mm (min.) thick tiles In flooring	SQM	73			0.0153323447
d	9.00 mm (min.) thick tiles In skirting and dado upto specific height	SQM	2			0.0004449943
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.	SQM	2			0.0011429800
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. All tiles to be used should be with appropriate % of recycled content.					
a	300X300 mm	SQM	703			0.0888596777
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.	SQM	50			0.0096994307
A1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12mm thick ( to be laid in layers of 6mm each). The tiles shall be applied with 6mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing, pointing joint of bedding 20mm deepx6mm wide with epoxy/Furane mortar etc. all complete for following thicknesses. The tiles should be abrasion resistant & durable.					
Aa	12 mm thick	SQM	102			0.0285256009
a	20mm thick	SQM	1022			0.3412231969
b	38mm thick	SQM	50			0.0228529698
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 12 mm 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	545			0.3943330459
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 18 mm 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	1104			0.6098804831
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 marbel nosing, pigments, curing, grinding, making corners, granite polishing etc. complete.	SQM	10			0.0038280597
1426	Providing and laying marble skirting /dado (Aranga white or approved shade/color /design) equivalent of minimum 20mm thickness projecting 6mm from adjacent plaster all complete including underbed 20mm cement mortar 1:3, with thick cement slurry 3.3kg/sqm spread over the surface scaffolding etc. all complete.	SQM	2			0.0007062092
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,					
a	5mm thick	SQM	10			0.0012875155
b	7mm thick	SQM	224			0.0283056994
A1428	Providing and laying 2mm thick heavy duty antistatic PVC(Virgin) tile in flooring / skirting of approved shade,as per IS:3462 and laying as per IS:5318 all complete as per specifcations.	SQM	102			0.0044766761
1430	Providing and fixing dividing strips in joints of cast in situ floorings at various elevations, finishing, all labour, material etc. complete as per drawing, specification and instructions of engineer in charge.					
a	Glass strips 40 mm wide and minimum 6 mm thick.	RM	25			0.0001756786
b	Aluminium strips 40 mm wide and minimum 3 mm thick	RM	25			0.0003381135



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1500	ROOFING / SIDE CLADDING: Roofing / side cladding work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
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	50			0.0053701736
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 0.6 mm dia and 25 mm mesh GI wire netting, fixed at various elevations with rawl plugs including clips but excluding cost of insulation.	SQM	174			0.0148812565
1516	Providing and fixing non metal opaque PVC sheet similar to ONDEX roofing or equivalent including all fixing accessories.	SQM	25			0.0038883792
1517	Providing and fixing 1 mm thick corrugated/semicorrugated G.I. sheet in roofs, cladding of minimum galvanisation of 275 gsm total on both sides with minimum 150mm overlapping, 8 dia G.I. hook bolts or 'J' Bolts and nuts @305 mm c/c along with G.I. and bitumen washers including cutting of sheets for opening etc. all complete.	SQM	25			0.0042861633
1518	Supply & fixing FRP (fibre reinforced plastic) sheets 2 mm thick including GI hooks/ J or L bolts, nuts, washers, bitumen washers etc. complete including overlap 100mm .	SQM	25			0.0052408628
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, other underground structures, etc. 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 as per drawings/specifications. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	1290			0.3024148202
B1802	Providing and Filling in trenches, plinths, area paving, grade slab, other underground structures, etc. with graded stone aggregate of size range 40 mm downwards nominal size rammed, consolidated 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 as per drawings/specifications. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	100			0.0234430093
1802	Supply and laying approved quality Stone aggregate 40mm size in transformer yards.	CUM	103			0.0449739048
1803	Supply and laying approved quality rounded pebbles / gravels of 40mm size in transformer yards.	CUM	10			0.0033342616
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).	SQM	2556			0.0542364229
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	20			0.0287813743
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).	each	10			0.0145060404
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).	NO	10			0.0112627345
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)	NO	10			0.0009639790
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	10			0.0005595524
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.	EACH	10			0.0345970449
1814	Construction of below ground earthing system test pits as per drawing/ sketches including brickwork, plaster, concreting, reinforcement, formwork, providing & fixing GI strips/pipes, GI wires, covers etc as per drawing & specification including associated earthwork.	EACH	10			0.0249373985
1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	60			0.0008751132
A1816	Providing and fixing PVC pressure release valve of minimum dia 90mm in water retaining/conveying structure including 160 mm dia housing pipe of minimum length 3.75 m with perforation as per IS4558, nylon jali, perforated end plug, collar, graded filter, excavation, fixing in concrete slab/wal, with under drainage arrangement etc. all complete.	EACH	20			0.0278861094
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 suppression 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	100			0.0084994713
1823	Providing and laying cinder filling in the toilets, roads,etc complete as directed by engineer in charge.	CUM	5			0.0014055234
A1823	Providing and laying cinder filling or foam concrete blocks filling in sunken slabs of toilets or where ever light weighted filling material required ,etc complete as directed by engineer in charge.	CUM	10			0.0028110468
1827	Anti weed chemical treatment of soil with suitable chemical pertaining to the types of weeds found in the vicinity including providing anti-weed/ soil sterilization test certificate, performance guarantee of three years etc. all complete.	SQM	200			0.0001326144
A1849	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 or equivalent to 8% to 10% by volume including compaction. Separation layer of one tack coat @ 1Kg/sqm shall be spray after first layer of 30mm and sand shall be sprayed on the final surface of 20mm @ 0.5 cum/100 sqm. etc. all complete as per specification ans as guided by engineer-in-charge.	SQM	361			0.0296368072
A1850	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	361			0.0294454071

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A1851	Providing and fixing GI strips minimum 1.5mm thk and 150mm wide including fixing accessories etc. all complete.	Kg	150			0.0042961035
A1852	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	100			0.0060065809
A1853	Providing, laying and fixing rails and guide rails in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	MT	1			0.0125444133
A1862	Supplying, fabrication and installation of PVC pipes in concrete / Duct bank for all kind of works, including setting material in concrete, layout, cutting, forming, grinding, jointing etc. all complete as per specification and as guided by engineer-in-charge. (Concrete, Reinf. paid separately)					
a	200 mm nominal diameter.	RM	75			0.0111082812
B1862	Supplying, fabrication and installation of HDPE pipes and conduits of PE-80, PN-10 type as per IS 4984/IS 8008 part-I, in concrete / Duct bank for all kind of works, including setting material in concrete, layout, cutting, forming, grinding, jointing etc. all complete as per specification and as guided by engineer-in-charge. (Concrete, Reinf. paid separately)					
a	200 mm nominal diameter.	RM	500			0.0884068190
2000	FENCING AND GATES: Fencing and gates including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc at all level as per specification, drawings and as directed by engineer - in - charge.					
A2003	Supplying and erecting in position 2.4 m high PVC coated gavanised chain linked fencing of minimum 4 mm (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 2.5 mm. The PVC coated chain link will be stretched by the clips at 0.5m intervals to three strands of galvanised high tensile spring steel wire (HTSSW) of 2.5 mm diameter interwoven with chain link wire mesh and kept under tension which in turn are attached to the fence post with security nuts and bolts. Concertina of height of 600 mm at top of chain link fencing shall be provided with all accessories. Concertinal shall be from tensile serrated galvanised wire (HTSW) made with wire diameter of 2.5 mm which will be stretched to 6m and attached on two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5mm dia by means of clips at 1m interval. These two HTSSW strands will be attached to the fence posts/ angles with 12 mm security fasteners. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts etc. all complete. (Structural post shall be paid separately under ST No. 2007) Payment Terms: a) On receipt of material site - 60% b) Execution as per item description - 40%	RM	188			0.0635296141
2007	Supply and fixing of hot dip galvanised mild steel posts for fencing. Rate of zinc coating shall not be less than 710 g/m2 on steel posts. Payment Terms: a) On receipt of material site - 60% b) Execution as per item description - 40%	MT	5			0.0744369583
A2008	Supply, fabrication and fixing of mild steel posts for fencing, etc. including chlorinated rubber paint over a suitable primer etc all complete as per specification. Payment Terms: a) On receipt of material site - 60% b) Execution as per item description - 40%	MT	2			0.0279727972
2009	Supply, fabrication and installing in position and testing galvanised MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete. Payment Terms: a) On receipt of material site - 60% b) Execution as per item description - 40%	MT	3			0.0490076230
2010	Supply, fabrication and installing in position and testing MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete. Payment Terms: a) On receipt of material site - 60% b) Execution as per item description - 40%	MT	1			0.0155999649
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	10			0.0010475118
2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.	NOS	10			0.0006457399
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	3			0.0002498129
b	50mm nominal bore.	NOS	3			0.0005234893
2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrosive bituminous 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	30			0.0018536868
b	20 mm nominal bore.	RM	40			0.0027049554
c	25 mm nominal bore.	RM	40			0.0030285155
d	50 mm nominal bore.	RM	40			0.0043597560
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	25			0.0012099290
b	20 mm nominal bore.	RM	25			0.0013557871
c	25 mm nominal bore.	RM	25			0.0015580122
Ac	32mm nominal bore.	RM	15			0.0011038729
d	50 mm nominal bore.	RM	25			0.0023900375
Ae	65mm nominal bore.	RM	25			0.0028475217

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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	4			0.0012580761
2107	Providing and fixing 610mmx127mmx6mm thk clear glass with C.P Guard rails and mounted on C.P. brackets etc all complete.	NOS	2			0.0002057882
2108	Providing and fixing 25 mm diameter stainless steel towel rails (600mm X 25mm) with C.P. mounting brackets all complete.	NOS	5			0.0006298356
2110	Providing and fixing C.P. Soap holder mounted with C.P. screws etc all complete.	NOS	5			0.0004475145
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	5			0.0004229796
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. slt complete.	NOS	5			0.0003049717
A2113	Providing and fixing rotating type chromium plated brass shower rose with 15 or 20 mm inlet all complete.	NOS	5			0.0002453071
2114	Providing & fixing in position P.V.C. water tank of Syntex or approved equivalent conforming to IS:12701 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	2			0.0010849058
b	1000 litres capacity	NOS	2			0.0021698116
c	2000 litres capacity	NOS	1			0.0021696759
A2115	Providing and installing approved brand single tap water cooler of 150 L cooling capacity all complete.	NOS	1			0.0107833985
A2116	Providing and fixing glass shelves 600mmx127mmx4mm with chromium plated brackets all complete.	EACH	2			0.0001856365
A2117	Providing and fixing metal storing cabinets all complete.	EACH	2			0.0039778951
A2118	Providing and fixing electric operated hand dryer with photo voltaic control etc all complete..	EACH	2			0.0013259666
A2120	Providing and fixing grab bars, barrier-free access and appropriate fittings and fixtures for toilets for handicapped etc. all complete.	EACH	3			0.0007955800
2200	SANITARY: Sanitary work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
2201	Supply and fixing glazed vitreous china Wash Basin of approved make conforming to IS:2556 part 4 of oval shape with R.S. or C.I. brackets painted white, 15mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32mm chromium plated brass bottle trap and waste of standard pattern, 32mm dia chromium plated brass trap unions, plastic connection pipe with chromium plated nuts, fittings, cutting and making good the walls where required etc all complete.					
b	Colored	EACH	3			0.0042615152
A2201	Supply and fixing coloured glazed vitreous oval shape china wash basin 450x550mm conforming to IS: 2556 mounted over 20 mm thk granite beveled edge counter counter. The Basin shall be fitted with approved shape bib cock, photo-voltic control system for water control with flow rate less than 5 LPM (litres per minute) at 45 psi, CP brass chain with rubber plug, 40mm CP brass waste and bottle trap as per IS: 2556 with two taps, necessary union including cutting of notch in granite counter slab etc complete as per specification	EACH	7			0.0072397611
2202	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			0.0022244348
A2203	Providing and fixing stainless steel kitchen sink/Eye wash sink of size size 610 x 510 mm, bowl depth 200 mm as per approved manufacturer with drain board of at least 450 mm length with trap, hot and cold water mixer, conforming to IS: 13983 including all fittings etc. all complete.	EACH	2			0.0026378718
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	8			0.0094047932
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, necessary C.P connections etc all complete.	EACH	3			0.0024456093
A2205	Providing and fixing colour glazed vitreous china Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 of approved manufacturer simpolo, varmora or equivalent with all fittings including foot rests, low level 12.5 litre PVC flushing cistern with valveless fittings, necessary C.P connections etc all complete having flow rate of 6/3 LPF (litres per flush) or less at 45 psi.	EACH	3			0.0032777845
A2206	Providing and fixing white/coloured water efficient flat black glazed vitreous china urinals of size 610x375x390mm with photo voltaic control flushing systems of approved manufacturer simpolo, varmora or 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 LPF (litres per flush) or less at 45 psi.	EACH	10			0.0159645978
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	20			0.0009308254
b	110mm dia pipes	RM	15			0.0009348073
c	160mm dia pipes	RM	15			0.0014499327
d	200mm dia pipes	RM	15			0.0017860641
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 shall be issued by BHEL free of cost as per TCC)					
a	200mm dia	RM	10			0.0010594401
b	300mm dia	RM	20			0.0036543515
c	450mm dia	RM	20			0.0061047439
d	600mm dia	RM	10			0.0041794406
e	900mm dia	RM	5			0.0036775590
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 shall be issued by BHEL free of cost as per TCC)					
a	150mm dia	RM	5			0.0003507201
b	250mm dia	RM	5			0.0004567939
c	300mm dia	RM	5			0.0005675104
d	450mm dia	RM	5			0.0008433164
e	500mm dia	RM	5			0.0009898293

