



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TCN - 02

Ref: PSER: SCT:BRM:C1302:TCN-02

Date: 19-01-2012

Sub	Tender Change Notice (TCN)- 02.	
Job	Civil, Structural and Architechtural works including Piling and ground improvement for CWPH, Forebay and Channel, Clarified water PH and reservoir, raw water reservoir, raw water pump house, administrative building, work shop, cable/pipe racks, cable trenches, road and drains, hydrogen generation plant, canteen, DG building, car parkingwith open area, fire water pump house, fire station, chemical lab, store, pressuring & heating PH, foam pump house, fuel oil unloading area, FO tank FDN and dyke & fuel oil tank farm area, DM plant shed, CW treatment area, Chlorination building, watch tower, PTP, ETPand STP(excluding Power block,Chimney and cooling tower) for 2 x 250 MW Barauni Thermal Power Station (Extension project),unit#8& 9 Begusarai, BIHAR and balance civil works for boiler auxiliaries foundation for R & M job of 2 x 110 MW Barauni Thermal Power Station,Bihar.	
Ref	1.0	Tender no PSER:SCT:BRM:C1302:11
	2.0	BHEL's NIT, vide reference no PSER:SCT:BRM:C1302:11 Date: 03/01/2012.
	3.0	BHEL's TCN-01, vide reference no PSER: SCT:BRM:C1302:TCN-01 Date: 11-01-2012.
	4.0	Other References,if any.

With reference to above, following points, relevant to tender, may please be noted and complied with while submitting the offer.

- 1) Revised Volume-IF (Rev-01)-(Technical Conditions of Contract), superseding Volume-IF issued earlier along with NIT.
- 2) Revised BOQ cum price schedule format VOL-III- PRICE SCHEDULE, REV-01 superseding VOL-III PRICE SCHEDULE, REV-00 issued earlier along with NIT.

Bidders are requested to submit their offer as per revised BOQ (Rev-01) only. Offer from bidders in superseded price schedule (Vol-III, REV-00) shall not be considered. Bidders are also requested to submit a declaration in techno-commercial offer that they have submitted their price bid in sealed envelope as per **REVISED price schedule format (VOL-III- PRICE SCHEDULE, REV-01).**

- 3) Due date of submission of tender extended from 24-01-2012 to **30-01-2012** (15=00 Hrs). Bidders are requested to submit their offer by extended due date positively.
- 4) Revised 'No deviation certificate' is attached. Bidder to submit 'No deviation certificate' as per attached format only.
- 5) All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,
for BHARAT HEAVY ELECTRICALS LTD

ENGINEER(SCT)

Encl:

- 1.0 Revised TCC-Volume-IF (Rev-01)
- 2.0 Revised BOQ cum price schedule format (VOL-III- PRICE SCHEDULE, REV-01)
- 3.0 Revised format of 'No deviation certificate'.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

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REV-01	TECHNICAL CONDITIONS OF CONTRACT (SERVICE)	

These Special conditions shall be construed as part of tender document and shall be read along with General Conditions of Contract. In case of any conflict or inconsistency between the general and these Technical conditions, the same shall be brought out by the bidder in writing to BHEL for clarification during pre-bid discussions; failing which most stringent interpretation / clause in favour of BHEL shall be adopted and the same shall be binding to the contractor.

CLAUSE NO	DESCRIPTION
1.0	<p>PROJECT SYNOPSIS AND GENERAL INFORMATION</p> <p>INTRODUCTION</p> <p>Details of proposed stage/ units Project name: BARAUNI THERMAL POWER PLANT -2x250 MW EXTENSION PROJECT No of units x capacity: 2 x 250 MW. Project setting up by: Bihar State Electricity Board (BSEB)</p> <p>Bihar State Electricity Board, hereafter referred to as BSEB, has awarded BHEL the job for establishing two numbers of coal fired of rating 250 MW each on Engineering, Procurement and Construction (EPC) package basis The units are proposed to be set up adjoining existing plant at Barauni Thermal Power Station, Extension unit 8 &9 at district Begusarai in the state of Bihar, India. Project site is disposed at N25⁰23'13.5" to N N25⁰23'54"latitude and E 86⁰01'05" to 86⁰01'46.3" longitude,</p> <p>It is essential that the bidder visit site and acquaint with the conditions prevailing at site before submission of the bid . The information given hereunder is for general guidance and shall not be contractually binding on the/ BHEL.</p> <p>APPROACH TO SITE</p> <p>LOCATION :Barauni Thermal Power Station, Begusarai, Bihar</p> <p>NEAREST RAILWAY STATION :Hathidah Railway Station (Broad Gauge) on Howrah-Patna route is about 3.5 KM away from the site. :Barauni Railway Station (Broad Gauge) on Howrah-Muzzafarpur route is about 15 KM away from the site.</p> <p>ROAD DISTANCES :NH-31 is adjacent to site.</p> <p>NEAREST AIR PORT :Patna, 110 KM away from Barauni.</p> <p>MODE OF TRANSPORTATION :Rail/Road</p> <p>DESIGN AMBIENT TEMPERATURE: 35.2 Deg.C maximum, 12.1 Deg.C minimum, DESIGN RELATIVE HUMIDITY :98% (Maximum)</p> <p>AVERAGE ANNUAL RAINFALL :1003.4 MM</p> <p>SEISMIC ZONE :Zone-IV as per IS-1893 Part-I (2002)</p> <p>WIND SPEED :47 m/s</p> <p>Owner: Bihar State Electricity Board (BSEB)</p>
2.0	<p>SITE VISIT</p> <p>The bidder must visit the actual site of 2x250 MW Barauni Extension Thermal Power Project, to acquire full knowledge and information about the conditions prevailing at site as well as, in and around the project site, together with the statutory, obligatory, mandatory requirements of various authorities before submission of the bid.</p>
3.0	<p>SCOPE OF WORK</p>
3.1	<p>The scope of works covers Civil including driven cast –in –situ piling work(for aux package of</p>

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	<p>2x250 MW Barauni Extension Project)and bore cast -in -situ piling work(for 2x110 MW Barauni R&M job) , structural & architectural works as per specification including supply of all materials (Other than those being supplied by BHEL), labour, tools and plants. The scope of work is indicative but not limited to the given below –</p> <ul style="list-style-type: none"> • Below ground earth mating of entire plant excluding PB-1 & PB-2, CHP, AHP, Chimney, Swithyard area • CW pump house & RCC ducts • CW treatment Bldg • Effluent Treatment Plant (civil) • Hydrogen generation plant • Canteen building • DM Plant Bldg(including all civil foundation and superstructure civil) • DM tank Foundation • FOPH & All foundation, dyke etc • Fuel oil unloading area • Fuel oil pressurizing area and heating pump house • FOAM pump house • FO tank Foundation+ and Dyke • Fuel oil Tank Farm Area • PT Plant area all structure • Clarified water pump house & storage tank • Filter water tanker • Chlorination Bldg • Chemical Lab • All civil work of sewage treatment plant • All common pipe racks foundations & super structure (excluding PB-1 & PB-2 area) • Permanent store • Administrative Building • Raw Water Reservoir • Raw Water Pump House • Time office and Security building • Workshop building • Car Parking Shed and open area • Fire Water Pump House • Fire Station Building • Civil Work related to large Dia piping • Misc Civil Work • Balance Civil job of R&M of Barauni unit # 7 & unit # 8 (2x110MW) <p>NOTE : superstructure above pump floor for CW pump house, permanent store and Clarified water pump house shall be of steel frame structure.</p>
3.2	Any buried pipe/ cable coming in the working fronts are to be removed safely by the contractor at no extra cost to BHEL.
3.3	The work to be performed under this specification consists of providing all labour, materials, consumables, equipment, temporary works, temporary storage sheds, temporary colony for labour and staff, temporary site offices, constructional plants, transportation/handling and all incidental items not shown or specified but reasonably implied or necessary for the completion of subject scope, all in strict accordance with the specifications including revisions and amendments thereto as may be required during the execution of work.
3.4	The scope shall also include setting up by the bidder a testing laboratory in the field to carry out all relevant tests, Non Destructive Testing etc., complete as per Quality Plan/Customer requirements.
3.5	All quality standards, tolerances, welding standards & other technical requirements shall be strictly adhered to. The Bidder shall fully apprise himself of the prevailing conditions at the

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	proposed site, climatic conditions including monsoon pattern, soil conditions, local conditions and site specific parameters and shall include for all such conditions and contingent measures in the bid, including those which may not have been specifically brought out in the specifications.
4.0	DEVIATIONS/CLARIFICATIONS The bidder is required to submit his offer in the relevant schedule/ format without any ambiguity. Any assumptions, presumptions, deviations etc. indicated or implied anywhere by the bidder except those indicated in the deviation schedule/ format will not be recognized and will not form a part of consideration / offer. In the absence of such filled-up schedule/ format it will be understood and agreed that the bidder's offer is based on strict conformance to the specification and no negotiation would be allowed in this regard. BHEL reserve the right not to recognize any / all deviations submitted after opening of the bid.
5.0	DEWATERING Contractor shall ensure at all times that his work area & approach/ access roads are free from accumulation of water, so that the materials are safe and the erection/ progress schedule are not affected. No separate claim in this regard shall be admitted by BHEL. No separate payments for dewatering of subsoil, surface water or catchments water, if required, at any time during execution of the work including monsoon period shall be considered by BHEL.
6.0	LAND
6.1	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 mechanical/ electrical contractors and the storage of plant machineries and materials. The existing land shall be shared by all erection agencies. Contractor shall develop these areas for their site office, covered storage shed, various open yard, fabrication yard, batching plant yard etc including grass/ tree cutting, leveling, grading etc as applicable. Bidder must visit site to assess site condition, prior to quoting.
6.2	Land outside plant adjacent to boundary wall within 2KM will be provided (if available within construction period) for labour colony free of cost. Contractor will arrange temporary fencing, levelled the area according to their requirement, drinking water, sanitation, construction of temporary colony/hutment, electricity as per their requirements at their own cost.
6.3	The contractor will be responsible for handing back all lands, as handed over to him by BSEB/BHEL.
6.4	Area for fabrication, batching plant and storage area for construction material and equipment shall be provided free of cost.
7.0	WATER
7.1	To start with the enabling job construction water may be drawn from adjacent river. Drinking water to be arranged by the contractor till borewell Water established. Construction & Drinking water will be provided to the contractor free of cost after the borewell is commissioned.
7.2	Contractor will provide maintenance of entire system of two/three nos borewell pumps (for construction as well as drinking water) as directed by BSEB/BHEL as per BOQ schedule rates.
7.3	Distribution network for drinking water system within power block area shall be done by the bidder at his own cost.
7.4	Contractor should arrange on their own drinking water in their labour colony.
7.5	BHEL shall not be responsible for any inconvenience or delay caused due to any interruption of water supply and the contractor shall claim no compensation for delay in work for such interruption. Contractor may make standby arrangement for water for which no separate payment shall be made by BHEL.
7.6	Bidder will ensure adequate supply of construction water to meet the requirement of water during major concreting.
7.7	The availability of water (construction as well as drinking) in BARAUNI Extension project may be limited. Contractor shall ensure that no water is wasted. In this regard the contractor shall take all necessary measure towards preservation of water.
8.0	ELECTRICITY
8.1	CONSTRUCTION POWER :- BSEB/BHEL Shall Provide Construction Power free of charge at 415V level at one point (300 M away from workplace). Contractor has to make his own distribution arrangement to draw electricity at batching plant, fabrication yard, power block area.

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	<p>Work area illumination: The contractor will arrange and install general illumination system during construction right from start of work. This system will include work area lighting, temporary pole, portable lighting arrangements etc. at his work spot and at his own cost.</p> <p>GENERAL:- 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 & 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>
8.2	The bidder shall have to provide earth leakage circuit breaker at each point wherever human operated electrical drives/ T&Ps are deployed.
8.3	The power supply will be from the available grid. BHEL shall not be responsible for any inconvenience or delay caused due to any interruption of power supply/ variation in voltage level and no compensation for delay in work can be claimed by the contractor due to such non-supply on the grounds of idle labour, machinery or any other grounds.
8.4	Bidder will have to arrange sufficient illumination at their own work areas to the satisfaction of BHEL/BSEB.
8.5	The contractor should ensure that the work in critical areas is not held up in the event of power breakdown. In the event of breakdown in the electric supply, if the progress of work is hampered, it will be the responsibility of the contractor to step up the progress of work after restoration of electric supply so that overall progress of work is not affected.
8.6	The contractor shall have to make arrangement at their own cost for illumination that will be required in the working area for execution of the work & safety of workmen.
9.0	CONSUMABLE
9.1	All consumables, like gas, electrodes, chemicals, lubricants etc. required for the scope of work, shall be arranged by the contractor at his cost unless otherwise specifically mentioned in the contract.
9.2	All consumables to be used for the job shall have to be approved by BHEL/BSEB prior to use.
9.3	In the event of failure of contractor to bring necessary and sufficient consumables, BHEL may arrange for the same at the risk and cost of the contractor. The entire cost towards this along-with overhead shall be paid by the contractor or deducted from the contractor's bills.
10.0	TEST CERTIFICATES
	Necessary test certificates of all materials supplied by contractor are to be produced to BHEL prior to use of those materials.
11.0	IMTE
	The contractor shall ensure deployment of reliable and calibrated instrument, measuring, and test Equipment (IMTE). The IMTE shall have test calibration certificate from authorized / Govt approved agencies. The contractor shall also keep provision of alternate engagement for such IMTE so that the work does not suffer when a particular IMTE is sent for calibration. Re-testing/ re-calibration shall also be arranged by the contractor at their own cost at regular interval during the period of use as advised by BHEL.
12.0	QUALITY CONTROL & QUALITY ASSURANCE
	Contractor's Engineers and supervisors shall be adequately qualified and also inclined to do a quality job. The quality assurance Engineer shall co-ordinate all aspects of quality control, inspection, implementation of quality assurance procedures laid down in Quality Plan and technical specification by BHEL. He shall fill up quality assurance log sheets / formats and submit to BHEL for joint inspection and acceptance. The contractor shall fill up, maintain & preserve the quality records in computerized media. BHEL's authorized representative shall be given free access at all time to such quality related records etc. for inspection, review etc.

13.0	QUALITY ASSURANCE PROGRAMME
13.1	The contractor shall arrange for suitable quality assurance programme to control all activities pertaining to the scope of work, as necessary. Such programs shall be outlined by the contractor and shall be finally accepted by BHEL .A quality assurance programme of the contractor shall generally cover the following
13.2	Organization structure and qualification data for key personnel of the contractor for the management and implementation of the proposed quality assurance programme.
13.3	The procedure for source inspection, incoming raw material inspection, verification of material purchased etc.
13.4	System for maintenance of records.
13.5	General requirements – quality assurance All materials, components and equipments covered under the specification shall be procured, manufactured, erected, commissioned and tested, as applicable, at all stages as per comprehensive quality assurance programme. An indicative programme for inspection /test, to be carried out by the contractor, for some of the major items is given in the respective technical specification.
13.6	Field quality plan will detail out the quality practices and procedures etc to be followed by the contractor's site quality control organization, during various stages of site activities from receipt of material /equipment at site.
13.7	Casting and forgings used for construction shall be of tested quality. Details of results of chemical analysis, mechanical properties test result, as necessary, shall be furnished.
13.8	All welding shall be carried out as per procedure drawn and qualified in accordance with the requirements of ASME Section- 1X/BS4870 or other international equivalent standard acceptable to BHEL
13.9	All welders etc employed on any part of the contract at contractors' work or at site shall be qualified as per ASME Section – IX or BS 4871 or equivalent international standard approved by . Such qualification test shall be conducted in presence of BHEL.
13.10	All non-destructive examinations (NDT) shall be carried out in accordance with approved international standard .NDT operators shall be qualified as per SNT-TC-IA (of American society of non-destructive examination) Results of NDT shall be properly recorded and submitted for approval.
13.11	All the purchase specifications for the major bought out items list of which shall be drawn up by the contractor and finalized with BHEL shall be furnished to BHEL for comments and approval before placement of orders.
13.12	BHEL reserves the right to carry out quality audit and quality surveillance of the systems and procedures of contractor's quality management. Contractor shall provide all necessary assistance to enable BHEL to carry out such audit.
13.13	Quality audit/approval of the results of test and inspection will not prejudice the right of BHEL to reject an equipment service not giving the desired performance and shall not in no way limit the liabilities and responsibilities of the contractor in earning satisfactory performances of equipment/service as per specification.
13.14	Repair/rectification procedure to be adopted to make any job acceptable shall be subject to the approval of BHEL.
13.15	All the latest relevant IS codes as per technical specification should be available with the contractor at site with in 45 days from the date of placement of LOI.
14.0	PROJECT MANAGEMENT/ CONSTRUCTION MANAGEMENT
	To meet the need of construction management at site, contractor shall provide the following services within quoted/ accepted rates.
14.1.1	PLANNING & MONITORING The bidder shall prepare detail construction schedule (L-3) as per completion dates given in this document. This schedule must include all milestone and key activities for each subsystems/ components in the areas of engineering (wherever applicable), procurement, manufacture (wherever applicable), excavation/ concreting/construction/ erection. The network must conform to following overall project milestone schedule. However, further micro break-up of schedule based on major milestone schedule shall be drawn at site prior to start of work. Bidder should also ensure monitoring of these activities at least weekly basis to start with and on daily basis

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whenever required by BSEB/BHEL. The bidder has to adhere to the following project schedule for Part-1 & Part-2 of volume-III(BOQ-PRICE SCHEDULE)

Sl no	Major Milestone activity	Completion of activity within months from date of Start Of Work
1	Completion of below ground earth mating of each Structure / building area	At the time of back filling
2	CW pump house, elect annexie and RCC ducts :	
i)	Completion of excavation, RCC upto GL & back filling	Within 5 months
ii)	Casting of RCC CW pump operating floor	Within 7 months
iii)	Completion of superstructure erection	Within 16 months
iv)	Completion of side cladding (metal or masonry) & roofing	Within 19 months
v)	Hand over of Crane Girder for EOT erection	Within 19 months
vi)	Completion of foundation upto GL for CWPH Elect Annexie Bldg	Within 8 months
vii)	Completion of all RCC, transformer foundation, Brick work, Inside plaster, Flooring, Trench, Toilet, Doors, Windows, Rolling sutter & hand over for erection of CWPH ANNEXIE bldg	Within 16 months
viii)	Completion of feed pool upto GL	Within 17 months
3	DM plant Bldg(including all civil foundation, Drain, superstructure) :	
i)	Completion of Piling & Foundation upto GL	Within 7 months
ii)	Completion of RCC column, Roof casting & equipment foundations	Within 12months
iii)	Building hand over for erection with completion of masonry work, door, RS, windows, Inside plaster, RCC drain with acid / alkali treatment including MCC room	Within 18months
4	DM tank Foundation completion and handover for tank erection	Within 10 months
5	FOPH, All foundation, dyke etc,Fuel oil unloading area,Fuel oil pressurizing area and heating pump house , FOAM pump house ,FO tank Foundation+ and Dyke and Fuel oil Tank Farm Area, Completion all RCC & Brick work, Inside plaster, Flooring, Toilet, Doors, Windows, Rolling Sutter & hand over for erection.	Within 18 months
6	PT Plant area all structure completion and handover for erection	Within 15 months
7	Clarified water pump house & storage tank, Completion all RCC & Brick work,Inside plaster,MCC Flooring, Doors, Windows, Rolling sutter alongwith MCC , PH & erection of CW Gates & hand over for water filling	Within 20 months
8	Chlorination Bldg Completion all RCC & brick work,inside plaster, flooring, toilet, doors,windows,Rolling sutter & hand over	Within 20 months
9	Administrative Building Completion all RCC & Brick work,Inside plaster, Flooring, Toilet, Doors,Windows,Rolling sutter & hand over	Within 22 months
10	Raw Water Reservoir & Raw Water Pump House Completion & hand over for erection	Within 20 months
11	Time office and Security building, Workshop building, Car Parking Shed and open area,Fire Water Pump House	Within 24 months

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	Fire Station Building Completion all RCC & Brick work, Inside plaster, Flooring, Toilet, Doors, Windows, Rolling shutter & hand over	
12	Completion of external plaster, all painting, completion of misc. structures, roads, drain, pavements etc.	Within 27 months
14.1.2	The bidder shall also prepare progress report indicating progress on key activities, management summary for critical activities, list of actions requiring attention of BHEL. This schedule is to be preferably made in PRIMAVERA/MS PROJECTS, so that the same is compatible with BHEL's project management software.	
14.1.3	The bidder will have to install 3 nos PCs (multimedia PC work station Pentium-Duo, 1 GHZ or above, 1GB RAM, 100 MBPS LAN card of HCL/ COMPAQ/ ZENITH or equivalent make with window XP (professional) O/S and required software like MS Office 2007 Professional, AutoCAD 2005, PageMaker (7.0 etc), ADOBE PDF CREATOR with one nos laser jet printer compatible for A3 size printing (ink/ cartridge for which to be supplied as and when required, for estimation of the bidder, the consumption may be assumed as 1 cartridge per 2 month), two nos laser jet printer compatible for A4 size printing (ink/ cartridge for which to be supplied as and when required, for estimation of the bidder, the consumption may be assumed as 1 cartridge per 3 month) with power backup at places. 1 Xerox machine with operator, as per instruction of BHEL for exclusive use of BHEL. These computers/ printers/Xerox Machine shall remain contractor's property and they will be allowed to take out the same after completion of the site works. The contractor shall provide data / information etc in prescribed formats for periodical updating of the progress reports, material management reports, updating of network pertaining to the contractor's scope of work etc. The contractor shall also provide three nos computer operators and four numbers service staff for miscellaneous service for BHEL's use at site/ Kolkata for reconciliation, progress review & day-to-day planning purpose, documentation etc. This facility to be provided from 1 st month from LOI date till completion of site works or as decided by BHEL. If contractor fails to provide computer/ printer or personnel as per requirement, for a continuous period of fifteen days or more, BHEL shall have the right to deduct the amount as per following rates on prorated basis, from contractor's RA bill or any other dues.	
14.1.3.1	@ Rs 12,000/- (twelve thousand)/ month for each computer operator.	
14.1.3.2	@ Rs 8,000/- (eight thousand)/ month for each computer with printer.	
14.1.3.3	@ Rs 6,000/- (eight thousand) / month for each service staff.	
14.1.3A	In the event of the contract period getting extended beyond the stipulated time for reasons not attributable to the bidder. The bidder will be reimbursed at Rs 9230 per month for each computer operator, Rs 6153 per month for each computer with printer and Rs 4615 per month for each service staff, if the services of computer/ operator/ staff are being used by BHEL.	
14.1.4	The contractor's site office must have facilities of communications like Fax, E-mail, and telephone with STD facility within a month from LOI.	
14.2	PROGRESS REPORTING	
14.2.1	The bidder shall submit daily, weekly and monthly progress reports for work force, materials reports, consumables (gases/electrodes) report and other reports as per pro-forma considered necessary by the BHEL. In case of any failure on contractor's part to comply with this, BHEL may at its discretion, consider to withhold part payment against their RA bills.	
14.2.2	The progress report shall indicate the progress achieved against planned with reasons indicating delays, if any, and shall give the remedial actions which the contractor intends to take to make good the slippage or lost time, so that further works again proceed as per the original program and the slippages do not accumulate and effect the overall program.	
14.2.3	The daily work force reports shall clearly indicate the work force deployed, category-wise specifying also the activities in which they are engaged.	
14.2.4	Weekly progress review meetings will be held at site during which actual progress during the week vis-à-vis scheduled program shall be discussed or actions to be taken for achieving targets. For discussions, the contractor shall present program of subsequent week. The contractor shall constantly update/revise his work program to meet the overall requirement.	
14.2.5	Periodic progress reviews on the entire activities of execution in respect of supply and works in scope of bidder will be held once in a month at Calcutta/site. These meetings will be attended by reasonably higher officials of the contractor and will be used as a forum for discussing all areas where progress needs to be speeded up. The contractor shall be further responsible for	