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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 shall be issued by BHEL free of cost as per TCC)					
Aa	250mm dia	RM	10			0.0019677304
Ab	300mm dia	RM	5			0.0011741385
a	450mm dia	RM	5			0.0017456309
b	600mm dia	RM	2			0.0009268493
c	900mm dia	RM	2			0.0017123487
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	10			0.0143124518
2212	Providing and fixing circular heavy duty C.I. manhole cover of 600 mm dia with frame etc. all complete.	EACH	10			0.0142275857
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:					
a	100x100mm P or S Type.	EACH	2			0.0004794693
b	150x100mm P or S Type.	EACH	2			0.0004977687
c	150x150mm P or S Type.	EACH	3			0.0007800662
2214	Providing and fixing C.I. floor traps size 100 mm Inlet and 100 mm Outlet Sand Cast Iron S&S as per IS: 1729 with C.P jalli all complete.	EACH	3			0.0006396460
A2215	Providing and fixing C.I. floor traps with stainless steel grating etc all complete.	EACH	3			0.0007036902
2215	Providing and fixing 100mm heavy duty UPVC floor traps with 100 mm inlet and 100 mm outlet & C.P jalli all complete.	EACH	3			0.0006118005
A2217	Providing and installing approved brand single tap water efficient water cooler of 50 L cooling capacity all complete.	EACH	2			0.0087744361
A2218	Providing and installing approved brand single tap water efficient water cooler of 150 L cooling capacity all complete.	EACH	2			0.0215668017
2219	Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS: 10592) all complete as per specification.	EACH	2			0.0047416476
2220	Providing and fixing heavy duty cast iron pipes for above and below ground sanitary works with water tight lead joint, fixing clamps, excavation, filling, disposal etc. all complete for the following.					
a	75mm dia pipes	RM	5			0.0009931447
b	100mm dia pipes	RM	5			0.0012795575
c	150mm dia pipes	RM	10			0.0037047425
d	200mm dia pipes	RM	10			0.0053303775
e	250mm dia pipes	RM	10			0.0076852852
2221	Providing, laying spun CI pipes with conforming to IS 1536 complete for following. (Excavation, backfilling, concrete to be paid seperately)					
a	75mm dia	RM	8			0.0018234616
b	100mm dia	RM	8			0.0024514401
c	150mm dia	RM	20			0.0091040701
d	200mm dia	RM	50			0.0335270098
e	250mm dia	RM	20			0.0170943211
f	300mm dia	RM	20			0.0209847120
2222	Providing and fixing HDPE pipes in concrete/ brick work of following sizes including cutting, fixing and levelling in position etc. all complete.					
a	Upto 75 mm dia	RM	4			0.0001511615
b	100 mm dia	RM	4			0.0002185211
c	150 mm dia	RM	4			0.0003919533
d	200 mm dia	RM	4			0.0006449494
A2223	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.	1			0.0015978237
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 150 mm sewer water outlet pipe	NOS.	1			0.0031353279
A2227	Providing and fixing energy efficient geyser of 25 liters capacity including fittings etc all complete.	EACH	2			0.0021215466
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.					
2301	Supply / Transporting from BHEL Stores, Fabrication, erection and alignment of structural steel with mild steel 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, toe gaurd/kick plate, stringers, treads, landings, hand-rails etc including 2 coats of red oxide zinc-chromate primer (one coat at shop and one coat after erection), connection design & preparation of fabrication drgs, 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 seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL (BHEL shall issue steel free of cost).	MT	10			0.0319146245

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2329	Design, supply, fabrication, erection of stoplog gates, Sluice gates etc. in CW Pumps, etc. with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, with electrically operated hoisting arrangements, all materials such as structural steel, cast steel, stainless steel, brass used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fastners etc., cleaning, shot blasting, MS structural parts shall be galvanised to minimum coating of Sealed Zinc spray (250 Micron) as per BS 5493. Over zinc coating one coat of zinc Phosphate Epoxy primer having minimum 30 micron DFT and three coats of coal tar Epoxy paint having minimum 75 micron DFT / coat shall be provided. Total DFT of epoxy paint including primer shall be minimum 250 microns. hot double dip galvanised with minimum coating of zinc 750 gms/sqm., following by an application of etching primer and dipping in black bitumen as per B.S. 3416, erection along with a second stage concreting to true plumb and levels, submission of drawings / fabrication drawings for engineers approval etc all complete. The leakage through rubber seal shall not be more than 5 lit/min/metre length of seal under maximum head. (only weight of structural steel including embedments shall be considered for payment purpose, SS component shall be paid separately under relevant BOQ item). ( supply of structural steel is in the scope of contractor only)	MT	19			0.3703949506
2331	SS (316L) component mentioned under ST No. 2329.	MT	6			0.3411624633
2332	Design, Supplying, fabricating, erecting in position and testing / examining bolted and / or welded structural steel work for stationary screens made out of rolled sections and / or plates including cutting, straightening if required, edge preparation, bolting / welding of joints, MS structural parts shall be galvanised to minimum coating of Sealed Zinc spray (250 Micron) as per BS 5493. Over zinc coating one coat of zinc Phosphate Epoxy primer having minimum 30 micron DFT and three coats of coal tar Epoxy paint having minimum 75 micron DFT / coat shall be provided. Total DFT of epoxy paint including primer shall be minimum 250 microns with electrically operated hoisting arrangements and cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc as 750 gms./sqm. followed by application of an etching primer and dipping in black bitumen as per BS 3416, submission of drawings / fabrication drawings for engineers approval etc all complete. (supply of structural steel is in the scope of contractor only)	MT	14			0.2516169753
2400	ROAD WORKS: Road works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation etc. as per specification drawing, relevant IRC & IS codes and as directed by the Engineer-in-charge for the following:					
2401	Preparation of sub grade by excavating earth to required depth for all types of soil/ rock, dressing to camber and consolidating the base including making good the undulation etc and disposal of surplus earth, debris etc. within a lead upto 1 km etc. all complete.	CUM	526			0.0046029712
2402	Supplying and filling with selected good earth of approved quality in layers not exceeding 300 mm loose thickness using borrowed soil (borrowed soil to be arranged by the bidder) and compacted so as to achieve at least 95 % maximum dry density as per IS-2720 (Part-VII) including royalty/seignorage fee (if any), sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing etc all complete.	CUM	250			0.025160153
A2405	Providing & Laying granular sub-base using close graded Material conforming to MORTH specification (Table 400-1, Grading-I), mixing in a mechanical mix plant at OMC, carriage of mixed material to work site, for all leads & lifts, spreading in uniform layers of specified thickness on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications, drawings and directions of Engineer-in-Charge.	CUM	395			0.138533524
A2406	Providing & Laying water bound macadam sub base/ base course with stone aggregate 53 mm to 22.4 mm size stone conforming to MORTH specification (Table 400-7) mixing in a mechanical mix plant at OMC, carriage of mixed material to work site, for all leads & lifts, spreading in uniform layers of specified thickness on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications, drawings and directions of Engineer-in-Charge.	CUM	222			0.0778593479
2600	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.					
2602	Earth work in stripping of top soil upto a maximum depth of 0.30 m below ground level so as to exclude all debris, grass, vegetation, bushes, trees having girth upto 300mm 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.	Sq.m	2100			0.0061248012
2609	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300mm compacted thickness so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII) with surplus stacked soil/soft rock and compacted as specified including re-excavation of stacked earth, all lifts, dewatering if required, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	4500			0.0632496158
2700	RAIN WATER HARVESTING					
2701	Making 250mm dia bore hole up to a maximum depth of 20 m below ground level in all types of rocks including all equipments, tools & plants, lowering casing pipes, bentonite slurry, removal of casing pipes etc. complete in all types of soil.	RM	15			0.0028123683
2702	Supply & fixing 150mm dia perforated PVC pipe ISI mark 6 Kg/ cm2 with air vent at top as per the drawing & specification complete.	RM	30			0.0017264053
2703	Providing & fixing 150 dia PVC pipe ISI mark 6 Kg/cm2 as per specification.	RM	15			0.0008632027
2704	Supply & packing uniformly 6mm to 3mm size gravel in the bore hole surrounding the perforated PVC pipe.	CUM	4			0.0012172346
2705	Supply & packing uniformly downgraded 40mm size gravel at all depth in the well dug for rain water harvesting.	CUM	4			0.0012172346
2706	Supply & packing uniformly downgraded 40mm size pebbles at all depth in the well dug for rain water harvesting.	CUM	3			0.0009129260
2707	Supply & laying 300mm thick coarse sand layer at all depth in the well dug for rain water harvesting.	CUM	7			0.0020698293
2708	Supply & fixing Netlon jali/ PVT net in the well dug for rain water.	SQM	15			0.0004853048
	<b>TOTAL PART-I</b>					<b>30.5064852365</b>
Part-II (Non-plant Building)	Balance Civil and Architecture Works of Non-Plant Buildings consisting of O&M Workshop, Fire station, Drill tower, Admin building, Gate complex, Service building, Canteen, Primary health center with rest room, O&M Worker's building & rest room, Gas cylinder shed, CISF Building, all parkings, PCRI Lab, FQA Lab, Leveling & Grading and Other Miscellaneous Foundations/ Structures etc.					