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	ensuring that suitable steps are taken to meet various targets decided upon such meetings.	
14.2.6	Average rate of fabrication per month shall not be less than 700T - 750T. During peak period, minimum fabrication should be 800 MT - 850 MT per month Average rate of erection per month shall not be less than 700T - 750T. During peak period, minimum erection should be 800 MT - 850 MT per month	
14.2.7	During construction contractor shall take an average thirty colour digital photograph / slides per month (not less than seven per week) of the works during progress and fifty colour digital photograph/slides of completed facilities.	
14.2.8	Successful bidder has to provide for electronic/ computerized storing and re-production/ printing/ plotting of various data, log sheets, protocols, measurements etc. These may be stored in CD (as per requirement) and handed over to BHEL as per requirement.	
14.3	SITE ORGANIZATION	
14.3.1	The contractor shall maintain a site organization of adequate strength in respect of manpower, construction machinery and other implements at all time for smooth execution of the contract headed by a competent construction manager for site operations with sufficient level of authority to take site decisions. The vendor will submit organization chart (showing the name of SITE-IN-CHARGE) with individual bio-data indicating various levels of experts to be posted for supervision in the fields of supervision and execution, quality, material management, planning, safety, etc. The organization shall be reinforced from time to time, as required to make up slippage (if any) from the schedule without any commercial implication to BHEL. The organization chart is to be submitted within 10 days from the date of LOI.	
14.3.2	Following (minimum) engineering manpower with power plant construction background to be deployed at site by the successful vendor for their day to day supervision etc.	
14.3.2.1	Qualified safety officers with assistants (exclusive for safety supervision for project jobs).	Officer – Two Nos.
14.3.2.2	Site supervising engineer and supervisors for leveling grading, Roads & drains job.	One no Enigneer One nos supervisor
14.3.2.3	Engineer & Supervisors for quality inspection (Civil + Strl).	Two nos Engineer Two supervisors
14.3.2.4	Site supervising engineer and supervisors for piling, gound improvement work & stone col work.	Three nos ENG Three supervisor
14.3.2.5	Site supervising engineer and supervisors for civil works in power block area.	Two nos Enigneers Three nos supervisors
14.3.2.6	Site supervising engineer and supervisors for Structural job(fabrication &erection).	Three nos Enigneers Three nos supervisors
14.3.2.7	Planning engineer (power plant erection background)	One
14.3.3	Engineer/ supervisor for other functions like store & purchase, material management, planning, fin, admn etc are to be provided as per site requirement and not considered above.	
14.3.4	In the event of non deputation of engineer/ supervisor/ draftsman by the bidder BHEL shall reserve the right to deduct Rs 45,000.00 per man-month for engineer and Rs 25,000.00 per man-month for the supervisor/ safety officer from the date of deputation as indicated as above from RA bills. Further induction of manpower regarding site supervisor & site engineer will be decided at site as per requirement. Further induction of manpower regarding site supervisor & site engineer will be decided at site as per requirement.	
14.3.5	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.	
14.3.6	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.	
14.3.7	The contractor should also submit to BHEL for approval a list of T&Ps along with their fitness certificates. The tools & tackles shall not be removed from site without written permission of BHEL.	
14.3.9	The contractor should also submit network programs for the erection of various items. These networks shall show the BHEL hold points (CHP), which have to be cleared by BHEL, or their authorized representatives before further erection can take place. These programs for the erection would clearly identify responsibilities of the contractor and BHEL. It is the	

	responsibility of the contractor to get the Networks approved by BHEL within four weeks of the date of finalization of award of work/ placement of LOI.	
14.4	CONSTRUCTION MANAGEMENT	
14.4.1	Based on the approved program the contractor shall submit a program of construction/ erection/ commissioning for the implementation. These programs would be amplified showing start of erection and subsequent activities and shall form the basis for site execution and detail monitoring. The three monthly rolling program with the first month's program being tentative based on the site condition would be prepared based on these programs. The contractor shall also be involved along with BHEL to tie up detailed resources mobilization plan over the period of the contract matching with the performance targets.	
14.4.2	The program would be jointly finalized by the site in-charge of the contractor with BHEL project coordinator as well as the site-planning representative. The erection program will also identify sequential events matching financial turnover.	
14.4.3	The contractor is liable to furnish all documentary evidences towards payment of Works Contract Tax as and when required by BHEL.	
14.5	WORK & SAFETY REGULATIONS	
14.5.1	The contractor shall ensure the safety of all workmen, materials and equipment either belonging to him or to others working at site. He shall observe safety rules and codes applied by the BHEL at site without exception.	
14.5.2	Passenger lift should have safety cage with multiple rope, i.e. with safety rope & limit switch.	
14.5.3	Safety nets with hand railings must be provided on all both inside & outside hanging platform of slip-form equipment & hanging platform from brickwork.	
14.5.4	Emergency vehicle must be provided & kept separately as stand-by.	
14.5.5	Non-conformity of safety rules and safety appliances will be viewed seriously and BHEL has right to impose fines on the contractor on each incident/each non-conformity as per details given below:	
	Safety measure	Fine (Rs)
14.5.5.1	Not wearing safety helmet at site.	Rs 50/-
14.5.5.2	Not wearing safety shoes at site.	Rs 50/-
14.5.5.3	Not wearing safety belt while working at higher elevation	Rs 100/-
14.5.5.3	Not providing lifeline of safety belt	Rs 100/-
14.5.5.4	Not using grinding goggles while doing grinding operations	Rs 50/-
14.5.5.5	Not using 24V supply for lighting in confined spaces.	Rs 500/-
14.5.5.6	Improper earthing of welding & other electrical machines.	Rs 500/-
14.5.5.7	Electrical plug not used for hand machines	Rs 100/-
14.5.5.8	Not slinging properly	Rs 200/-
14.5.5.9	Using damaged slings	Rs 200/-
14.5.5.10	Using frayed / broken welding cables	Rs 200/-
14.5.5.11	Non removal of scarp from platforms	Rs 200/-
14.5.5.12	Lifting cylinders without cage	Rs 500/-
14.5.5.13	Gas cutting without taking proper precautions or not using sheet below	Rs 200/-
14.5.5.14	Not maintaing electrical winches properly	Rs 500/-
14.5.5.15	Shorting of fuse links by thick wire	Rs 500/-
14.5.5.16	Over speeding of vehicles within in site premise	Rs 200/-
14.5.5.17	Not having valid driving license for type of vehicle being driven	Rs 500/-
14.5.5.18	Not having valid registration for the vehicle	Rs 500/-
14.5.5.19	Not providing proper barricades/ caution boards	Rs 200/-
14.5.5.20	Not displaying SWL on the lifting equipment	Rs 200/-
14.5.5.21	Sub-contractor not attending safety meeting	Rs 1000/-
14.5.5.22	Improper ladder for climbing up	Rs 500/-
14.5.5.23	Improper scaffolding arrangement	Rs 500/-
14.5.5.24	Engaging child labour for construction work	Rs 1000/-
14.5.5.25	Using domestic LPG cylinder for gas cutting /welding operations	Rs 500/-
14.5.5.26	Not maintaining First Aid Box	Rs 500/-

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14.5.6	Any other nonconformity noticed not listed above will also be fined. The decision of BHEL engineer is final on the above. The amount will be deducted from running bills of the contractor. The amount collected on the above will be • ecogniz for giving award to the employee who could avoid accidents by following safety rules. Also, the amount will be spent for improving the safety at site.
14.5.7	The contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislation and BHEL, as he may deem necessary.
14.5.8	The contractor will notify well in advance to BHEL of his intention to bring to the site any container filled with liquid or gaseous fuel or explosive or petroleum substance or such chemicals, which may involve hazards. BHEL shall have the right to prescribe the conditions, under which such container is to be stored, handled and used during the performance of the works and the contractor shall strictly adhere to and comply with such instructions. BHEL shall have the right at his sole discretion to inspect any such container or such construction plant/equipment for which material in the container is required to be used and if in his opinion, its use is not safe, he may forbid its use. BHEL shall entertain no claim due to such prohibition and BHEL shall not entertain any claim of the contractor towards additional safety provisions/conditions to be provided for/constructed as per the BHEL's instructions.
14.5.9	Further, any such decision of the BHEL shall not, in any way, absolve the contractor of his responsibilities and in case, use of such a container or entry thereof into the site area is forbidden by the BHEL, the contractor shall use alternative methods with the approval of the BHEL without any cost implication to BHEL or extension of work schedule.
14.5.10	Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives, the Contractor shall be responsible for carrying-out such provision and/or storage in accordance with the rules and regulations laid down in Petroleum Act 1934, Explosives Act, 1948, and Petroleum and Carbide of Calcium Manual published by the Chief Inspector of Explosives of India. All such storage shall have prior approval of the BHEL. In case, any approvals are necessary from the Chief Inspector (Explosives) or any statutory authorities, the Contractor shall be responsible for obtaining the same.
14.5.11	All equipment used in construction and erection by Contractor shall meet Indian/ International Standards and where such standards do not exist, the Contractor shall ensure these to be absolutely safe. All equipments shall be strictly operated and maintained by the Contractor in accordance with manufacturer's operation Manual and safety instructions and as per Guidelines/ rules of BHEL in this regard.
14.5.12	Periodical examinations and all tests for all lifting/ hoisting equipment & tackles shall be carried-out in accordance with relevant provisions of Factories Act 1948, Indian Electricity Act 1910 and associated laws/ rules in force from time to time. A register of such examinations & tests shall be properly maintained by contractor and will be promptly produced as & when desired by BHEL or by the person authorized.
14.5.13	The contactor shall be fully responsible for the safe storage of his and his sub-contractor's radioactive sources in accordance with BARC/ DAE (Bhabha Atomic Research Center/ Department of Atomic Energy, Govt of India) rules and other applicable provisions. All precautionary measures stipulated by BARC/ DAE in connection with use, contractor would take storage and handling of such material.
14.5.14	The contractor shall provide suitable safety equipment of prescribed standard to all employees and workmen according to the need, as may be directed by BHEL who will also have right to examine these safety equipments to determine their suitability, reliability, acceptability and adaptability.
14.5.15	Where explosives are to be used, the same shall be used under the direct control and supervision of an expert, experienced, qualified and competent person strictly in accordance with the Code of Practices/ Rules framed under Indian Explosives Act pertaining to handling, storage and use of explosives.
14.5.16	The contractor shall provide safe working conditions to all workmen and employees at the Site including safe means of access, railings, stairs, ladders, scaffoldings etc. The scaffoldings shall be erected under the control and supervision of an experienced and competent person. For erection, the contractor only shall use good and standard quality of material.
14.5.17	The contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to BHEL or other contractors under any circumstances, whatsoever, unless expressly permitted in writing by BHEL to handle such fuses, wiring or electrical equipment.
14.5.18	Before the contractor connects any electrical appliances to any plug or socket belonging to the

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	other contactor or BHEL, he shall fulfill following.
14.5.18.1	Satisfy BHEL that the appliance is in good working condition.
14.5.18.2	Inform BHEL of the maximum current rating, voltage and phases of the appliances.
14.5.18.3	Obtain permission of BHEL detailing the sockets to which the appliances may be connected.
14.5.19	The BHEL will not grant permission to connect until he is satisfied that:
14.5.19.1	The appliance is in good condition and is fitted with suitable plug;
14.5.19.2	The appliance is fitted with a suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.
14.5.20	No electric cable in use by contractor/ BHEL will be disturbed without prior permission. No weight of any description will be imposed on any cable and no ladder or similar equipment will rest against or attached to it.
14.5.21	No repair work shall be carried out on any live equipment. BHEL must declare the equipment safe and a permit to work shall be issued by BHEL before the contractor carries out any repair work. While working on electric lines/equipments whether live or dead, suitable type and sufficient quantity of tools will have to be provided by contractor to electricians/ workmen/ officers.
14.5.22	The contractors shall employ necessary number of qualified, full time electricians/ electrical supervisors to maintain his temporary electrical installations.
14.5.23	The contractor shall employ trained safety officer to supervise day to day safety aspects of the equipments and workmen, who will co-ordinate with BHEL safety officer. In case of work being carried out through sub-contractors, sub-contractor's workmen/ employees will also be considered as the contractor's employees/ workmen for the above purpose.
14.5.24	The name and address of such safety officer of contractor will be promptly informed in writing to BHEL with a copy to safety officer-In charge before he starts work or immediately after any change of the incumbent is made during currency of contract.
14.5.25	In case any accident occurs during the construction/ erection or other associated activities undertaken by the contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the contractor to promptly inform the same to BHEL in prescribed form and also to all the authorities envisaged under the applicable laws.
14.5.26	BHEL shall have the right at his sole discretion to stop the work, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and/ or property, and/ or equipments. In such cases, the contractor shall be informed in writing about the nature of hazards and possible injury/ accident and he shall comply to remove shortcomings promptly.
14.5.27	The contractor shall not be entitled for any damages/ compensation for stoppage of work due to safety reasons above and the period of such stoppage of work will not be taken as an extension of time for completion of the facilities and will not be the ground for waiver of levy of penalty.
14.5.28	The contractor shall follow and comply with all safety rules of BHEL, relevant provisions of applicable laws pertaining to the safety of workmen, employees plant and equipment as may be prescribed from time to time without any demur, protest or contest or reservation. In case of any inconformity between statutory requirement and Safety Rules of BHEL referred above, the later shall be binding on contractor unless the statutory provisions are more stringent.
14.5.29	In case BHEL is made to pay such compensation then the contractor is liable to reimburse BHEL such amount in addition to compensation indicated above.
14.9.30	These insurance covers have to be taken prior to start of his work at the subject project and he shall make available the Policy to BHEL site-in-charge for necessary verification before commencement of work. However, irrespective of such verification/ acceptance, the sole responsibility to maintain adequate insurance cover for his workmen, T&P, assets etc at all times during the period of contract shall lie with the contractor. Regarding the aforesaid insurance cover, the contractor shall directly deal with the Insurance Company for all matters regarding the insurance in his scope.
14.10	HEALTH SAFETY & ENVIRONMENT
14.10.1	It is imperative on the part of the contractor to join and effectively contribute in joint measures such as tree plantation, environment protection, contributing towards social up-liftment, conversion of packing woods to school furniture, keeping good relation with local populace etc.
14.10.2	Round the clock experienced paramedical personnel with first aid facility & one ambulance at site to be arranged by the bidder at his own cost. No medical facility within / near the site shall

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	be provided by BHEL. However, BHEL shall provide one room (without furniture) for use as first aid.
14.10.3	No staff quarter shall be provided by BHEL.
14.10.4	No borrow area for earth shall be arranged / provided by BHEL.
14.10.5	All individual site erection, temporary approaches required for movement of cranes, trailers, trucks, transit mixers, dumpers, etc shall be arranged by the contractor at his own cost.
14.10.6	The contractor shall solely be responsible for the safety, quality, & quantity of material after it is handed over and issued to contractor by the BHEL.
15.0	TEST CERTIFICATE FOR T&P
	All T&P, lifting tackles and pulling devices to be deployed by the contractor must bear valid / latest test certificates for their suitability, and the documents shall be preserved at site.
16.0	ISSUE OF T&P
	No T&P to be issued by BHEL.
17.0	DELETED
18.0	MATERIAL HANDLING (BHEL ISSUED MATERIAL)
18.1	Cement, reinforcement, earthing MS Rod, structural steel (MS plates, ISMB, ANGLE, CHANNEL, Chequered plate, Stainless Steel Plate) will be issued free of cost by BHEL for use in the work covered in this contract.
18.2	Cement & steel will be issued to the contractor from BHEL/Customer's store within the plant premises, on weighment basis. Receipt from BHEL/Customer's stores, handling / transportation to work site, unloading, safeguarding of material, reconciliation of materials etc. will be under the scope of work within his quoted rate.
18.3	Open land (free from encumbrance) shall be provided by BHEL on free of cost basis. Contractor shall maintain one centralized fenced store cum bar bending yard (Area Approx. 70mx70m). Hard surfacing of this yard and all round drain shall be carried out by the contractor at his own cost within the quoted rate. Batching plant area shall be provided within plant premises and contractor shall make use of the area for installation and operation of the Batching Plant at his own cost. The bidder shall make complete arrangement of necessary security personnel, to safeguard all such materials in his custody. Materials issued will be used only for construction of permanent work. The contractor shall take care of material issued by BHEL and shall protect the same from theft, damage and weathering.
18.4	The contractor shall construct waterproof cement store for initial period (capacity minimum 400 MT) for storing and stacking of cement, CGI/ asbestos roofing (slope) with brick masonry wall, PCC flooring. Materials required for the same shall be provided by contractor at his own cost. Cement has to be kept over wooden raised platform. Stacking of cement is to be done as per IS codes with proper illumination and locking arrangements.
18.5	The contractor shall in no case be entitled for any compensation or damages on account of any delay in supply or non-supply thereof for all or any such material.
18.6	Clotting of cement and excessive rusting of steel must be avoided. In case, due to any cause attributable to the contractor, such clotting of and/or rusting of steel occur rendering the same unusable, then such quantity of cement /steel shall be recovered from the interim payment at the penal rate specified in the tender.
18.7	No material shall be issued to the contractor except as those indicated above i.e. cement and steel unless otherwise expressly provided for in the contract. Contractor will have to make his own arrangement at his own cost for procurement of any other material as required for the works and of such quality as acceptable to BHEL.
18.8	The contractor shall maintain proper store account for all the BHEL issued materials and shall give three copies of once in two months computerised reconciliation statement of such account to the BHEL.
18.9	The contractor shall solely be responsible for the safety & quality of material after it is handed over and issued to contractor by BHEL.
18.10	BHEL issued materials shall not under any circumstances taken out of the project site unless otherwise permitted by BHEL.
19.0	ISSUE OF MATERIALS
19.1	ISSUE OF CEMENT
19.1.1	Cement as received from the manufacturer/ stockiest will be issued free of cost to the contractor. The theoretical weight or each bag of cement for issued purposes will be considered

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	as 50 kg, the contractor shall be accountable for the cement issued to him on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement.
19.1.2	The empty cement bags duly accounted for against issue shall be the property of the bidder and the same shall be disposed by the bidder as per statutory regulation prevailing in the project.
19.2	ISSUE OF STEEL
19.2.1	The steel shall be issued to the contractor free of cost on the following basis.
19.2.1.1	M S Structural steel (plates including cheqd plate, angle, channel, ISMB, stainless steel plate) materials – Weighment basis (unit – MT).
19.2.1.2	Reinforcement steel and earthing rod (MS round) – Weighment basis (unit – MT).
19.2.2	All the steel (structural steel, reinforcement, earthing & MS rod, stainless steel) issued by the BHEL shall be properly accounted for. The total quantity of steel required for the work will be calculated from the approved Bar Bending schedule, fabrication drawings, approved laps, chairs and lugs. The measurement for payment as well as for accounting shall be based on the sectional weights as indicated in the following IS specifications. IS: 808-1964 Beams, Channels and Angles IS: 1730-1961 Plates, Reinforcements Fe-500 confirming to IS: 1786. or grade-1 of IS:432 (part-I)
19.2.3	In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding.
19.2.4	The steel issued to the contractor shall be mainly in standard length and sections as received from the supplier. However, the contractor shall be bound to accept the steel in length as available in the project stores no claims for extra payment because of issue of non-standard length will be entertained.
19.3	The contractor shall satisfy himself of the quality and quantity of the materials 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.
19.4	The contractor shall submit to the engineer, a statement indicating estimated quantity of cement and steel required at least two months in advance. In addition, the contractor shall also furnish the estimated requirement of cement and steel during a month by the third week of the previous month indicating his requirement.
19.5	Bidders to ensure that no lamination materials are taken over by them from BHEL. Fabrication wastage, if any due to above, shall not be compensated by BHEL
19.6	Bidder to note that all fasteners like MS/HT/HSFG bolts/nuts, lock nuts, washers etc shall be supplied by the bidder as per applicable item of BOQ-cum Rate schedule.
19.7	Bidder to note that cement and steel required for his enabling job like store/site office etc shall be arranged at his own cost. All TG staging material shall be arranged by contractor at his own cost. Bidder shall do the design for its structure just immediately after receipt of TG deck drawing and obtain approval from an institution of repute.
19.8	For main civil, structural and architectural work, any reinforcement / structural item required shall be arrange by the contractor and payment will be released as per BOQ schedule rates.
20.0	RETURN OF MATERIALS
20.1	RETURN OF CEMENT
20.1.1	Sealed cement bags remaining unused and in perfectly good condition at the time of completion or termination of the contract shall be returned promptly, (within 15 days from assessment) if BHEL/ Engineer is satisfied of the physical condition of the cement. Return of such cement to the project stores/ place as identified within the project area by Engineer/ BHEL will not be entitled to handling and incidental charges. Surplus sealed and good conditioned cement bags will be taken back on weighment basis.
20.2	RETURN OF STEEL INCLUDING SCRAP
20.2.1	All surplus steel and all wastage materials will be taken back on weighment basis.
21.2.2	Surplus, unused and un-tampered steel shall be sorted section-wise and returned separately for a place directed by BHEL/Engineer within the project area; Return of such materials will not be entitled to any handling and incidental charges.
20.2.3	All wastage/ scrap (including wastage, unusable scrap) shall be returned to the stores on weighment basis and a receipt obtained for material accounting purposes. Return of such material will not be entitled to any additional cost due handling and transportation and incidental