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A	Construction and maintenance of labour colony having adequate no. of rest rooms along with toilets & fencing etc. as per drawing attached and TCC including associated civil and structural works on built, own and operate basis. Proposal for construction of these hutment is to be got approved from BHEL before organizing material and execution. One-time payment towards construction/development of labour colony of 03 Sets as per drawing attached and as above shall be paid by BHEL as per following payment terms: i) On receipt of material for each set of labour colony at site - 50% ii) On completion of installation of labour colony for each set - 20% iii) Handing over for accommodation of labour with all amenities for each set - 30% Land for labour colony shall be provided by BHEL free of 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.	LS	1	₹ 1,50,00,000.00	₹ 1,50,00,000.00	Fixed Price
Continued... A	The labour colony shall be handed over for accommodation with all amenities within Three (03) Months from date of start. Date of start shall be decided jointly by BHEL/NTPC and Contractor based on availability of Land, Fronts, etc. If the contractor fails to maintain the required progress of work which results in delay in the completion of the labour colony as per above completion period, BHEL shall have the right to impose Penalty at the rate of Rs. 75,000/- per weeks of delay or part thereof beyond Three (03) Months of completion period for a maximum delay of Three (03) Months. In case, contractor fails to complete the labour colony within Six (06) Months Period, BHEL reserves the right to execute the work at risk and cost of contractor. Risk & Cost Amount= [(A-B) + (A x H/100)] Where, A= Value of Balance scope of Work new contract B= Value of Balance scope of Work of this contract being paid to the contractor. H = Overhead Factor to be taken as 5 In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).					
100	EARTH WORK: Earth work In excavation, backfilling and disposal including all labour, matrial, 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), shoring & strutting (wherever required), 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	20786			0.2838923416
b	Depth exceeding 2 m but not exceeding 4 m	CUM	6825			0.1167441122
c	Depth exceeding 4 m but not exceeding 6 m	CUM	527			0.0112504382
d	Depth exceeding 6 m but not exceeding 8 m	CUM	1813			0.0483199848
103	Earth work in excavation in soft rock (rock without any recovery of excavated materials in the form of hard stone/boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc but does not require chiselling or blasting including setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.					
b	Depth exceeding 2 m but not exceeding 4 m	CUM	4534			0.1103796920
c	Depth exceeding 4 m but not exceeding 6 m	CUM	2088			0.0609990274
d	Depth exceeding 6 m but not exceeding 8 m	CUM	1398			0.0490092335
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), shoring & strutting (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 1 Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.					
b	Depth exceeding 2 m but not exceeding 4 m	CUM	632			0.0316768987
c	Depth exceeding 4 m but not exceeding 6 m	CUM	181			0.0108960312
d	Depth exceeding 6 m but not exceeding 8 m	CUM	560			0.0404686164
A105	Extra over item no. 104 and 105 for breaking of the rock boulders into the size of 150mm - 700mm and stcked at designated location within a lead upto 1 Km including spreading / levelling of the rock pices etc. all complete.	CUM	687			0.0254328146
106	Earth work in excavation upto any depth below ground level in hard rock requiring chiselling including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, stacking/disposal of surplus excavated material within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.					
c	Depth exceeding 4 m but not exceeding 6 m	CUM	181			0.0628318694
d	Depth exceeding 6 m but not exceeding 8 m	CUM	140			0.0583265083
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 300 mm 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	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	43765			0.5513157650
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	4025			0.0053377279
b	Carriage for disposal of serviceable/unserviceable material/ earth	CUM	6870			0.0091106064
A111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 300 mm 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	88			0.0216062297
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, tank foudnation 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 mechanical means, dressing, royalty (if any) etc. all complete.	CUM	5			0.0012276267

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200	CONCRETE WORK: Placing concrete work including cost of labour, (unless otherwise specified in BOQ/contract specification) and transportation, placing, vibrating and curing (excluding cost of centering, shuttering and reinforcement) with mechanised equipments like transit mixer, concrete pump etc. complete as per drawing, specifications and as per direction of engineer in charge for the following. (Ready Mix Concrete (RMC) shall be issued by BHEL free of cost at Batching Plant of BHEL's RMC / Other Agency)					
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, at any depth below finished floor level etc.	CUM	1890			0.3315531797
202	Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc	CUM	218			0.0382426419
203	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc	CUM				
204	Concrete of grade M20 (1 part cement, 1.5 part sand, 3 parts of 20 mm graded aggregate by volume) under floors, paving, plinth protection, pipe encasing etc complete.	CUM	50			0.0087712481
A204	Providing and laying Design Mix Concrete under floors, paving, plinth protection, pipe encasing etc complete with 12 mm nominal size graded aggregate at any depth below finished floor level for the following grades.					
b	M20 Grade	CUM	101			0.0177179212
E204	Extra over item no. 201, 202, 203, 204, A204 & 212 for providing Ready Mix Concrete (RMC) at Batching Plant (Cement shall be issued by BHEL free of cost).	CUM	723			0.2025071862
A205	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under floors, pipe encasement etc at all level below finished floor level, 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 for the following.					
Aa	M 20 Grade	CUM				
a	M 25 Grade	CUM	5609			0.9839586163
b	M 30 Grade	CUM	851			0.1492866433
c	M 35 Grade	CUM				
206	Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in superstructure at all level above finished floor level, 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 for the following.					
a	M 25 Grade	CUM	6975			1.2235891155
E206	Extra over item no. A205, 206, 211 & 213 for providing Ready Mix Concrete (RMC) at Batching Plant (Cement shall be issued by BHEL free of cost).					
Aa	M 20 Grade	CUM	5			0.0013974061
a	M 25 Grade	CUM	3780			1.1888901027
b	M 30 Grade	CUM	272			0.0867750961
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. (Payment of welded wire mesh, chicken wire mesh shall be made separately)					
a	M 20	CUM	15			0.0026313744
b	M 25 -(Design mix)	CUM	15			0.0026313744
Ac	M30 grade	CUM				
212	Screed concrete conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size on the roof at all level or thickness, drains etc complete as per following.					
a	01:02:04	CUM	147			0.0257874695
b	01:01:02	CUM	5			0.0008771248
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, chajjas, 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.					
a	M25	CUM				
b	M30	CUM	57			0.0241855636
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 confirming to IS 9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS 2545 and specification with 20 mm nominal size graded aggregate for following grades. Watertightness is to be ensured including structural grouting if required.					
a	M25	CUM				
b	M30	CUM	17			0.0032527175
E214	Extra over item no. 214 for providing Ready Mix Concrete (RMC) at Batching Plant (Cement shall be issued by BHEL free of cost).					
b	M 30 Grade	CUM	5			0.0021914641

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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	50			0.0069148831
b	Reinforced cement concrete of all grades	CUM	50			0.0101900094
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	180			0.0015513756
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	10			0.0000066307
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	18			0.0006658916
219	Providing and applying curing compound (water based) of approved make where ever required as per manufacturer's specification.	SQM	18			0.0002888043
220	Providing & laying Plum cement concrete 1:3:6 with 75% graded metal of maximum size 40 mm and 25% plums of maximum size 150 mm.	CUM	45			0.0199769608
221	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in sloped surface of canal lining or channel cast in alternate panels with provision of expansion gap/construction joints at all level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete, compaction with special equipments, etc all complete as per specification & drawing for the following.					
a	M20 Grade	CUM				
b	M25 Grade	CUM				
222	Cutting of groove of 10mm X 40mm size with groove cutting machine in concrete paving all complete.	RM	40			0.0002970373
223	Cutting of existing concrete/ RCC slab (total thickness upto 250mm including floor finish & deck sheet if any) inside control room/ pump house or anywhere inside boundary using power tools of (DD2E of HILTI/ BOSCH make or equivalent) with low noise and dust including cutting reinforcements, removing the rubbish within a lead of 1 km, including making good the broken edges/ surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/ supporting at all level, all complete and as directed by Engineer (measurements shall be taken as per cutting surface area).	SQM	200			0.0650251615
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, mass concrete, trenches etc.including chamfering of edges as per drawing, specification and instruction of engineer in charge..	SQM	14103			1.0303736499
301A	Fairface form work with good quality water proof ply wood with film face of required thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	4130			0.3229898124
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 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.	SQM	15564			1.3930230300
302A	Fairface form work with good quality water proof ply wood with film face of required thickness and smooth surface above finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	24917			2.3424739179
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	85			0.0027049318
b	Pockets of depths more than 150mm and upto 300 mm depth	Each	65			0.0034906128
c	Pockets of depths more than 300mm and upto 600 mm depth	Each	85			0.0081712567
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	22			0.0033225937
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	24			0.0052349069
f	Pockets of depths more than 1500mm and upto 2000 mm depth	Each	24			0.0069119925
305 A	Extra over item no.301 and 302 for curved form work for foundations, footings, Columns, beams, walls, trenches, domes, arches etc as per specification.					
a	Extra for Curve Shuttering for Item No. 301/301A	SQM	400			0.0065769171
b	Extra for Curve Shuttering for Item No. 302/ 302A	SQM	600			0.0118538830
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 for the following:					
402	Providing, straightening, cutting, bending, placing in position at all level, binding in position of steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 including cost of reinforcement steel, binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.	MT	1353			14.4654804570
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.	10			0.0005383388
b	16mm Reinforcement bar	Nos.	10			0.0008459593
c	20mm Reinforcement bar	Nos.	10			0.0011854119
d	25mm Reinforcement bar	Nos.	10			0.0016097189



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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 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.	12			0.0001097962
b	16mm dia	Nos.	12			0.0001527519
c	20mm dia	Nos.	12			0.0001925362
d	25mm dia	Nos.	12			0.0002689051
e	28mm dia	Nos.	12			0.0004137002
f	32mm dia	Nos.	12			0.0004773551
g	36mm dia	Nos.	12			0.0006189645
h	40mm dia	Nos.				
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.(Material used for roof treatment shall be CFC & HCFC free. The contractor shall submit documentary proof to GRIHA consultant in support of same).					
502	Providing and laying underbed 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.	SQM	6190			0.1075181290
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),	SQM	6190			0.8716622233
A506 cont...	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.					
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 for mortar shall be provided by BHEL free of cost)	SQM	6190			0.2823428113
A 510	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 provided by BHEL free of cost)	SQM	1238			0.1479035216
511	Providing and applying two coats of bitumen grade 85/25 as per IS 702 ( @ 1.7kg/sqm)with 1% antistripping compound conforming to IS 6241 in foundation, wall, column etc on concrete surfaces exposed to soil / ash including surface preparation etc. all complete.	SQM	23836			0.4772428768
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	100			0.0022806366
513	Providing and mixing water proofing compound conforming to IS:2645 in concrete or cement mortar all complete.	KG	500			0.0075580745
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	100			0.0091093322
B514	Providing and applying Food grade epoxy coating complying to FDA Ttitle 21, Part 175.300 of minimum 400 micron DFT over absolutely dry, clean and dust free surafe of water retaining structures storing drinking water. This coat shall be applied by airless spray technique and shall conform to as per IS 9862 ,complete as per specifications & drawings.	SQM	100			0.0103557184
517	Providing and laying foam concrete blocks in the toilets/sunken slab etc. after water proofing complete as directed by engineer in charge.	CUM	100			0.0294098295
A 517	Providing and laying Cinder / foam concrete blocks in the toilets/sunken slab etc. after water proofing complete as directed by engineer in charge.	CUM	100			0.0294098295
A518	Providing and laying water proofing treatment for wet areas like toilets,kitchen,pantry of sunken slab etc. material like with three coats of Acrylic Polymer Modified Flexible Cementitious Waterproofing Coating material like Danocrete I-protect flex or equivalent make applied @ 0.70 to 0.8 0 Kg/m2 per coat, while embedding 34 gsm polyester scrim armor Armadura IP 34 or equivalent as reinforcing layer between first and second coat, the waterproofing coat applied by stiff bristle brush to build total thickness of 1.3 to 1.5 mm in three coats including reinforcing layer, 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	50			0.0045082983
A519	Providing and laying an angular fillet around parapet wall junction at roof level of min.50mm x 50mm, shall be trowel applied in cement-sand mortar in 1:3 proportion. A latex based bonding agent should be added (10% by weight of cement) and also a glass cloth must be inserted while the angle fillet is being constructed.	RM	300			0.0249812887
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.					