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	charge.	
20.2.4	Scrap for reinforcement steel and structural steel shall be returned separately	
21.0	CEMENT AND STEEL CONSUMPTION AND WASTAGE	
21.1	CEMENT CONSUMPTION	
21.1.1	The theoretical consumption of cement shall be based on the following.	
21.1.1.1	For design mix concrete as per approved design mix.	
21.1.1.2	For nominal mix concrete work, as per minimum cement as specified or as approved by Engineer-in-charge.	
21.1.2	For item of works, where volume mix is permitted in writing by the BHEL, for masonry works, plaster other miscellaneous items, the cement consumption shall be governed by the "Statement of Cement Consumption" attached to Delhi schedule of Rates of CPWD-DSR-2002 unless otherwise specified in the specifications or the drawing of contract of contract or mutually agreed by Engineer-in-charge and contractor.	
21.1.3	Actual consumption = Issue – Surplus/ unused quantity of cement returned in good condition by contractor to store. (No sweep cement will be taken back by BHEL).	
21.2	CEMENT WASTAGE	
21.2.1	Allowable wastage – One and half percent (+1.5%) of theoretical consumption of cement unless specified otherwise in the technical specification.	
21.2.2	For any material 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 effected at penal rates.	
21.2.3	Sl no	Basis of issue & penal recovery
	C-1	Free
	C-2	Free
	C-3	Penal rate
21.3	REINFORCEMENT STEEL & EARTHING MS ROUND CONSUMPTION	
21.3.1	The theoretical consumption of various diameter of reinforcement and earthing MS round shall be based on approved construction drawing and bar bending schedule. Weight shall be calculated considering the sectional weights as per Indian standards. No extra cost shall be payable to the contractor for any deviation in weights for the different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.	
21.3.2	Actual consumption = Issue – Surplus.	
21.3.3	Surplus = Un-tampered and unused quantity of steel returned by the contractor to BHEL store along-with relevant documents.	
21.3.4	Wastage = Actual consumption – Theoretical consumption.	
21.4	REINFORCEMENT STEEL & EARTHING MS ROUND WASTAGE	
21.4.1	Allowable wastage: (+4%) of the theoretical consumption shall be considered as allowable wastage.	
21.4.2	Wastage and scrap shall be as per actual weighment basis.	
21.4.3	Sl no	Basis of issue & penal recovery
	R-1	Free
	R-2	Free
	R-3	Penal rate
21.5	STRUCTURAL STEEL MATERIALS CONSUMPTION	
21.5.1	The theoretical consumption of various sections shall be based on approved drawings. Weights shall be calculated considering the sectional weights as per Indian standard as mentioned in relevant clause. No extra shall be payable to the contractor for any deviation in weights for the two different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.	
21.5.2	Actual consumption = Issue – Surplus.	

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21.5.3	Surplus = Untempered, unused, uncut quantity of steel returned by the contractor to BHEL store.	
21.5.4	Wastage = Actual consumption – Theoretical consumption.	
21.6	STRUCTURAL STEEL WASTAGE	
21.6.1	Allowable wastage – 4 % (four percent) of the theoretical consumption shall be considered. Wastage is further classified as cut pieces and scrap measured as per actual weightment basis. Invisible wastage (loss of materials due to gas cutting, straightening of edges etc) shall be limited to 0.5 % (zero point five percent) of theoretical consumption and shall be considered for reconciliation purposes only. But this invisible wastage shall be considered to be included in allowable wastage (i.e. four percent).	
21.6.2	Sl no	Basis of issue & penal recovery
	S-1	Theoretical consumption (without considering any wastage, scrap or loss) as per specification & drg.
	S-2	Wastage limited to plus four percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage.
	S-3	Wastage beyond four percent (4%) of the aforesaid theoretical consumption (S-1).
21.7	All wastage reinforcement, MS round (for earthing), structural steel shall be returned to BHEL.	
22.0	RECONCILIATION OF BHEL ISSUED MATERIALS	
22.1	The contractor shall submit a reconciliation statement of cement and steel issued to him with each RA bill.	
22.2	At the time of submission of bills, the contractor shall properly account for the material issued to him as specified herein to the satisfaction of BHEL certifying that the balance material are available with contractor's custody at site.	
22.3	At the time of submission of bills by the contractor, if it is noticed by BHEL that the wastage is high and calls recovery at the penal rate, then BHEL will proceed for recovery for the excess wastage as per penal recovery rates as specified.	
22.4	The approved drawings/ bar bending schedules are to be considered for the purpose of reconciliation of materials.	
23.0	DELETED	
24.0	RECOVERY OF MATERIAL	
24.1	If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA bill at the penal rate stipulated below.	
24.2	PENAL RATE OF MATERIALS	
	Item	Penal rate (Rs)
24.2.1	Cement (OPC/ PPC/PSC).	6,500/- per MT.
24.2.2	Reinforcement steel and earthing rod etc.	58,000/- per MT.
24.2.3	Stainless Steel Plate / Liner	6,00,000/- per MT
	Structural steel and hand railing materials.	65,000/- per MT.
25.0	CONSTRUCTION OF TEMPORARY OFFICE, STORES ETC	
25.1	The contractor shall arrange at his own cost cleaning and grass removing of area allotted, construction of his temporary office/stores, cement godown, fabrication yards etc. and also the watch and ward of all the above. Materials required for the same shall be provided by contractor at his own cost.	
25.2	BHEL contemplates to provide fabrication yard more that one places within plant premises. However; during execution, based on actual site conditions, requirement and layout and approaches, the above may change suitably.	
26.0	TOOLS & PLANTS (TO BE PROVIDED BY CONTRACTOR)	
26.1	Tentative list of T&P to be deployed by contractor for successful completion of work is detailed below. This supersedes corresponding Annexure of Volume-1E	
26.2	It may be noted that the list is not exhaustive and is only for general guidance. The contractor is required to provide all necessary T&P (other than those specified to be provided by BHEL) measuring (calibrated) instruments & handing equipments for timely completion of total work as per contract. In case of project requirement, some activities may have to pre-pone. In such cases the contractor may have to deploy additional T&P. Quoted rate shall be inclusive of such requirements. However, contractor shall submit deployment plan of all T&P along with tender	

	bid.	
26.3	In the event of any failure of the part of the contractor and as a result progress of work suffered, BHEL may at his discretion also terminate the contract on this ground and take out any or whole amount of the contract from the scope of the contractor. In the event of failure of contractor to deploy necessary and sufficient T&P/ IMTEs. BHEL will be at liberty to arrange the same at the risk & cost of contractor including transportation cost of same from any of BHEL site/ other agency & charges as applicable shall be deducted from contractor's RA bill. Decision of BHEL in this regard will be final & binding on contractor.	
26.4	Following Major T&Ps to be arranged by contractor within the time as indicated against each T&P.	
	Major T&P items	Mobilisation time (from the date of written intimation by BHEL to start the work)
26.4.1	Two nos. crawler/tyre mounted cranes 40/45 T capacity	1 st Within 60 days
26.4.2	DELETED	
26.4.3	2 Nos. hydraulic excavator / Poclain	1 st Within 25 days, 2 nd within 45 days
26.4.4	Two Nos. 20/25 T capacity crawler crane	1 st Within 45 days, 2 nd within 90 days.
26.4.5	5 nos. hydra (10/ 12 T cap)	1 st & 2 nd within 30 days. 3 rd within 70 days. 4 th & 5 th within 100 days
26.4.6	Two Nos. All cut drill machine	Within 100 days.
26.4.7	DELETED	
26.4.8	DELETED	
26.4.9	DELETED	
26.4.10	40 nos. welding rectifier	Within 150 days.
26.4.11	1 no. trailer – 15T	Within 100 days.
26.4.12	2 no. power driven HSFG bolt tightening m/c	Within 140 to 160 days.
26.4.13	1 no. portable automatic concrete batching plant with printing facility (Output 15 cum/ hr)	To be commissioned Within 45 days.
26.4.14	1 no. automatic concrete batching plant with printing facility (30 Cum/Hr) – to be commissioned at site.	Within 75 days.
26.4.15	4 nos. transit mixer (4.5/5/6 M3 capacity)	1 st within 40 days. Balance within 75 days.
26.4.16	2 nos. concrete pump (20 cum/ hr min capacity & lift 70M)	Within 60 to 75 days.
26.4.17	One mobile concrete boom placer atleast 41mt height lifting capacity.	Within 45 days.
26.4.18	2 nos. self priming dewatering pump 5 HP (diesel/ electric)	Within 20 days.
26.4.19	Two nos. 10 HP submersible mono-block electric pump (KOS-1040+ of Kirloskar or equivalent),	Within 60 days.
26.4.20	2 nos. self priming dewatering pump 2 HP (diesel/ electric)	Within 30 days.
26.4.21	One no. 5 HP sludge/sump/slurry electric pump.	Within 30 days.
26.4.22	2 nos. curing pump – 1.5 /2 HP (pump for curing at heights)	Within 60 days.
26.4.23	1 no. dozer.	Within 25 days.
26.4.24	One vibro-piling rig for sand piling work.	Within 40 days
26.4.25	Two nos driven piling rig with all accessories	1 st & 2 nd within 30 days (commissioning).
26.4.26	Ply shuttering board (4500 sqm) including propping with steel tubular sections/ ACROW pipes	Within 60 days.
26.4.27	Ply shuttering board (4500 sqm) including propping with steel tubular sections/ ACROW pipes	Within 120 days.
26.4.28	8 nos. dumper	3 nos. Within 20 days. Balance within 30 days
26.4.29	2 nos. reinforcement bending machine	Within 30 days.
26.4.30	2 nos. reinforcement cutting machine	Within 30 days.
26.4.31	40,000 RM MS scaffolding pipe/cup-lock system	As per site requirement

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26.4.32	04 nos. power driven earth rammer	Within 60 days.
26.4.33	1 no. vibromax (earth compacter)	Within 45 days.
26.4.34	1 no. compression testing machine (200 T cap)	Within 45 days.
26.4.35	Civil laboratory equipments as per list attached in ANNEX `A` with temporary building (20 M x 8 M).	Within 55 days.
26.4.36	4 nos. electric winch with building hoist	Within 220 days.
26.4.37	Power winch – 3T - 4 nos for structural erection	Within 150 days
26.4.38	Power winch – 5T - 2 nos for structural erection	Within 150 days
26.4.39	1 no total station with adequate arrangement for operators.	Within 15 days.
26.4.40	1 no theodolite 1 second accuracy	Within 15 days.
26.4.41	2 nos auto level & staff	Within 15 days.
26.4.42	DELETED	
26.4.43	125 nos concrete cube moulds	Within 15 days.
26.4.44	DELETED	
26.4.45	Adequate no. of small trucks 2T/5T for movement within site	As per requirement.
26.4.46	One nos drinking water tank – 5000 lit.	Within 30 days.
26.4.47	1 nos truck mounted water tank (minimum 5000 lit) capacity with sprinkler arrangement.	Within 30 days.
26.4.48	1 no ultra-sonography testing machine for structural work.	Within 75 days.
26.4.49	1 no radiography source.	Within 100 days.
26.4.50	scaffolding materials / structural steel (approx 90 T).	Within 160 days.
26.4.51	DELETED	
26.4.52	DELETED	
26.4.53	Portable fire extinguishers as below: Soda acid – 20 sets. Dry chemical powder – 20 sets CO2 – 15 sets. Water & sand bucket (4 buckets in one stand) – 10 sets. Fire hose with nozzle (50 M length) – 12 sets.	Within 90 days
26.4.54	1 no concrete cutting power tools (DD2E of HILTI/ BOSCH make).	As per site requirement
26.4.55	1 no concrete coring machine for drilling in concrete upto 150 mm dia alongwith diamond bits.	As per site requirement
26.5	T&P shown in the above mentioned list are minimum requirement. Mobilisation period shown above for major T&Ps have to be adhered and no change will be permitted without written approval of BSEB/BHEL. Further requirement will be reviewed time to time at site and vendors will provide additional T&P/ equipments to ensure completion of entire work within schedule time without any financial implication to BHEL. However payment for deployment of 150T, 250T capacity cranes and water tanker with sprinkler arrangement (under sl no 26.4.41, 26.4.52 and 26.4.47) only shall be made as per BOQ schedule rates. All other T&Ps shall be provided by the contractor without any extra cost to BSEB/BHEL. Vendor will give advance intimation & certification regarding capacity etc prior to dispatch of heavy equipments.	
26.6	All T&P and all IMTEs, which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by the contractor at his own cost in working condition.	
27.0	CIVIL LABORATORY AT SITE	
27.1.0	Contractor shall establish and maintain civil laboratory at site with equipments as listed attached in ANNEX `A`	
27.1.1	Compressive strength of cement, concrete cubes, bricks etc.	
27.1.2	Water absorption test of bricks.	
27.1.3	Earth compaction test (proctor density/ dry density and optimum moisture content, etc).	
27.1.4	Conducting of test for setting time and compressive strength of cement.	
27.1.5	Sieve analysis of fine aggregates and coarse aggregates.	
27.1.6	Bulking test of fine aggregates.	
27.1.7	Sieve analysis, moisture content, specific gravity and crushing strength of course aggregates.	
27.1.8	Rapid moisture meter	
27.1.9	Other than above mentioned test, any testing required to be carried out at site as per Quality Plan and technical specification have to be arranged by contractor for all the works at his own cost.	

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27.2.0	The scope shall also include setting up by the bidder a testing laboratory (one AC lab size 4.5mtr x 6mtr and 1 non AC lab 4.5 mtr x 4.5 mtr.) in the field to carry out all relevant tests. Detail of laboratory equipments as per Annexure-A is to be arranged by the contractor within quoted rate. For conducting day to day one no. chemist to be deployed as necessary.
28.0	CONSTRUCTION SCHEDULE
28.1	Entire work shall be carried out in accordance with the construction schedule within the stipulated completion period. Within 30 days of LOI, the contractor shall discuss with BHEL site engineer & furnish the (L-3) construction schedule based on milestones as per clause 14.1.1 for approval.
28.2	Contractor will establish mix design within 40 days from the date of LOI.
28.3	Mix design for all concreting may be carried out either at site or from a reputed institute; contractor has to ensure adding of admixture and minimizing of cement content in line with IS 456.
29.0	COMPLETION PERIOD
	1) FOR PART-1 & PART-2 JOB OF VOL-III-The entire work under this scope shall be successfully completed in all respect within 27 (twenty-seven) months from date of start of work. 2) FOR PART-3 & PART-4 JOB OF VOL-III- The entire work under this scope shall be successfully completed in all respect within 6 (six) months from date of start of work. Mobilisation period - 15 days from date from date of intimation of BHEL site.
30.0	LIQUIDATED DAMAGE
	It shall be applicable as per relevant clause of GCC.
31.0	CERTIFICATE TOWARDS COMPLETION
	The work under the scope of the contractor shall be deemed to have been completed in all respects only when so certified by BHEL. The decision of BHEL in this regard shall be final and binding on the contractor.
32.0	GUARANTEE
32.1	Even though the work will be carried out under supervision of BHEL, the contractor will be responsible for the quality of workmanship, quality of materials/ items and design for which the contractor is responsible.
32.2	The contractor shall guarantee the work executed under the scope of the contract for a period of 12 (twelve) months from the date of start of guarantee period as certified by the Engineer (ie on completion of total work under scope and/ or taking over by BHEL) and shall rectify free of cost all defects due to faulty supply or work done. In case the contractor fails to repair/ replace the defective works within the time specified by the Engineer, BHEL may proceed to undertake the repairs/ replace such defective works at contractor's risk and cost without prejudice to any other rights and recover the same from security deposit/ other dues.
33.0	DELETED
34.0	DELETED
35.0	OVER RUN CHARGES
	It shall be applicable as per relevant clause of GCC.
36.0	REVISION ON ACCEPTED CONTRACT RATE
	No revision of rates shall be applicable in the event the completion period is extended for any reason whatsoever.
37.0	PRICE VARIATION CLAUSE (SUPPLY OF CEMENT & STEEL BY BHEL)
37.1	It shall be applicable as per relevant clause of GCC.
38.0	SECURITY DEPOSIT & PERFORMANCE BOND
38.1	Security deposit shall be as per relevant clause of GCC.
38.2	Performance bond is not applicable for this tender.
39.0	CONTRACT PRICE
39.1	The bidder shall quote their rates strictly in accordance with prescribed rate schedule of Volume-III.
39.2	The quantities of the various items mentioned in the BOQ cum rate schedules of items of Volume-III are approximate, based on very preliminary information and may vary to any extent or to be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value

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	of the work executed under any part of the this contract including extra items, if any, but excluding any price variation, remains within +/- 30 % (plus/minus thirty percent) of the awarded price as per LOI / WO.
40.0	TAXES AND DUTIES
40.1	TDS under Income Tax, V.A.T etc, if any, shall be deducted at prevailing rates on Gross Invoice Value from the Running Bills unless Exemption Certificate from the Appropriate Authority/ Authorities is furnished .
40.2	All taxes (except Service Tax including Educational Cess and other Cess , if any), Works Contract Tax under BIHAR V.A.T ACT, charges royalties, duties, Octroi , any State or Central Levy and other Taxes for materials obtained for the work and for the Execution of the Contract shall be borne by the Contractor and shall not be payable extra. Any Increase of the same at any stage during execution of the Contract shall have to be borne by the Contractor. Quoted price of the bidder shall be inclusive of all such requirements after taking the Input Credit , if any, as per provisions of the State V.A.T ACT. The Contractor is responsible to furnish all documentary evidences towards payment of Works Contract Tax as and when required by BHEL. Submission of Tax Invoice is a must after Grossing up the Bills as the price is inclusive of VAT/WORKS CONTRACT.
40.3	<p>The Contractor has to make his own arrangement at his cost for completing the formalities, if required, with State V.A.T.Act Authorities, for bringing their materials, plants and machinery at Site for the execution of the Works under this Contract, Road Permit / Way Bill, if required, shall be arranged by the Contractor and BHEL-P.S.E.R will not supply any Road Permit/Way Bill for this purpose. The Contractor must be a Registered Dealer with the State VAT Act, if not Registered yet and a copy of the said Registration Certificate along with TIN Number must be provided to Site R.A.O</p> <p>The Vendor must furnish Tax Clearance Certificate from prescribed authority as per Sec.42 of The Bihar Value Added Tax Act,2005 before accepting the LOI / W.O. from BHEL.</p> <p>Advance Recovery of Tax from Works Contractors : BHEL will deduct applicable WCT TDS as per Sec 41 The Bihar Value Added Tax Act,2005</p>
40.4	Service Tax: Finance Act, 2007 introduced a new sub-clause (zzzza) to Section 65 (105) which provided for levying Service Tax on execution of Works Contract with effect from 1.6.07.
40.5	<p>Notification No. 32/2007-Service Tax provides an option (of composition) to the person liable to pay service tax in relation to works contract service to pay an amount equal to 4.12 % of the gross amount charged for the Works contract instead of normal rate provided in the Sec. 66 of the Act. However, <u>this option of paying service tax @4.12 % (at present) on gross value can be exercised prior to payment of service tax in respect of said Works contract and the option so exercised shall be applicable for the entire works contract and shall not be withdrawn until the completion of said works contract.</u></p> <p>As such, Service Tax as legally leviable & payable by the Contractor under the above provisions of applicable law/Act , shall be paid by BHEL-P.S.E.R on Contractor's Gross Bill.</p> <p>The Contractor shall furnish proof of Service Tax registration with Central Excise Division covering the Services as well as exercising the aforesaid option i.e. the Composition Scheme under Notification 32/2007 under this Contract.</p> <p>Registration should also bear endorsement for the premises from where the billing shall be done by the Contractor on B.H.E.L-P.S.E.R for this Project.</p> <p>B.H.E.L-P.S.E.R will not be held to be responsible for non-compliance of various Service Tax Rules, being framed from time to time</p> <p>Contractor is allowed to include the value of free issue of materials , if any , mainly Steel , Cement & other materials , supplied under Supply Contract based on monthly Consumption basis to enable them to comply with Notification 23/2009 –S.T for arriving at Gross Amount charged .</p>

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40.6	<ul style="list-style-type: none"> ➤ Point of Taxation Rule,2011 has come into operation from 01-04-2011. As per the rule Invoice must be generated within 14 days from the date of completion of service. In such case, the date of invoice will be the relevant date. However, if the invoice is not generated within 14 days as stated above, the date of completion of service shall be the relevant date. ➤ <u>Vendors must take adequate care and cautions w.r.t “Point of Taxation Rule,2011”</u> as otherwise both the Vendors (for non-compliance) and BHEL (unable to take Credit on Input Services, resulting in extra fund flow in that particular month) will suffer
40.7	New tax & duties, if imposed subsequent by statutory authority after 19-02-08 during contract period (including extension, if the same is not attributable to bidder), shall be reimbursed by BHEL on production of relevant supporting document to the satisfaction of BHEL. However, bidder shall obtain prior approval from BHEL before depositing new taxes & duties
41.0	INTERIM PAYMENTS
41.1	For all items of work as per Volume-III, Price Schedule, interim payment shall be limited to 95% of the gross value of interim bill on item rate basis which will be prepared and submitted by the contractor on the basis of measurement sheet duly checked and signed by BHEL and BSEB Engineers. All admissible recoveries/adjustments etc. shall be made from the interim payable amount. The balance 5% shall be payable along with final bill.
41.2	Out of this 95%,1.5 % of gross bill amount shall be paid in the following manner on certification by BHEL engineer after compliance of each of the following activity in each month. In case of non-fulfillment of respective activity by vendor in each month, no payment shall be made by BHEL against corresponding activity and no claim of bidder at a later date, whatsoever,in this regard shall be entertained by BHEL.
41.2.1	0.7% shall be paid on compliance of All admissible recovered/adjustments etc. shall be made from the interim payable amount of house keeping of vendor’s working area and store/office areas.
41.2.2	0.3% shall be paid on compliance of general illumination of vendor’s working area and stores, office area.
41.2.3	0.2 % shall be paid on compliance of applicable OHSAS requirement as per guidelines of BHEL/PSER and as specified in the tender.
41.2.4	0.3 % shall be paid on compliance of applicable safety requirement as per guidelines of BHEL/PSER and as specified in the tender .
41.3	Contractor’s RA bill, complete & correct in all respects, certified by BHEL/BSEB engineer, shall be paid within 30 days of date receipt of bill.
41.4	Fifty percent of the Mobilisation & Demobilisation Charge of hired crane (2743A & 2743B of Price bid) will be payable against Mobilisation and balance fifty percent is payable against Demobilisation as per BHEL Site Engineer’s certification.
41.5	BSEB/BHEL site at its discretion may further split up the above percentages of break up and effect payment to suit the site condition, cash flow requirement, according to the progress of work. BHEL reserve the right to release payment through electronic mode, for which bidder shall comply with requisite formalities
41.6	Such payment as above shall be effected only on certification by BHEL against completion of each stage.
41.7	No bills including RA bills will be paid to individual consortium partners in case of consortium arrangement.
42.0	METHOD OF MEASUREMENT
	IS 1200 in conjunction of IS code 3385 shall be adopted. In case the item of measurement is not available in the IS 1200, the standard procedure adopted in CPWD shall be adopted. In case the same is also not available in CPWD, the measurement of the work done will be based on the mutual agreement between BHEL and contractor. In all the above cases, the interpretation of BHEL will be final and binding to the contractor.
43.0	EXTRA/ ADDITIONAL ITEMS OF WORK