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601	Supplying & installation of bitumen impregnated fibre board confirming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete.					
a	12 mm wide joints.	SQM	50			0.0038585587
b	20 mm wide joints.	SQM	25			0.0028541288
c	25 mm wide joints	SQM	630			0.0873780195
d	50 mm wide joints	SQM				
A601	Supplying & installation of engineering grade polystyrene foam backer rod (circular cross section) at 12 mm depth with minimum density of 22 kg/cum and compressive strength of 0.40 kg/sqm having dia. 25% more than the expansion joint width 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	20			0.0022170195
b	20 mm wide joints.	SQM	40			0.0061948839
c	25 mm wide joints	SQM	100			0.0204331117
Ad	50 mm wide joints	SQM	50			0.0156994045
602	Supplying and installation of Dura board HD100 or its equivalent as approved by the Engineer, as filler material in joints including nailing, installation as per manufacturer's recommendation etc. all complete.					
a	12 mm wide joints.	SQM				
b	20 mm wide joints.	SQM				
c	25 mm wide joints	SQM	512			0.0634695481
d	50 mm wide joints	SQM				
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	150			0.0045744874
b	20mmX25mm	RM	250			0.0114031830
c	25mmX25mm	RM	1191			0.0655382045
d	50mmX25mm	RM	50			0.0050916716
603	Providing and applying polysulphide based sealant conforming to IS:12118 in joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves:					
a	25mmX25mm	RM	50			0.0027513940
b	50mmX25mm	RM	50			0.0050916716
c	20mmX25mm	RM	50			0.0022806366
A603	Providing and applying polysulphide based sealant with VOC content limited to 250 grams per litre as prescribed by GRIHA, 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	564			0.0248285792
b	20mmX25mm	RM	500			0.0289062106
c	25mmX25mm	RM	1000			0.0678893485
d	50mmX25mm	RM	300			0.0369148111
A604	Supplying and filling in position hot applied bitumin sealing compound (Grade A) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete.(The sealant should have VOC content limited to 250 grams per litre as prescribed by GRIHA. All necessary documentation (certificates, manufacturer declarations ) to be provided by the contractor to green building consultant.					
a	10mm X 40mm	RM	20			0.0001219958
b	12mm X 25mm	RM	350			0.0019491007
c	25mmX25mm	RM	450			0.0030432871
A605	Supply and installation of Polystyrene flexible board confirming to IS 4671 ( type-1), 20 Kg/ Cum. as joint filler at joint of concrete including nailing, coating of both faces with coal tar pitch /butimen etc. all complete.					
a	100 mm thick	SQM	100			0.0294894689
b	50mm thick	SQM	25			0.0051248547
A610	Providing and fixing ribbed PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following: (Bulb or Kicker type)					
b	230 mm wide and 8 mm thick	RM	50			0.0018166043
bb	230 mm wide and 10 mm thick	RM	190			0.0086664191
d	230 mm wide and 6 mm thick	RM	300			0.0081147245
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	100			0.0080221068
A615	Providing and fixing 300 mm wide Stainless steel strips (316 GRADE) over expansion joints with minimum lap of 50mm length including stainless steel screws, rawl plugs etc. all complete	Kg	100			0.0080221068
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. Payment Terms:- a) On Fabrication as per Drawing / Engineer In Charge : 60% b) On Completion of RCC pour with embedment : 40%	MT	19			0.2574781678
A701	Extra over item no. 701, 703A and A2008 for preparation of Steel surfaces by Manual Cleaning and provided with Chlorinated Rubber based paint with Primer Coat of Zinc Phosphate of Minimum 50 Micron Dry Film Thickness (DFT). etc. all complete as per specification.	SQM	24			0.0006205502
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. a) On receipt of material (bolts) at site - 60% b) Execution as per item description - 40%	MT	7			0.1109725608
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.	MT				
A	Mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc.	MT	5			0.0143707950

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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, stiffener plates, protective tape, pipe sleeves, templates etc.	MT	5			0.0154567580
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	200			0.0020949293
b	PVC pipes / conduits of all diameters	kg	900			0.0448709647
c	UPVC pipes / conduits of all diameters	kg				
d	Expansion anchor fasteners (galvanised) of HILTI make(HRD Universal Fastners) or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:					
i	8mm Dia	Nos	20			0.0001379001
ii	10mm Dia	Nos	20			0.0001564708
iii	12mm Dia	Nos	20			0.0001776844
iv	14mm Dia	Nos	20			0.0002280741
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	HST3 M8	Nos	20			0.0004428659
ii	HST3 M10	Nos	20			0.0006444067
iii	HST3 M12	Nos	20			0.0010368933
iv	HST3 M16	Nos	20			0.0018536986
v	HST3 M20	Nos	20			0.0037789901
vi	HST3 M24	Nos	20			0.0062691668
f	Chemical Expansion fasteners (galvanised)of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with anchoring rod,nuts,washers,chemicals all complete,etc:					
i	HAS-E5.8 M8	Nos	20			0.0009228732
ii	HAS-E5.8 M10	Nos	20			0.0010793440
iii	HAS-E5.8 M12	Nos	20			0.0013365734
iv	HAS-E5.8 M16	Nos	20			0.0022329237
v	HAS-E5.8 M20	Nos	20			0.0037127065
vi	HAS-E5.8 M24	Nos	20			0.0049935677
706	Supply and installation of approved 25mm thick vibration damping resilient pads on/around foundation of vibrating equipment and at other locations all complete.	SQM	10			0.0024198817
707	Providing, laying and fixing rails (52kg/rm) and guide rails in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	MT				
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.					
801	Providing & grouting with cement slurry mix of approved ratio using pressure pump for water retaining concrete structures as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at maximum 500 mm centre to centre spacing, cutting of nipples after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing.	SQM	20			0.0016468485
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.	CUM	5			0.0139796358
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).	CUM	5			0.0135825065
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 ConbextraGP-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	6			0.0336298874
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			0.0307504321
806	Providing Chemical (epoxy) injection grouting with pressure pump for water retaining concrete structures conforming to IS:6494, including fixing nozzles, cost of approved chemical, admixture, curing etc. all complete .Payment shall be made as per the consumption of chemical grout.	Kg	20			0.0043067339
900	DOORS & WINDOWS: Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, preparation of working drawings etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
A903	Providing, fitting and fixing solid core flush door shutter as per IS 2202 part II, 35mm thick homogenous particle board bonded with BWP type phenolformaldehyde synthetic resin, partial board core conforming to IS 3087 type I, 35x12 mm thick teakwood beading all around including preparation of working drawings. godrej or equivalent make mortice lock with handels on both sides,approved ISI mark anodised fittings like door stopper,300mm long tower bolts,16x300mm long aldrops ,125mm long handles on both sides etc. butt hinges, sliding bolt, knobs, (all fittings shall be anodised aluminium color dyed), finish flat oil paint confirming to IS: 137 over primer, screws etc. all complete as per drawing, specification and instruction of engineer in charge. with commercial faces and teak wood edges. (Finish painting paid separately)	SQM	66			0.0363006462
904	Providing and fixing single or double steel door shutters with 45 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, air tight, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	20			0.0203349724
A904	Providing and fixing single or double steel door shutters with 35mm (min) thk flush design shutter as per IS 4351 comprising of two outer sheets of 18 gauge(1.2mm min.) steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge (1.0 mm) 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	412			0.4337598795

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905	Providing and fixing single or double steel door shutters with 18 gauge M.S. sheets shutter presenting a flush surface on the outside and inside stiffened with semitubular edge and central stiffening rail which shall convey the lock including fixtures, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	5			0.0054981099
B905	Providing and fixing electrically operated, self operable/closing anodized extruded aluminium doors (single or double shutter) conforming to IS:1948, IS:1949 fabricated from extruded sections of HINDALCO/JINDAL or equivalent make having minimum 3mm wall thickness as per IS:1285, IS:733 and anodized and electro color coating of required shade as per IS 1868 ( minimum anodized coating of grade AC15 ). fixed with rawl plugs, expansion fasteners,SS screws / fixing clips necessary filling of gaps at junctions, at top, bottom & sides with required PVC / neoprene felt for bi-metallic protection etc. Glazing shall be clear float glass of 6mm thickness including snap fit type beading, concealed screws, fixtures, Godrej or equivalent make Mortice lock with handle on both sides, etc all complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required. Weight of aluminium section only shall be measured. (Glazing shall be paid separately)	SQM	10			0.0209396184
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	333			0.0284843607
907	Providing and fixing fire proof steel doors (single or double shutter) with 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, TAC requirements and as per specification. Minimum ratings shall be 2 Hrs.	SQM	101			0.1155492260
A907	Acoustic Wooden Fire Door : Providing of Single / Double Leaf both side laminated finish fully insulated wooden fire door of 120 min. fire rating, of min.50mm thickness, comprising of 75mm x 50mm hardwood internal timber frame work, with infill of 96 kg/m3, ceramic fiber blankets, coated with FR intumescent coating on both sides for insulation. The coated insulation shall be sandwiched between 12mm thick, Matrix Mineral Engineered Boards on both sides (edge to edge on internal Hardwood frame) and clad with 3mm ply on both sides, with 55mm x 14mm teak wood lipping all round the shutter the main door frame will be made out of Hardwood of section 120 x 70mm and cotaed with Fire reatrdent Primer.The rebate shall be of 20mm x 57mm in Door Frame to accommodate the shutter in frame.Both frame and shutter shall be fitted with fire & smoke intumescent seal of size 20 x 4mm on all the three sides except bottom.The pasting of the ply/veneer/laminate should be done using automatic machine and should be free from any nails or perforations. The doors shall be provided with Pyroswiss Extra" or equivalent vision panel of 300mm x400mm. Test certificate for fire rating from International testing facility shall be provided by its relevant manufacturer. Provisions/ reinforcement for fixing all fixtures shall be built in on the doors prior to the supply.The rate should be inclusive of all fire rated hardware door handle 32X1200 H shape, door closer, dead lock, etc complete as per manufacture spec. (The rate should be inclusive of door frame)	SQM	18			0.0582674076
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	130			0.4601387866
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 of fitting wherever required including cost of PVC/neoprene gasket, all complete as per drawing, specification and instructions of engineer in charge (Glazing and panelling shall be paid seperately).Weight of aluminium section only shall be measure.	Kg	28736			2.4580378013

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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 7.5 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 conforming 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.	SQM	4190			2.3234649038
Cont. A910	Installation of ACP Coving/facia at terrace level sealing the top gap of the parapet wall and ACP Panel shall have GI stiffeners below with required aluminium grid work with necessary MS HDG / aluminium alloy brackets & SS fasteners.2nd barrier of 1mm thk GI sheet laid continuously below the copping to seal the parapet wall. Overlap of GI sheet shall be properly sealed with weather sealant, All shade approval shall be as per Architect's Approval.as per approved sample from Alucobond Plus, Aludecor,Alpolic or equivalent. The system shall be designed to withstand a wind pressure of 200kg/Sqm or as per design requirement and shall be fixed to the Masonry/RC walls or aluminium frame with necessary clamps, brackets and anchor fasteners etc. All clamps and brackets shall be Hot dip galvanized minimum 80 microns thick and shall conform to IS: 4759-1996. The extruded aluminium section shall be anodized in approved colour with a anodic coating of minimum 20 microns. Extruded section shall be 6063 T5 or T6 alloy conforming to ASTM B221. Any other festering straps, nuts, bolts, rivets, washers, etc. shall be in stainless steel SS316 grade. EPDM gaskets, open cell polyethylene backer rods, weather sealant etc. shall be provided as per requirement. Item shall include aluminium base frame with all fixing arrangements to wall/RC members, fastening material and hardware(festering straps, nuts, bolts, rivets, washers etc.), EPDM gaskets, open cell polyethylene backer rods, weather sealant, scaffolding, approach to all height, material handling, transportation, labour, T&P, preparation of working drawings etc.all complete as per drawing, specification & instructions of engineer in charge. Measurement of payment shall be outer finished area of ACP panel.The contractor shall provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in maufacturer of ACP.					
911	Providing and fixing of door closers as per specification ,of approved make & quality all complete of following type :					
a	Over head hydraulic door closures as per IS 3564	Each	10			0.0025908205
b	Floor mounted Hydraulic door closers as per IS 6315	Each	10			0.0037460815
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	6468			0.2670928680
913	Providing and fixing in position rolling shutter of hot rolled double dipped galvanised steel lath section of 18 SWG tested mild steel strips at 75mm rolling centres interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation including wire springs, top cover, primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.(partly coiled and lath/full lath).					
b	Mechanically Operated	SQM				
c	Electrically operated	SQM	308			0.5450874857
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 grided (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).					
b	Mechanically Operated	SQM	35			0.0267360869
c	Electrically & Mechanically operated	SQM	150			0.1275113599
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.					
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	13			0.0036543609
f	4 mm thick ground glass	SQM	20			0.0039757689
g	6 mm thick tinted heat reflecting type toughened glass	SQM	100			0.0275800110
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-value 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	14			0.0057324043
Ah	6 mm thick clear toughened glass conforming to IS 5437	SQM	1153			0.3852672804
AhA	6 mm thick reflective toughened glass conforming to IS 5437. Reflective toughened glass, with technical characteristics: Solar factor 45% or less, U-value less than 5.7 W/m2.K, VLT min 40% shall be used.Glass parameters may varies as per approved sample. The glass to be used should be from the manufacturers of glass like Saint Gobain (India) or ASAHI (India) or equivalent. The glass should be free from distortion and thermal stress.	SQM	826			0.3723884980
AhB	8 mm thick clear toughened glass	SQM	384			0.1564170590

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AhC	8 mm thick clear toughened fire resistant glass	SQM	200			0.3539529128
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	465			1.7007437459
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	370			1.3969341625
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	229			0.8916073873
m	6 mm thick clear toughened safety glass	SQM	80			0.0248857214
o	10 mm thick clear toughened safety glass	SQM	37			0.0208017030
916	Supplying and fixing weather stripping of approved make and quality to doors as per instructions of engineer in charge and specification complete.	RM	300			0.0083136460
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	50			0.0110121240
918	Providing and fixing steel louvered window with ISMC 100 frame all round including verticals with 18G pressed steel louvers, painting etc. all complete.	SQM	25			0.0109292696
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	25			0.0159844840
A919	Design, Supply, fabrication, detailing and installing in position and testing Galvanized MS SLIDING doors of approved size and design n, made out of channels, joists, angles, flats, plates, pipes, CI bracket, tubular sections (conforming to IS: 1161), bracings, diagonal braces of 50X50X6 angle iron, locking arrangement, tempered steel pivot, guide track of MS Tee, roller trolley, Galvanised/SS Wheels of required dia as per opening with ball bearings, SS pin and axle with lubrication point, Galvanised adjustable upper guide brackets with guide post constructed from a steel square hollow section of required dimension of 50 x 100 x 3mm profile, bronze aluminium ball bearing arrangements, paintings with one coat of zinc chromate/red lead primer and two coat of enamel paint, fixing to post etc. all complete as per specification, drawing and as directed by Engineer.	SQM	30			0.0210987438
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.	SQM	205			0.1400429212
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	50			0.1681276336
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 other 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	15			0.1061858738

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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.	SQM	20			0.2123717477
Cont. A923	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 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	50			0.0859347378
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	100			0.0252463994
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	50			0.1740268488
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 accomodate 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	SQM	50			0.1710772412
Cont..A927	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,Nauvair,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.					



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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)1 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	20			0.0936259491
A929	Providing and fixing frameless fully glazed (single/ double leaf) doors and Mullion-less glass partition 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			0.1173544451
A930	Providing and fixing motorized curtain (operated with remote control also) mechanism at all heights.	SQM				
A931	Provide & Install SS Logo/Signature ICON of NTPC as per Guidelines of "Client" complete in all aspects. Logo to be fabricated in Sainless 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				
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				
1000	BRICKWORK: Brickwork masonry including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding etc. at all levels as per specification, drawings and as directed by engineer - in - charge.					
1001	Providing brick work in cement mortar 1:6 (1 part cement 6 parts coarse sand) in walls, chambers etc. in thickness varying from 230mm to 460mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting.					
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	100			0.0733124971
1002	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc. in thickness 230mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.					
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	1925			1.7706553749
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	200			0.1977011073
A1002	Providing Autoclave Areated concrete blocks blocks having dimensions of 625 mm x 250 mm in cement mortar 1: 6 ( 1 part Cement 6 parts coarse sand having modulus of fineness 1.1 & suitable plasticizer ) conforming to I.S. :2185(part-III) in walls, chambers etc. in thickness varying from 100mm to 300 mm at depths, places and position above plinth, including horizontal and vertical joint thickness approximately 10 mm , raking out joints, curing, scaffolding etc. complete excluding plastering and painting all complete as per specification and drawing. (BHEL will supply cemen free of cost for cement sand moratr as per TCC)	CUM	2400			2.3103582634
1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm at all heights, 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.					
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	235			0.0265484978

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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	2030			0.5273418322
1004	Providing brick soling including spreading of earth, ramming, watering including 25mm thick cushion of sand complete but excluding excavation and disposal of surplus earth (excavation and disposal of surplus earth shall be measured under applicable item). Using brick on edge.					
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	40			0.0035323557
b	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 50 kg/cm2(including cost of cement for brick making)	SQM				
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	SQM	40			0.0038505829
d	Using burnt clay bricks of class designation 5.0 of nominal dimension	SQM				
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	20			0.0046276040
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 separately) (Cement shall be issued by BHEL free of cost as per TCC)	CUM	5			0.0037133613
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	5			0.0001160199
1008	Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar 1:6 etc. complete.	CUM	10			0.0026532546
1009	Supply and placing in position mild steel wire fabric 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	5			0.0001392274
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	200			0.0105015470
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 all level, removal of debris upto a lead of 1 km including loading, unloading, transportation etc. all complete.	SQM	20			0.0024212031
A1012	Providing Autoclaved Aerated Concrete (AAC ) block masonry with blocks having dimensions of 625 mm x 250 mm. thickness ranging from 100 mm to 300 mm conforming to IS 2185(part-III) .The jointing cement sand mortar in the composition of 1: 6 (Cement: sand) shall be used with suitable plasticizer(optional). Sand having modulus of fineness 1.1 shall be used. The horizontal and vertical joint thickness shall be approximately 10 mm. In case of partition walls (100 mm /125 mm thick) the joint reinforcement i.e. 1 number of 6-8 mm diameter bars shall be placed at every alternate course to be anchored properly with the main structure. All other structural requirements like stiffening of masonry, joint reinforcement etc. in the AAC masonry work strictly be carried out as per instructions laid down in IS 6041, IS 1905 etc all complete as per specification. (BHEL will supply cemen free of cost for cement sand mortar as per TCC)	CUM	3153			2.3178041507
A1013	Providing and fixing 190mm x 190 mm x 80 mm glass bricks of approved make and design with white CM 1:2 ( 1 white cement : 2 sand). Two numbers of 5 mm thick GI wires to be passed through PVC spacers in each joint horizontal as well as vertical by drilling holes in surrounding surface (brick or RCC) and filling the same with Hilti or equivalent chemical (rebaring). The PVC concealed spacer (with provision for passing the 2 no. GI wires in horizontal and vertical direction) shall be provided to maintain grooves/spaces for GI wire and white cement mortar at the junction of two glass bricks. The sample of the glass brick shall be got approved by Architect. The glass bricks shall be fixed with placing GI wires vertically as well as horizontally after passing through the spacer and having minimum lap length of + 200 mm as per the site conditions at all the places, heights and shapes, etc. complete, as per the details and drawing to the satisfaction of Engineer-in-charge. Joints along the periphery of glass bricks to be filled with approved make and color weather silicone sealant of DOW corning 789 or equivalent	SQM	75			0.0885378701
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, before starting of masonry work.					
b	50mm thick	SQM	472			0.0201525875
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.	SQM	13333			0.5073827484
1202	Providing 12mm thick plaster inside the building/boundary wall in cement mortar 1:6 on walls finished to a smooth finish as per specification all complete.	SQM	30623			0.9461089129
1203	Providing 12mm thick plaster in cement mortar 1:6 on walls with rough finish all complete.	SQM				
1204	Providing 6mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.	SQM	10442			0.2810666789
A1206	Providing and making decorative plaster of all types and design on walls, ceilings, arcs, columns with various thickness upto 18 mm including finishing all complete.	SQM	200			0.0087387263

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1207	Forming groove of uniform size from 12X12 mm upto 25X15 mm in plastered surface as per approved pattern, using wooden battens nailed to the under layer, including removal of wooden battens, repair of the edges of plaster panel and finishing the groove etc. complete as per specification, drawing and the instructions of engineer in charge.	RM	2000			0.0100782193
A1207	Providing drip coarse 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	1500			0.0226742236
A1208	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	1200			0.0146380767
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 enginner in charge (chicken wire mesh to be paid separately)	SQM	100			0.0064309705
1209	Ruled pointing in masonry in Cement Mortar 1:3 (1 cement and 3 fine sand) including raking out joints, curing etc. complete.	SQM	400			0.0091225464
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	100			0.0004680437
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	15194			0.1940188904
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	14525			0.2625079389
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 conforming 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	90			0.0038772710
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	200			0.0062585954
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	1000			0.0430807889
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	50			0.0017986707
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	318			0.0082222908
1309	Two or more coats of fire resistant transparent paint (@3.5 litre per sqm 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 seperately.	SQM	50			0.0020645483
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	1997			0.0212901403
1312	Providing and applying 3 coats of water proof cement paint of approved make and color on exterior surface at all heights including material, labour, scaffolding, curing etc including primer coat complete as per specification.	SQM	15755			0.2055694157
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	30			0.0032300327
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	1006			0.1316581471