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	<p>If any extra or additional items, which are not incorporated in the BOQ schedule/ CPWD DSR 2007, have to be executed by the contractor, the rate of such extra or additional work shall be as per the following.</p> <p>First, the rate of such items shall be derived by a duly constituted committee, if possible, from the available rates, agreed upon in the rate schedule of this contract. The rates have to be mutually agreed upon on the basis of prevailing market rates for which all documentary evidences, as required by BHEL shall have to be produced by the contractor. Decision of BHEL in such cases shall be final and binding on the contractor.</p>
44.0	DESIGN OFFICE AND FABRICATION DRAWING
44.1	Based on design drawings of structures , to be issued to the contractor from time to time by BHEL, contractor will prepare & submit within 15 days of receipt, the detail fabrication/ shop drawing including tabulated form of bill of materials (BOM), joint calculations, for comments/ approval of BHEL at the office of BHEL/ PEM, Noida. BHEL reserves the right to assess the capability of the agency to be deployed by contractor for preparation of such fabrication drawing, and prior approval from BHEL Engineering office at Noida, is required for appointment of such agency.
44.2	Since time is the essence of the contract, the contractor must indicate the location of their design office where from such detailed activities will be made operative. It is preferred that the contractor have establishment / liason office at Delhi /Noida with a co-ordinator for better co-ordination with BHEL-PEM.
44.3	Contractor shall submit progress report pertaining to fabrication drawing, by 7 th of each month, drawing-wise, section-wise cumulative Bill of Materials for which Engineering drawing has been issued to them and status of fabrication drawing.
45.0	FABRICATION / GALVANISING
45.1	All the fabrication of structural steel items (except nuts/bolts) shall be done in fabrication yard inside project premises. Bidders to note that all fasteners like MS/HT/HSFG bolts, nuts, lock nuts, washers etc. shall be supplied by bidder as per technical specification/ drawings and BOQ items.
45.2	Bidder, at his own cost, shall supply electrodes required for fabrication, erection of structural steel as per specification and approval of BHEL.
45.3	However, in case of exigency as considered fit by BHEL, BHEL may permit the contractor to get some specific portion of fabrication / Galvanizing work done at qualified shop (s) out side the project premises. For steel to be issued to the contractor for such purpose, 50% of the value of such steel as worked out as per BHEL's procurement rates shall be furnished by the contractor in the form of BG. Such BG shall be returned depending on the receipt of fabricated / Galvanized steel back to site.
46.0	OTHER TERMS
46.1	While bidder's scope include deplyment of all resources, like T&P, materials, consumables, manpower including supervision etc for proper completion of the subject job and no sub-contracting for execution of the job is allowed by BHEL, depending on project's requirement and on prior acceptance of BHEL, bidder may associate agencies for deployment of skilled/ unskileld manpower only for site execution. Bidder should arrange all resources, like T&P, materials, consumables, supervision etc directly for the subject job.
46.2	All other term & conditions of this specification, not mentioned above shall be governed by the pertinent provisions of GCC.

ANNEXURE-A
LIST OF EQUIPMENTS FOR CIVIL SITE LABORATORY

CONCRETE TESTING EQUIPMENT				
SL NO.	NAME OF TEST	NAME OF EQUIPMENT	SIZE OF EQUIPMENT	IS REF.
1	Initial & final setting time, Consistency of cement	Vicat Apparatus with desk pot	Standard	IS 5513
2	Shrinkage of cement, Auto Clave Test	Le Chatelier's apparatus Auto Clave Equipment	Standard	IS 5514
3	Abrasion value test	Los Angles Abrasion testing machine	Standard	IS 2386
4	Aggregate Impact value test	Aggregate Impact value testing machine with blow counter	Standard	IS 9377
5	Aggregate crushing value test	Crushing value apparatus	Standard	IS 2386
6	Flakiness index	Thickness gauge for measuring flakiness index	Standard	IS 2386
7	Elongation Index	Elongation guage	Standard	IS 2386
8	Bulk density, voids and bulking apparatus	Measuring cylinders	3, 5,10 & 15 liters cylinders	
9	Concrete Compressive test	Digital Compressive Testing Machine with 2000 KN capacity.	2000KN capacity	IS 2505
10	Cement mortar cube casting	Mortar Cube mould	70.6 x 70.6 x 70.6 mm, minimum 06 sets desired.	IS 10086
11	Concrete Cube casting	Concrete Cube Mould	150x150x150mm, minimum 20 sets desired considering TG Raft major concreting activity.	IS 10086
12	Workability of concrete	Slump cone	Standard, atleast 04 nos	IS 456
13	Specific gravity of aggregates	Pycnometer	Standard, atleast 02 nos	IS 383
14	Cement mortar cube vibrating	Motorised vibration machine for cement testing	Standard	IS 4031
15	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	IS 383
16	Fine aggregate sieve analysis	Sieve set	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	IS 383
17	Sieve Shaker	Motorised Sieve shaker	Mfg. Catalogue	

18	Silt content check	Sand silt content beaker	Standard	
19	Ultrasonic pulse velocity test	UPV apparatus for concrete	Standard	

Soil Testing Equipment (Levelling & Grading)				
1	Liquid limit test	Liquid limit apparatus	Standard	IS 2720
2	Core Cutter test	core cutter apparatus	Rammer, 6 nos of std core cutter mould, dolly	IS 2720
3	Proctor density test	Std proctor Compaction apparatus	Standard	IS 2720
4	Moisture Content	Rapid moisture meter	Standard, atleast 04 nos	IS 2720

Process Control Accessories				
1	Hot air oven	Temperature range 50° C to 300° C	600x600x600mm (min.size)	
2	Electronic balance	3 nos	600gx0.01g, 10g and 50 kg	
3	Physical balance	5 kg capacity	Weights upto 5 kg	
4	Thermometer	Temperature range 0° C to 150° C	Digital	
5	Poker Thermometer (Concrete Road)	Temperature range 0° C to 50° C & 150° C	02 nos each required	
6	Measuring jars	2 nos set of each size	100ml, 200ml, 500ml & 1000 ml	
7	Gauging trowlers	4 nos	100mm & 200 mm with wooden handle	
8	Sptula	2 nos each size	100mm & 200 mm with long blade wooden handle	
9	Stainless steel scoop	2 nos each	2 kg and 5 kg	
10	Vernier calipers	2 nos each	12" and 6" Sizes	
11	Digital pH meter	01 nos	.01 mm least count	
12	Digital micrometer	01 nos	0.01 mm least count	
13	Digital paint thickness meter for steel	02 nos	500 micron Range	
14	GI tray	02 nos each	600x450x50mm, 450x300x40mm, 300x250x40mm	
15	Electric mortar mixer	01 nos	0.25 CUM capacity	
16	Rebound hammer test	01 nos	Digital Rebound hammer	IS 13311
17	Screw Gauge	02 nos	0.1 mm-10mm, Least count 0.05	
18	Digital paint thickness meter for masonry/concrete painting measurement	02 nos	150 micron range	

**VOLUME-III
PRICE SCHEDULE-REV 01**

JOB: CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS INCLUDING PILING AND GROUND IMPROVEMENT FOR CW PH, FOREBAY AND CHANNEL, CLARIFIED WATER PH AND RESERVOIR, RAW WATER RESERVOIR, RAW WATER PUMP HOUSE, ADMINISTRATIVE BUILDING, WORK SHOP, CABLE/PIPE RACKS, CABLE TRENCHES, ROAD AND DRAINS, HYDROGEN GENERATION PLANT, CANTEEN, DG BUILDING, CAR PARKING WITH OPEN AREA, FIRE WATER PUMP HOUSE, FIRE STATION, CHEMICAL LAB, STORE, PRESSURISING & HEATING PH, FOAM PUMP HOUSE, FUEL OIL UNLOADING AREA, FO TANK FDN AND DYKE & FUEL OIL TANK FARM AREA, DM PLANT SHED, CW TREATMENT AREA, CHLORINATION BUILDING, WATCH TOWER, PTP, ETP AND STP (EXCLUDING POWER BLOCK, CHIMNEY AND COOLING TOWER) OF 2X250 MW BARAUNI EXTENSION PROJECT, BIHAR AND BALANCE CIVIL WORKS FOR BOILER AUXILIARIES FOUNDATION FOR R&M JOB OF 2X110 MW BARAUNI THERMAL POWER STATION AT BIHAR

TENDER NO. PSER:SCT:BRM:C1302:11

PREAMBLE

1	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully before filling in rates for various items. Clauses under this preamble shall be read in conjunction with various clauses of tender as applicable and shall have precedence over any contrary statement mentioned anywhere in this document.
2	The work shall be carried out as per specifications, description of the items in this schedule and / or engineer's instructions. Drawings enclosed with this document are only preliminary for giving some idea of the work involved.
3	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment etc required for carrying out different activities & tests, material, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the tender document and this schedule.
5	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or to be deleted altogether. The quoted/ accepted rates shall remain firm and valid as long as variation in total value of work executed under this contract including extra items, but excluding any price escalation, remains within +/- 30% (thirty percent) of the contract price given in the LOI/ WO.
6	Rates shall be quoted both in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language. The rates quoted are inclusive of all taxes and duties viz Sales Tax, excise, octroi etc.
7	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted.
8	The tenderer shall be deemed to have studied the drawings, specifications and details of work to be done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
9	BHEL does not contemplate to split up the job and award the job to different bidders.
10	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections / volumes of the contract.
11	Bidder's Grand Total Price, as per summary of Price Schedule shall be considered for evaluation.
12	Taxes & Duties shall be as per tender provision

**VOLUME-III
PRICE SCHEDULE-REV 01**

JOB:CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS INCLUDING PILING AND GROUND IMPROVEMENT FOR CW PH , FOREBAY AND CHANNEL, CLARIFIED WATER PH AND RESERVOIR, RAW WATER RESERVOIR, RAW WATER PUMP HOUSE, ADMINSTRATIVE BUILDING , WORK SHOP, CABLE/PIPE RACKS, CABLE TRENCHES, ROAD AND DRAINS, HYDROGEN GENERATION PLANT,CANTEEN ,DG BUILDING, CAR PARKING WITH OPEN AREA, FIRE WATER PUMP HOUSE, FIRE STATION, CHEMICAL LAB , STORE, PRESSURISING & HEATING PH, FOAM PUMP HOUSE, FUEL OIL UNLOADING AREA, FO TANK FDN AND DYKE & FUEL OIL TANK FARM AREA , DM PLANT SHED, CW TREATMENT AREA,CHLORINATION BUILDING, WATCH TOWER, PTP, ETP AND STP (EXCLUDING POWER BLOCK, CHIMNEY AND COOLING TOWER) OF 2X250 MW BARAUNI EXTENSION PROJECT,BIHAR AND BALANCE CIVIL WORKS FOR BOILER AUXILIARIES FOUNDATION FOR R&M JOB OF 2X110 MW BARAUNI THERMAL POWER STATION AT BIHAR

TENDER NO. PSER:SCT:BRM:C1302:11

SUMMARY OF PRICE SCHEDULE(PART-1+PART-2+PART-3+PART-4)

SL.NO	DESCRIPTION OF WORK	PRICE SCHEDULE REF	TOTAL AMOUNT (IN RS)
1.0	PACKAGE-3-AUX BUILDING(SERVICE PART)	PART-1	
2.0	PACKAGE-3- AUX BUILDING(SUPPLY PART)	PART-2	
3.0	R&M JOB-1	PART-3	
4.0	R&M JOB-2	PART-4	
5.0	GRAND TOTAL PRICE (SL NO 1.0 +SL NO 2.0 +SL NO 3.0+SL NO 4.0 ABOVE) IN RS		
NOTES:			
a)	Bidder to note that evaluation & awarding will be done on the Grand total quoted price against sl.no.5.0 above i.e summation of total price quoted under Price Schedule(Part-1),Price Schedule(Part-2),Price Schedule(Part-3) and Price Schedule(Part-4).		
b)	Any item as per scope of work if not included in the price quoted above and shown separately will not be taken into cognizance and the offer shall be liable for rejection.		
c)	Bidder to note the total all inclusive price quoted against Sl.no1.0, Sl.no. 2.0, Sl.no. 3.0 and Sl.no. 4.0 above should match with that of PRICE SCHEULE(PART-1), PRICE SCHEDULE(PART-2) ,PRICE SCHEDULE(PART-3),and PRICE SCHEDULE(PART-4) respectively.		