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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	1000			0.0421652307
1316	Providing and applying 2 mm thick plaster of paris 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	2500			0.0349381021
1317	Providing and applying 2 mm thick white cement 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	15368			0.2037654817
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	12326			0.2516912937
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. (The sealant should have VOC content limit less than 250 grams per litre as prescribed by GRIHA. All necessary documentation (certificates, manufacturer declarations ) to be provided by the contractor for green building documentation ).	SQM	8398			0.1948669663
1322	Providing & fixing GRC Tile of size 250mmx75mmx15mm conforming to IS:1237 in approved design, size, texture, thickness, pattern and color on walls upto any height as per the architectural drawing & approval, including necessary scaffoldings required for installation. The Tile shall conform to IS :1237-1980. The composition of tiles should be '43' Grade White Portland cement, reinforced with Alkali Resistant Glass Fiber and the pigmentation should be done with exterior grade synthetic inorganic iron oxide pigments. The pigmentation should be homogeneous and in accordance with British Standards BS EN 12878:1999. The other additives should be fine washed graded quartz, super plasticizers and integrated water proofing agents and others. The tiles should be produced with high vibration technology and should have compressive strength equivalent to M-40 Grade@28 days. The top surface of the tiles should be sealed with acrylic lacquer resulting in surface water absorption of tiles, less than 1% and water absorption by 24 hrs immersion method, less than 8%. The tiles should be applied on a rough plaster of cement mortar 1:3 (1 cement: 3 coarse sand) and the fixing of tiles should be done by tile adhesive as per manufacturer's laying instruction. Installation to be done by specialized vendor in strict supervision if required as per the manufacturer's specification.	SQM	1746			0.3228512123
A1322	Providing, fixing & Designing GRC Tile of size 250mmx75mmx15mm conforming to IS:1237 in approved design, size, texture, thickness, pattern and color on walls upto any height as per the architectural drawing & approval, including necessary scaffoldings required for installation. The Tile shall conform to IS :1237-1980. The composition of tiles should be '43' Grade White Portland cement, reinforced with Alkali Resistant Glass Fiber and the pigmentation should be done with exterior grade synthetic inorganic iron oxide pigments. The pigmentation should be homogeneous and in accordance with British Standards BS EN 12878:1999. The other additives should be fine washed graded quartz, super plasticizers and integrated water proofing agents and others. The tiles should be produced with high vibration technology and should have compressive strength equivalent to M-40 Grade@28 days. The top surface of the tiles should be sealed with acrylic lacquer resulting in surface water absorption of tiles, less than 1% and water absorption by 24 hrs immersion method, less than 8%. The tiles should be applied on a rough plaster of cement mortar 1:3 (1 cement: 3 coarse sand) and the fixing of tiles should be done by tile adhesive Unistone, Luxture or equivalent as per manufacturer's laying instruction. Installation to be done by specialized vendor in strict supervision if required as per the manufacturer's specification. The colour, texture and pattern finish shall be as finalized by Architect engineer.	SQM	1200			0.2218908676
A1323	Providing, Designing & fixing GRC in approved design, customized Screens and Dome in shapes, size, texture, thickness, pattern and color upto any height as per the architectural drawing & approval, including necessary scaffoldings required for installation. Glass Reinforced Concrete (G.R.C) Screens shall be casted with 'Spray Mix' concrete design in approved size, pattern, thickness of 50mm on the outer Border & 25-30mm for Internal member and shade. The Screens should be made from '53 grade' White Portland Cement manufactured by 'JK Cement' or 'Birla white', White Quartz fine graded sieved Silica Sand, Alkali Resistant Glass Fibre manufactured by 'NEG Japan, Owen Corning 'Saint Gobain' or equivalent, Super Plasticizers manufactured by 'Karochem' or equivalent, Polymers manufactured by 'Nova Polychem' or equivalent and UV resistant Synthetic inorganic pigments shall be used for pigmentation manufactured by 'Phenochem industries or equivalent. The Screens casting shall take place with layering methodology using- Direct Power Spray machines. The GRC Screens flexural strength average L.O.P shall be above or equivalent to 6 N/mm <sup>2</sup> and M.O.R shall be above or equivalent to 12 N/mm <sup>2</sup> for tests done on 28 days cured samples. Installation to be done by specialized vendor in strict supervision if required as per the manufacturer's specification. The fixing of Screens shall be done using 'Dry fixing' method onto structural support members i.e. R.C.C, Brick work, MS Framework. SS / MS Galvanized CLAMPS & PINS also if required fasteners to be used of Wurth, Hilti & Fischer or equivalent. All cast in socket to be epoxy primer coated. Electrodes to be used of advani, mangalam, esab or Victor brand or equivalent. GRC Customized Screens, dome shall be of Unistone make or equivalent. Installation to be done by specialized vendor in strict supervision if required as per the manufacturer's specification and as directed by Engineer. The colour, texture and pattern finish shall be as finalized by Architect engineer.	SQMT	300			0.3276320323
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. (Cement shall be provided by BHEL free of cost as per TCC)					

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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 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):	SQM	7246			0.5418874092
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):	SQM	1000			0.0727951359
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 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. (Quoted item rate shall be inclusive of providing glass joint strips).	SQM	100			0.0063910918
A1402	Providing and laying 25 mm thick heavy duty cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates) flooring with non 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 well graded) and top layer of non metallic concrete of mix 1:2 (1 cement hardner mix with approved quality hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete as per specification. (Quoted item rate shall be inclusive of providing glass joint strips).	SQM	100			0.0061922882
A1403	Providing and laying precast polished heavy duty cement concrete tiles (Carborundum/quartz chips topping pigment content is 3.5 kg per 50 Kg of white Cement) of size 300X300X25mm 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 for mortar will be provided free of cost by BHEL)					
a	Laid in floors	SQM	423			0.0619774559
b	Laid in skirting	SQM	10			0.0020512633
A1404	Providing and laying interlocking M35 Grade concrete blocks in paving with approved specified colours, pattern, sample, different texture, 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)					
Ab	80mm	SQM	3434			0.3879469847
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 for mortar will be provided free of cost by BHEL)	SQM	331			0.1395243459
A1412	Providing and laying 20mm thick Mirror polished (6 layers of polish)/Flame finish (making top surface rough by burning / shot blasting) Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 30mm thk of 1 cement : 1.5 sand : 3 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 spread over the surface with fine joint finished including pigments, curing, grinding, moulding, cornice, granite polishing etc. all complete. (Cement for mortar will be provided free of cost by BHEL)	SQM	567			0.1948719228
1414	Providing and laying polished Granite stone 18-20mm thk in skirting and dado with 6mm thick projection from adjacent plaster minimum 12 mm thick cement mortar bedding of 1:3 (1 cement : 3 sand) with thick cement slurry @3.3kg/sqm spread over the surface with fine joint finished including cutting brickwall upto the required depth, edging, finishing etc. all complete. including mortar ,cement slurry ,pigments, curing, grinding,moulding, granite polishing etc. all complete. (Cement for mortar will be provided free of cost by BHEL)	SQM	10			0.0042510453
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 for mortar will be provided free of cost by BHEL)					
a	7mm thick tiles In flooring	SQM				
b	10mm thick tiles In flooring	SQM	1373			0.1965318129
c	7mm thick tiles In skirting and dado upto specific height	SQM				
d	10mm thick tiles In skirting and dado upto specific height	SQM				
A1416	Providing and laying vitrified ceramic tiles of polished variety of size 600x600 with Matt/ Glazed from reputed / approved manufacturer, complete including underbed of cement mortar 1:3 average 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 for mortar will be provided free of cost by BHEL)					
a	7mm thick tiles In flooring	SQM				
b	10mm thick tiles In flooring	SQM	63			0.0118202717
c	7mm thick tiles In skirting and dado upto specific height	SQM	5			0.0003976935
d	10mm thick tiles In skirting and dado upto specific height	SQM				

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B1416	Providing and laying heavy duty Antiskid full body vitrified tiles 18-20 mm thick of size 600x600mm in flooring, of approved shade, colour, pattern and make from reputed / approved manufacturer as Simpolo,Endura,Varmora or equivalent, complete including underbed of cement mortar 1:3 minimum 30mm thick for flooring with neat cement slurry @3.3Kg/sqm etc.all complete. Full body Vitrified Tiles shall be laid on properly laid levelled floor, with joints 3 to 5mm wide & 8 to 10mm deep & shall be filled with approved Epoxy Grout mix of 0.70kg of organic coated filler of desired shade (0.10kg of hardener and 0.20kg of resin per kg). Full body Vitrified Tiles shall have water absorption less than 0.5%, Modulus of Rupture more than 38N/mm2, Breaking strength more than 7500N, Moh's scale more than 6, Abrasion resistance less than 144 mm3 and coefficient of friction more than 0.4. Vitrified Tiles shall generally conform to IS: 15622. All complete (including cost of epoxy grouting) as per engineer incharge. (Cement for mortar will be provided free of cost by BHEL)	SQM	300			0.1238835195
D1416	Providing and laying matt finish vitrified ceramic tiles of polished variety of size 600x600 / 800x800 from reputed / approved manufacturer, 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, Luxtare or approved equivalent in approved colour to match colour of tile etc. all complete for following. (Cement for mortar will be provided free of cost by BHEL)					
a	9.0 mm (min.) thick tiles In flooring	SQM	1108			0.2196403123
b	9.0 mm (min.) thick tiles In dado	SQM	10			0.0020883930
E1416	Providing and laying digitally glazed vitrified ceramic (with recycle content) tiles and matt finished of size 600x600/800x800/1000x1000 from reputed / approved manufacturer, complete 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 of 0.7kg of organic coated filler of desired shade (0.1 kg hardner and 0.3 kg resin per kg) or approved equivalent in approved colour to match colour of tile etc. all complete for following. (Cement for mortar will be provided free of cost by BHEL)					
a	9.00 mm (min.) thick tiles In flooring	SQM	4408			1.0082378358
b	9.00 mm (min.) thick tiles In dado	SQM	638			0.1521889451
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 for mortar will be provided free of cost by BHEL)					
b	9.00 mm (min.) thick tiles In flooring	SQM	400			0.0840128476
d	9.00 mm (min.) thick tiles In skirting and dado upto specific height	SQM	30			0.0066749148
C 1417	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 for mortar will be provided free of cost by BHEL)					
a	10 mm thick tiles In flooring	SQM	681			0.1679548054
c	10 mm thick tiles In skirting and dado upto specific height	SQM	40			0.0102735541
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.	SQM	106			0.0605779414
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. All tiles to be used should be with appropriate % of recycled content.					
a	300X300 mm	SQM	516			0.0652042004
b	600X600 mm	SQM				
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.	SQM	523			0.1014560447
A1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12mm thick ( to be laid in layers of 6mm each). The tiles shall be applied with 6mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing, pointing joint of bedding 20mm deepx6mm wide with epoxy/Furane morteret.c. all complete for following thicknesses. The tiles should be abrasion resistant & durable.					
Aa	12 mm thick	SQM	25			0.0069778867
a	20mm thick	SQM	963			0.3215244017
b	38mm thick	SQM	63			0.0287947420
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 12 mm 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	200			0.1448156613
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 18 mm 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	200			0.1104555797

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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 marbel nosing, pigments, curing, grinding, making corners, granite polishing etc. complete.	SQM	2030			0.7770961280
1426	Providing and laying marble skirting /dado (Aranga white or approved shade/color /design) equivalent of minimum 20mm thickness projecting 6mm from adjacent plaster all complete including underbed 20mm cement mortar 1:3, with thick cement slurry 3.3kg/sqm spread over the surface scaffolding etc. all complete.	SQM	100			0.0353104606
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,					
a	5mm thick	SQM	15			0.0019312733
b	7mm thick	SQM	3129			0.3953952383
A1428	Providing and laying 2mm thick heavy duty antistatic PVC(Virgin) tile in flooring / skirting of approved shade,as per IS:3462 and laying as per IS:5318 all complete as per specifaitions.	SQM	84			0.0036866744
1430	Providing and fixing dividing strips in joints of cast in situ floorings at various elevations, finishing, all labour, material etc. complete as per drawing, specification and instructions of engineer in charge.					
a	Glass strips 40 mm wide and minimum 6 mm thick	RM	1500			0.0105407177
b	Aluminium strips 40 mm wide and minimum 3 mm thick	RM	1500			0.0202868112
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	1800			0.4716181875
B1431	Providing and laying minimum 50 mm thick wooden flooring, consisting of 37 mm thick hardwood planks, finished with 11mm thick wooden flooring of greenlam, pergo or equivalent with min. plank size 193x1195mm (material class shall be 34 as per EN13329) of approved color and shade, over 2 mm expanded polystyrene foam and polythene sheet under laying all complete as per manufacturer specification.	SQM	38			0.0277511621
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	50			0.0073259404
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 > 38NCM2, MOH Hardness >7 & Breaking strength > 4000 N. Tile confirming 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	100			0.0202739509
A1434	Providing and fixing carpet flooring over cement concrete floor. The carpet shall be of tile/roll form, machine/hand made tupled 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				
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 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	1626			0.5870840271
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	200			0.0722120575
1500	ROOFING / SIDE CLADDING: Roofing / side cladding work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
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.					
c	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	250			0.0268508680
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 0.6 mm dia and 25 mm mesh GI wire netting, fixed at various elevations with rawl plugs including clips but excluding cost of insulation.	SQM	26			0.0022236360
1516	Providing and fixing non metal opaque PVC sheet similar to ONDEX roofing or equivalent including all fixing accessories.	SQM	200			0.0311070338

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1518	Supply & fixing FRP (fibre reinforced plastic) sheets 2 mm thick including GI hooks/ J or L bolts, nuts, washers, bitumen washers etc. complete including overlap 100mm .	SQM	35			0.0073372079
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.					
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. Payment Terms:- a) On receipt of material at site - 60% b) Execution as per item description - 40%	SQM	3630			0.6885843019
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 (silhouette T profile) 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 MS 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. The contractor to provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in manufacturing of board to be used) Payment Terms a) On receipt of material at site - 60% b) Execution as per item description - 40%	SQM	3406			0.7591404523
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	2555			1.1979407907
A1604	Providing, fixing and laying permanently colour coated Designer metal aluminium false ceiling of approved colour with stove enamel finish of approved make in LINEAR, RECTANGULAR, SQUARE, CURVILINEAR , OPEN GRID type etc.as per detail engineering drawing , with corrosion resistance aluminium alloys panels of minimum thickness MIN. 0.6mm. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures etc.Suitable M.S. channel (minimum MC 75) grid 1200 mm C/C maximum shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. The work to be complete as per specifications, drawings and direction of engineer. (Structural steel works for platform for movement is separately payable under relevant items of BOQ)	SQM	200			0.0589258450
B1607	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).The work to be complete as per specifications, approved drawings and direction of engineer. Payment terms - a) On receipt of Gypsum board false ceiling at site - 50%; b) On completion of erection & fixing - 50%.	SQM	795			0.2854615022
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 min.0.5 mm thick perforated with acoustic fleece, galvanised as per IS 277 including, along with galvanised supporting steel members exposed faces of galvanised member to be prepainted with regular modified polyester coating / super polyester coating minimum 20 DFT, to form panels of specified size for tile type panels and roll formed stove enamelled 0.6 mm thick steel carrier, for fixing of lineal type panels by clip on arrangement, suspended from RCC slab / structural steel or catwalk way steel channel grid above with 4 mm (minimum) galvanised wires (rods), with special height adjustment clips, providing angle section of minimum 25 mm leg width along the perimeter of ceiling, including all labour, material, supporting grid system (members minimum 0.8 mm thick and galvanised as per IS 277) anchor fasteners for making suspension arrangement from RCC, providing openings for AC ducts, return air grills, insulation light fixtures, etc., all complete.( Materials for structural platform grid for movement made up of MS Channels/ Beams / Angles shall be supplied by BHEL and shall be paid under ST No 2301)	SQM				



ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
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 prepaigned 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	200			0.1386957410
A1611	Providing , Design and fixing Aluminium ceiling trap door in the false ceiling matching with false cealign material with min. 2mm thick powder coated inner and outer aluminum frame, corner fitting plate with stainless steel of 2mm thick fixture are with self-drilling screws and sealing strip of 6mm width and 6mm thick. Hinge operated through Push-lock mechanism.	SQM	10			0.0062797618
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 acoat or primer all complete.Galvanising shall be as per IS: 4736. The minimum mass of zinc coating shall not be lessthan 360 gms/sq.m. as per IS:6745. The zinc coating shall be smooth and shall be subjected to testing as per IS: 2633, for uniformity of coating. The zinc coating shall be free from all defects as per IS: 2629.	RM	1795			0.4557904928
C1704	Providing and fixing galvanised MS down take pipes of 100 mm dia- Medium quality as per IS:1239 (part-I)with welded joints and provided with roof drain heads and complete with shoes bends, junctions, sockets, adapters, brackets and finished with anti corrosive painting over a coat or primer all complete.Galvanising shall be as per IS: 4736. The minimum mass of zinc coating shall not be lessthan 360 gms/sq.m. as per IS:6745. The zinc coating shall be smooth and shall be subjected to testing as per IS: 2633, for uniformity of coating. The zinc coating shall be free from all defects as per IS: 2629.	RM	203			0.0490967731
1705	Providing and fixing UPVC down take pipes of 110mm diameter- Class 3 as per IS:4985 all complete.	RM	50			0.0044684785
1706	Providing and fixing UPVC down take pipes of 160mm diameter- Class 3 as per IS:4985 all complete.	RM	50			0.0065569187
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, other underground structures, etc. 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 as per drawings/specifications. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	3642			0.8537943994
B1802	Providing and Filling in trenches, plinths, area paving, grade slab, other underground structures, etc. with graded stone aggregate of size range 40 mm downwards nominal size rammed, consolidated in layers not exceeding 200 mm in thickness including breaking of stone boulders to required sizes, filling the interstices with selected moorum/fine sand and compacting to 85 % of original volume of stone stack for all lifts etc. all complete as per drawings/specifications. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	500			0.1172150466
1802	Supply and laying approved quality Stone aggregate 40mm size in transformer yards.	CUM	200			0.0873279705
1803	Supply and laying approved quality rounded pebbles / gravels of 40mm size in transformer yards.	CUM	77			0.0256738146
1804	Providing and fixing weep holes in Retaining wall, drains, etc consisting of 100 mm dia HDPE pipe sleeves with single side covering for the pipe mouth with galvanised welded wire fabric of 20 mm sq. opening all complete.	EACH	50			0.0012463862
1807	Anti termite chemical treatment of soil with Chlorpyriphos/Lindane E.C. 20% with 1% concentration conforming to IS:8944 and as per IS 6313 all complete. (Plinth area of building at ground floor only shall be measured for payment).	SQM	2298			0.0487542246
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 provided by BHEL free of cost)	MT	50			0.0719534359
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).	each	40			0.0580241617
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).	NO	40			0.0450509380
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)	NO	40			0.0038559158
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	40			0.0022382094
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.	EACH	40			0.1383881795
1814	Construction of below ground earthing system test pits as per drawing/ sketches including brickwork, plaster, concreting, reinforcement, formwork, providing & fixing GI strips/pipes, GI wires, covers etc as per drawing & specification including associated earthwork.	EACH	40			0.0997495941
1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	100			0.0014585220
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	75			0.0063746035
1823	Providing and laying cinder filling in the toilets, roads,etc complete as directed by engineer in charge.	CUM	4			0.0011244187

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A1823	Providing and laying cinder filling or foam concrete blocks filling in sunken slabs of toilets or where ever light weighted filling material required, etc complete as directed by engineer in charge.	CUM	10			0.0028110468
1827	Anti weed chemical treatment of soil with suitable chemical pertaining to the types of weeds found in the vicinity including providing anti-weed/ soil sterilization test certificate, performance guarantee of three years etc. all complete.	SQM	500			0.0003315359
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 or equivalent to 8% to 10% by volume including compaction. Separation layer of one tack coat @ 1Kg/sqm shall be spray after first layer of 30mm and sand shall be sprayed on the final surface of 20mm @ 0.5 cum/100 sqm. etc. all complete as per specification ans as guided by engineer-in-charge.	SQM	50			0.0041105142
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	50			0.0040839677
1851	Providing and fixing GI strips minimum 1.5mm thk and 150mm wide including fixing accessories etc. all complete.	Kg	20			0.0005728138
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	20			0.0012013162
1853	Providing, laying and fixing rails and guide rails in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	MT	10			0.1254441333
A1862	Supplying, fabrication and installation of PVC pipes in concrete / Duct bank for all kind of works, including setting material in concrete, layout, cutting, forming, grinding, jointing etc. all complete as per specification and as guided by engineer-in-charge. (Concrete, Reinf. paid separately)					
a	200 mm nominal diameter.	RM	400			0.0592441666
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.					
2003	Supplying and erecting in position 2.4 m high PVC coated gavanised chain linked fencing of minimum 8 gauge (including PVC coating ) of mesh size 75mm x 75mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 12 gauge. Concertina of height of 600 mm at top of chain link fencing shall be provided with all accessories. Concertinal shall be from tensile serrated galvanised wire (HTSW) made with wire diameter of 2.5 mm which will be stretched to 6m and attached on two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5mm dia by means of clips at 1m interval. These two HTSSW strands will be attached to the fence posts/ angles with 12 mm security fasteners. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts etc. all complete. (Structural post shall be paid separately under ST No. 2007)	RM	30			0.0096360294
A2003	Supplying and erecting in position 2.4 m high PVC coated gavanised chain linked fencing of minimum 4 mm (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 2.5 mm. The PVC coated chain link will be stretched by the clips at 0.5m intervals to three strands of galvanised high tensile spring steel wire (HTSSW) of 2.5 mm diameter interwoven with chain link wire mesh and kept under tension which in turn are attached to the fence post with security nuts and bolts. Concertina of height of 600 mm at top of chain link fencing shall be provided with all accessories. Concertinal shall be from tensile serrated galvanised wire (HTSW) made with wire diameter of 2.5 mm which will be stretched to 6m and attached on two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5mm dia by means of clips at 1m interval. These two HTSSW strands will be attached to the fence posts/ angles with 12 mm security fasteners. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts etc. all complete. (Structural post shall be paid separately under ST No. 2007)	RM	79			0.0266487054
2007	Supply and fixing of hot dip galvanised mild steel posts for fencing. Rate of zinc coating shall not be less than 710 g/m2 on steel posts.	MT	2			0.0297747833
A2008	Supply, fabrication and fixing of mild steel posts for fencing, etc. including chlorinated rubber paint over a suitable primer etc all complete as per specification. (Chorinated rubber paint over si=uitabel primer shall be paid sepaeraetly as per SQM measurement in Item no. A701)	MT	2			0.0279727972
2009	Supply, fabrication and installing in position and testing galvanised MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete.	MT	9			0.1470228691
2010	Supply, fabrication and installing in position and testing MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete.	MT	2			0.0311999299
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	75			0.0078563389
2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.	NOS	75			0.0048430492
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	30			0.0024981289
b	50mm nominal bore.	NOS	30			0.0052348928
2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrosive bituminous 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	200			0.0123579120
b	20 mm nominal bore.	RM	500			0.0338119419
c	25 mm nominal bore.	RM	500			0.0378564439
d	50 mm nominal bore.	RM	300			0.0326981701
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	300			0.0145191485

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b	20 mm nominal bore.	RM	300			0.0162694456
c	25 mm nominal bore.	RM	300			0.0186961468
d	32mm nominal bore.	RM	200			0.0147183060
e	50 mm nominal bore.	RM	300			0.0286804506
f	65mm nominal bore.	RM	200			0.0227801735
2106	Providing and fixing 610mmx453mmx6mm thk mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	NOS				
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	40			0.0125807608
2107	Providing and fixing 610mmx127mmx6mm thk clear glass with C.P Guard rails and mounted on C.P. brackets etc all complete.	NOS	10			0.0010289411
2108	Providing and fixing 25 mm diameter stainless steel towel rails (600mm X 25mm) with C.P. mounting brackets all complete.	NOS	50			0.0062983561
2109	Providing and fixing 20mm dia chromium plated M.S. pipes wall mounted towel rod with C.P. Brackets etc all complete.	NOS				
2110	Providing and fixing C.P. Soap holder mounted with C.P. screws etc all complete.	NOS	100			0.0089502893
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			0.0084595926
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. sll complete.	NOS	50			0.0030497173
2113	Providing and fixing chromium plated brass shower rose 100mm dia with 15 or 20 mm inlet dia all complete.	NOS				
A2113	Providing and fixing rotating type chromium plated brass shower rose with 15 or 20 mm inlet all complete.	NOS	20			0.0009812283
2114	Providing & fixing in position P.V.C. water tank of Syntex or approved equivalent conforming to IS:12701 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	10			0.0054245290
b	1000 litres capacity	NOS	5			0.0054245290
c	2000 litres capacity	NOS	5			0.0108483795
d	5000 litres capacity	NOS	5			0.0271212585
2115	Providing and installing approved brand single tap water cooler of 150 L cooling capacity all complete.	NOS	5			0.0539169924
A2116	Providing and fixing glass shelves 600mmx127mmx4 mm with chromium plated brackets all complete.	EACH	5			0.0004640913
A2117	Providing and fixing metal storing cabinets all complete.	EACH	5			0.0099447377
A2118	Providing and fixing electric operated hand dryer with photo voltaic control.etc all complete..	EACH	5			0.0033149165
A2120	Providing and fixing grab bars, barrier-free access and appropriate fittings and fixtures for toilets for handicapped etc. all complete.	EACH	10			0.0026519332
2200	SANITARY: Sanitary work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
2201	Supply and fixing glazed vitreous china Wash Basin of approved make conforming to IS:2556 part 4 of oval shape with R.S. or C.I. brackets painted white, 15mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32mm chromium plated brass bottle trap and waste of standard pattern, 32mm dia chromium plated brass trap unions, plastic connection pipe with chromium plated nuts, fittings, cutting and making good the walls where required etc all complete.					
a	White	EACH				
b	Colored	EACH	10			0.0142050507
A2201	Supply and fixing coloured glazed vitreous oval shape china wash basin 450x550mm conforming to IS: 2556 mounted over 20 mm thk granite beveled edge counter counter. The Basin shall be fitted with approved shape bib cock, photo-voltic control system for water control with flow rate less than 5 LPM (litres per minute) at 45 psi, CP brass chain with rubber plug, 40mm CP brass waste and bottle trap as per IS: 2556 with two taps, necessary union including cutting of notch in granite counter slab etc complete as per specification	EACH	60			0.0620550955
2202	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	15			0.0111221739
A2203	Providing and fixing stainless steel kitchen sink/Eye wash sink of size size 610 x 510 mm, bowl depth 200 mm as per approved manufacturer with drain board of at least 450 mm length with trap, hot and cold water mixer, conforming to IS: 13983 including all fittings etc. all complete.	EACH	20			0.0263787184
2204	Providing and fixing colour glazed vitreous china European type water closet 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 etc all complete.					
a	Floor mounted	EACH				
b	Wall mounted	EACH				
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	25			0.0293899787
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, necessary C.P connections etc all complete.	EACH	50			0.0407601556
A2205	Providing and fixing colour glazed vitreous china Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 of approved manufacturer simpolo, varmora or equivalent 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	70			0.0764816381
2206	Providing and fixing white flat back glazed vitreous china urinals of size 440x265x355 mm with photo voltaic control flushing system as per IS:2556 (part 6, section 1) with flush pipes, lead pipes, gratings, traps and necessary C.P. fittings etc. all complete.	EACH				
A2206	Providing and fixing white/coloured water efficient flat black glazed vitreous china urinals of size 610x375x390mm with photo voltaic control flushing systems of approved manufacturer simpolo, varmora or 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	70			0.1117521845

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2207	Supply, laying and jointing UPVC pipes of class 3 as per IS:4985 including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.					
a	75mm dia pipes	RM	100			0.0046541269
b	110mm dia pipes	RM	100			0.0062320489
c	160mm dia pipes	RM	100			0.0096662181
d	200mm dia pipes	RM	100			0.0119070940
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.					
a	200mm dia	RM	50			0.00529727003
b	300mm dia	RM	100			0.0182717573
c	450mm dia	RM	100			0.0305237194
d	600mm dia	RM	100			0.0417944060
e	900mm dia	RM	100			0.0735511793
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.					
a	150mm dia	RM	30			0.0021043209
b	250mm dia	RM	30			0.0027407636
c	300mm dia	RM	30			0.0034050624
d	450mm dia	RM	30			0.0050598985
e	500mm dia	RM	30			0.0059389759
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:					
Aa	250mm dia	RM	40			0.0078709217
Ab	300mm dia	RM	40			0.0093931080
a	450mm dia	RM	20			0.0069825235
b	600mm dia	RM	10			0.0046342465
c	900mm dia	RM	10			0.0085617434
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	20			0.028624904
2212	Providing and fixing circular heavy duty C.I. manhole cover of 600 mm dia with frame etc. all complete.	EACH	20			0.0284551713
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:					
a	100x100mm P or S Type.	EACH	20			0.0047946934
b	150x100mm P or S Type.	EACH	10			0.0024888435
c	150x150mm P or S Type.	EACH	10			0.0026002207
2214	Providing and fixing C.I. floor traps size 100 mm Inlet and 100 mm Outlet Sand Cast Iron S&S as per IS: 1729 with C.P jalli all complete.	EACH	10			0.0021321534
A2215	Providing and fixing C.I. floor traps with stainless steel grating etc all complete.	EACH	40			0.0093825366
2215	Providing and fixing 100mm heavy duty UPVC floor traps with 100 mm inlet and 100 mm outlet & C.P jalli all complete.	EACH	20			0.0040786702
A2217	Providing and installing approved brand single tap water efficient water cooler of 50 L cooling capacity all complete.	EACH	2			0.0087744361
AA2217	Providing and installing approved brand single tap water efficient water cooler of 80 L cooling capacity all complete.	EACH	4			0.0228371454
A2218	Providing and installing approved brand single tap water efficient water cooler of 150 L cooling capacity all complete.	EACH	2			0.0215668017
2219	Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS: 10592) all complete as per specification.	EACH	10			0.0237082380
2220	Providing and fixing heavy duty cast iron pipes for above and below ground sanitary works with water tight lead joint, fixing clamps, excavation, filling, disposal etc. all complete for the following.					
a	75mm dia pipes	RM	10			0.0019862894
b	100mm dia pipes	RM	10			0.0025591150
c	150mm dia pipes	RM	40			0.0148189702
d	200mm dia pipes	RM	60			0.0319822649
e	250mm dia pipes	RM	40			0.0307411408
2221	Providing, laying spun CI pipes with conforming to IS 1536 complete for following (Excavation, backfilling, concrete to be paid separately)					
a	75mm dia	RM	30			0.0068379809
b	100mm dia	RM	30			0.0091929004
c	150mm dia	RM	120			0.0546244204
d	200mm dia	RM	200			0.1341080393
e	250mm dia	RM	120			0.1025659266
f	300mm dia	RM	90			0.0944312038
2222	Providing and fixing HDPE pipes in concrete/ brick work of following sizes including cutting, fixing and levelling in position etc. all complete.					
a	Upto 75 mm dia	RM	15			0.0005668556
b	100 mm dia	RM	15			0.0008194541
c	150 mm dia	RM	15			0.0014698249
d	200 mm dia	RM	5			0.0008061868
2223	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			0.0079891184
A2223	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.					
a	110mm dia pipes	RM	20			0.0045252729
b	160mm dia pipes	RM	20			0.0062476947
2224	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 150 mm sewer water outlet pipe	NOS.	8			0.0250826230
A2225	Providing and fixing energy efficient pvc of 25 liters capacity including fittings etc all complete.	EACH	12			0.0127292794
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.					

ST NO	ITEM DESCRIPTION	UOM	TOTAL QTY	RATES = TOTAL QUOTED PRICE * WEIGHTAGE / (QUANTITY * 100)	AMOUNT (INR) = RATE * QUANTITY	WEIGHTAGE IN % (UPTO 10 DECIMAL POINT)
2301	Trasnporataion from BHEL store, Fabrication,erection and alignment of structural steel with mild steel 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, toe gaurd/kick plate, stringers, treads, landings, hand-rails etc including 2 coats of red oxide zinc-chromate primer (one coat at shop and one coat after erection), connection design & preparation of fabrication drgs, 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 sepearte agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL (BHEL to supply steel free of cost).	MT	5			0.0159573123
A2302	Extra over ST NO. 2301 for blast cleaning of steel structures by shot blasting to near white metal finish conforming to Sa 2 ½ finish of Swedish standard ISO-8501 and shall have profile of 40 to 60 micron and applying two component self/moisture curing Inorganic Zinc ethyl Silicate Primer Coat (Solid by Volume Minimum 62+/- 2% and Zinc content %age on dry film minimum 80%), Zinc dust pigment conforming to ISO 3549 and Zinc dust pigment content determined in accordance with ASTM D 520, Minimum Dry Film Thickness (DFT) of primer coat of 70 Micron, instead of primer coat of red oxide zinc-chromate, including touch-up painting , using Airless spray technique in shop etc all complete.	MT	5			0.0039317759
A2305	Providing and applying Intermediate Coat of two component Polyamide Cured pigmented with Micaceous Iron Oxide (MIO content minimum 30%) Epoxy based Paint (Solid by Volume Minimum 80 +/- 2%) of Minimum 100 Micron DFT. This Coat shall be applied in Shop after an interval of Minimum overnight (from the application of Primer Coat) by Airless spray technique. Intermediate Coat shall be followed with the application of Finish Coat of two pack isocyanate Cured colour acrylic based Paint (Solid by Volume Minimum 55 +/-2 %) of Minimum 70 Micron DFT with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587, D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 ΔE) and minimum 70 micron DFT. This coat shall be applied in shop/site after an interval of minimum 10 hours and within six (6) months (from the completion of Intermediate coat). Colour and shade of the coat shall be as approved by the Employer. The painting includes protection and cleaning, scaffolding, touchup etc. all complete as per specifications.	MT	5			0.0036105070
2600	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.					
2602	Earth work in stripping of top soil upto a maximum depth of 0.30 m below ground level so as to exclude all debris, grass, vegetation, bushes, trees having girth upto 300mm 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.	Sq.m	20061			0.0585093509
2603	Earth work in excavation upto any depth below ground level in all types of soil including ash which can be excavated by any means for grading including setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, levelling to grade, all lifts, ramming/compacting the excavated bottom/graded surface, stacking/disposal of surplus excavated materials within a lead upto 1km, spreading/levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM				
2609	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300mm compacted thickness so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII) with surplus stacked soil/soft rock and compacted as specified including re-excavation of stacked earth, all lifts, dewatering if required, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	68314			0.9601853890
A2610	Extra over ST No. 2601 to 2609 for carriage of material/earth for every 500m or part thereof beyond an initial lead of 1 km.					
a	Carriage for stacking/ backfilling of serviceable material/ earth	CUM				
b	Carriage for disposal of serviceable/unserviceable material/ earth as per specification	CUM	7530			0.0097726399
A2612	Providing and laying 300mm thick stone pitching including caulking with 1 cement: 4 sand mortar on the slopes of earth fill/cut with approved quality of rock fragments including materials, testing, necessary excavations if any, compaction etc all complete as per specification, drawing and as directed by the engineer.	CUM	540			0.1962545722
2700	RAIN WATER HARVESTING					
2701	Making 250mm dia bore hole up to a maximum depth of 20 m below ground level in all types of rocks including all equipments, tools & plants, lowering casing pipes, bentonite slurry, removal of casing pipes etc. complete in all types of soil.	RM	200			0.0374982435
2702	Supply & fixing 150mm dia perforated PVC pipe ISI mark 6 Kg/ cm2 with air vent at top as per the drawing & specification complete.	RM	200			0.0115093689
2703	Providing & fixing 150 dia PVC pipe ISI mark 6 Kg/cm2 as per specification.	RM	50			0.0028773422
2704	Supply & packing uniformly 6mm to 3mm size gravel in the bore hole surrounding the perforated PVC pipe.	CUM	50			0.0152154329
2705	Supply & packing uniformly downgraded 40mm size gravel at all depth in the well dug for rain water harvesting.	CUM	150			0.0456462986
2706	Supply & packing uniformly downgraded 40mm size pebbles at all depth in the well dug for rain water harvesting.	CUM	50			0.0152154329
2707	Supply & laying 300mm thick coarse sand layer at all depth in the well dug for rain water harvesting.	CUM	100			0.0295689904
2708	Supply & fixing Netlon jali/ PVT net in the well dug for rain water.	SQM	200			0.0064707300
	TOTAL PART-II				₹ 1,50,00,000	69.4935147635
	GRAND TOTAL = PART-I + PART-II				₹ 1,50,00,000	100.0000000000