**VOLUME-III
PRICE SCHEDULE-REV 01**

JOB:CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS INCLUDING PILING AND GROUND IMPROVEMENT FOR CW PH , FOREBAY AND CHANNEL, CLARIFIED WATER PH AND RESERVOIR, RAW WATER RESERVOIR, RAW WATER PUMP HOUSE, ADMINSTRATIVE BUILDING , WORK SHOP, CABLE/PIPE RACKS, CABLE TRENCHES, ROAD AND DRAINS, HYDROGEN GENERATION PLANT,CANTEEN ,DG BUILDING, CAR PARKING WITH OPEN AREA, FIRE WATER PUMP HOUSE, FIRE STATION, CHEMICAL LAB , STORE, PRESSURISING & HEATING PH, FOAM PUMP HOUSE, FUEL OIL UNLOADING AREA, FO TANK FDN AND DYKE & FUEL OIL TANK FARM AREA , DM PLANT SHED, CW TREATMENT AREA,CHLORINATION BUILDING, WATCH TOWER, PTP, ETP AND STP (EXCLUDING POWER BLOCK, CHIMNEY AND COOLING TOWER) OF 2X250 MW BARAUNI EXTENSION PROJECT,BIHAR AND BALANCE CIVIL WORKS FOR BOILER AUXILIARIES FOUNDATION FOR R&M JOB OF 2X110 MW BARAUNI THERMAL POWER STATION AT BIHAR

TENDER NO. PSER:SCT:BRM:C1302:11

(PART-1)

PACKAGE-3-AUX BUILDING(SERVICE PART)

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
100	EARTH WORK				
	Earth work In excavation, backfilling and disposal including necessary men/women, materials, equipment, loading, transportation, unloading, dewatering etc 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 500 m, 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	132310		
b	Depth exceeding 2 m but not exceeding 4 m	CUM	50677		
c	Depth exceeding 4 m but not exceeding 6 m	CUM	18437		
d	Depth exceeding 6 m but not exceeding 8 m	CUM	8000		
e	Depth exceeding 8 m but not exceeding 10 m	CUM	5000		
f	Depth exceeding 10 m but not exceeding 15 m	CUM	500		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
102	Extra over ST No. 101 for dewatering of ground water by well point method as per IS 9759.	CUM	27150		
107	Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with selected materials from compulsorily excavated soil available within a lead upto 500m 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 95% maximum dry density as per IS-2720 (Part-VII)	CUM	25375		
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	88843		
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	CUM	100		
d	Each layer compacted so as to achieve at least 75% relative density as per IS-2720 part XIV in case of sandy soils.	CUM	100		
108	Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with selected materials directly from excavation and compacted as specified including watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following.				
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	500		
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	5000		
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	CUM	50		
109	Extra over ST No. 101,107 & 108 for carriage of excavated earth/selected materials for carriage beyond an initial lead of 500m.				
a	Carriage beyond 500 m and not exceeding 1 Km	CUM	15708		
b	Carriage beyond 1 Km and not exceeding 2 Km	CUM	10000		
c	Carriage beyond 2 Km and not exceeding 3 Km	CUM	5000		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
110	Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with approved borrowed soil (borrowed soil to be arranged by the bidder) and compacted as specified including supplying borrowed soil, royalty (if any), watering, rammimg/compaction by manual/mechanical means, dressing etc all complete for the following.				
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	2000		
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	5000		
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	CUM	50		
111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, rammimg/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.	CUM	13274		
200	CONCRETE WORKS				
	Providing and placing concrete work including cost of labour, materials 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. BHEL will supply cement free of cost as per TCC.				
201	Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 40 mm graded aggregate by volume) as filling course at any depth below finished floor level, under and around foundations/floors, mass fill etc.	CUM	120		
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	7367		
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	9		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
204	Concrete under floors, paving, plinth protection, pipe encasing etc complete with 20 mm nominal size graded aggregate at any depth below finished floor level for the following grades.				
a	M15 Grade	CUM	35		
b	M25 Grade	CUM	1836		
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 any 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.				
a	M25 Grade	CUM	13184		
b	M30 Grade	CUM	10126		
206	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 superstructure at any 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	M25 Grade	CUM	5347		
207	Providing and laying Design Mix cement concrete confirming to IS:456 & IS 10262-2009 for reinforced concrete works of grade M-30 Grade in machine foundations for TG, Gas Turbine, ID/FD/PA fans, BFP, Coal mills at all elevations below/above finished floor level except TG deck and top decks supported over vibration isolation system including addition of suitable plasticizer conforming to IS 9103(latest) to achieve a slump more than 125mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing.	CUM	100		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
209	Extra over St. No. 205 to 208 for controlling of temperature of fresh concrete to less than 23 degree centigrade using ice, including all related arrangements for providing, storing and mixing of ice with water, cooling of aggregates etc. All complete as per specification, drawing and instruction of engineer in charge.	CUM	500		
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	M20 grade	CUM	20		
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 any level or thickness, drains etc complete as per following.				
a	1:2:4 (1 part cement, 2 part sand, 4 parts of aggregate by volume)	CUM	103		
b	1:1.5:3 (1 part cement, 1.5 part sand, 3 parts of aggregate by volume)	CUM	130		
213	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in precast works like roof slabs/trench covers, fins, lintels, chajas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/moulds, curing, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transpoting, all leads, erection without damage, setting in position with cement sand mortar (1:3), filling the gaps between adjacent 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	M 25 grade	CUM	397		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
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 at all levels.				
a	M 25 grade	CUM	50		
b	M 30 grade	CUM	28211		
215	Dismantling all type of 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.	CUM	5		
216	Chipping of concrete in reinforced concrete work including cutting of reinforcement , 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 .	CUM	1		
218	Making opening in RCC slab or foundation by core cutter method upto 70mm dia and depth of cutting upto 250mm	NO	50		
219	Providing and applying curing compound of approved make where ever required as per manufacturer's specification.	SQM	50		
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	5		
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 any 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.				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
b	M25 Grade	CUM	50		
300	FORM WORKS				
	Providing, fixing and removing formwork at any elevations for all structures, as per specifications and including all labour, material, scaffoldings and centering complete including pockets 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 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	146318		
302	Fairface form work with good quality water proof ply wood of required thickness and smooth surface above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, domes, arches, circular overhead tanks etc. for all heights.	SQM	31734		
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	160		
b	Pockets of depths more than 150mm and upto 300 mm depth	Each	300		
c	Pockets of depths more than 300mm and upto 600 mm depth	Each	50		
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	10		
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	10		
A306	Extra over item no.301 for curved form work for foundations, footings, beams, walls, trenches, mass concreting etc as per specification.	SQM	3460		
400	REINFORCEMENT				
401	Transport from store, cutting, bending, placing in position at any level, binding of mild steel reinforcements conforming to grade 1 of IS:432 part 1 including cost of binding wire, labour, scaffolding etc. all complete as per specifications & drawings.	MT	100		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
403	Transport from store, straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation etc complete all as per specifications, drawings and as directed by Engineer. BHEL will supply reinforcement as per TCC.	MT	7980		
500	WATER PROOFING WORKS				
	Water proofing works including all labour, material, equipment, transportation, handling, curing, sampling, testing etc at any level as per specification, drawings and as directed by engineer - in - charge				
501	Providing and laying underbed grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 25 mm including preparation of surface, batching, mixing, leveling etc. all complete. BHEL will supply cement free of cost as per TCC.	SQM	9689		
502	Providing and laying in-situ light weight foam concrete insulation as per relevant IS Code in suitable panels over roofs followed by a layer of 15 mm thick cement sand plaster 1:5 (1 cement: 5 coarse sand) after the curing period of laid foam concrete and providing of expansion joint at intervals as per the recommendation of manufacturer. The insulating properties shall be such that the thermal conductivity shall not exceed 0.125 Kcal/sqm-hr deg C. Cost shall include making of fillets, cleaning & preparation of surface, expansion joints at suitable intervals etc all complete for following. BHEL will supply cement free of cost as per TCC.				
a	Average 50 mm thickness	SQM	930		
b	Average 75 mm thickness	SQM	1057		
c	Average 100 mm thickness	SQM	1050		
503	Providing and applying bitumen felt water proofing for normal treatment having bonding materials consisting of blown type conforming to IS: 702 or residual bitumen conforming to IS: 73 or a mixture of the two with one layer of felt consisting of five courses and with a minimum overlap of 75 to 100 mm of felt including preparation of surfaces etc all complete. (For description of layers refer specification)				
a	With hessian base felt	SQM	9114		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
506	Providing and applying PU based 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, polyscrim cloth /fabric for edges, joints & vulnerable points etc all complete as per specifications and directions of engineer in charge.	SQM	50		
507	Providing and laying wearing course consisting of 25mm thick plain cement concrete of grade M15 (1:2:4) with graded aggregate of 12.5mm size 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. BHEL will supply cement free of cost as per TCC.	SQM	4844		
508	Providing and laying cement concrete chequered flooring tiles of 22 mm thickness and size 250x250 mm / 300x300 mm conforming to IS 13801 with 8 mm thick 1:4 cement mortar over the top most layer of roofing treatment in pathway and entire equipment area with fine joints including sealing of joints (silicon/elastomeric sealant) etc all complete. (Water proofing paid elsewhere). BHEL will supply cement free of cost as per TCC.	SQM	533		
509	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	106898		
511	Providing and mixing water proofing compound conforming to IS:2645 in concrete or cement mortar all complete.	KG	1000		
512	Anti termite chemical treatment of soil with Chloropyrifos emulsifiable concentrates (1%) conforming to IS :8944 all complete.	SQM	2882		
513	Providing and applying concrete structures two coats of ERPB (Epoxy resin based anticorrosive and chemical resistant paint) over a coat of CPCI (concrete penetrating bipolar corrosion inhibitor) with 300 to 325 micron DFT for protection of concrete against carbonation and chloride penetration in saline/marine environment all complete of approved make and as per manufacturer's recommendation	SQM	50		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
600	JOINTS AND FILLERS				
	Joints & fillers including all labour, material, equipment, transportation, handling etc at any level as per specification, drawings and as directed by engineer - in - charge.				
601	Supplying & installation of bitumen impregnated fibre board confirming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete.				
a	12 mm wide joints.	SQM	638		
b	20 mm wide joints.	SQM	95		
c	25 mm wide joints	SQM	727		
d	50 mm wide joints	SQM	30		
602	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	1018		
b	20mmX25mm	RM	105		
c	25mmX25mm	RM	967		
d	50mmX25mm	RM	5		
603	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.				
a	10mm X 40mm	RM	5		
b	12mm X 25mm	RM	1855		
c	20mmX25mm	RM	5		
606	Providing and fixing PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following:				
a	150 mm wide and 8 mm thick	RM	432		
b	230 mm wide and 8 mm thick	RM	3250		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
607	Providing and fixing copper water stops in joints of deep underground structure all complete for the following:				
a	150 mm wide and 8 mm thick	RM	5		
700	MS EMBEDMENTS				
	Embedments including all labour, material, equipment, transportation, handling etc. at any level as per specification, drawings and as directed by engineer - in - charge.				
701A	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, ms flats, angle pieces, rungs of various diameters, plates/ angle/ channel/ joist of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete. Contractor to supply all materials.Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	MT	31		
701B	Transport from store, fabricating and fixing of mild steel embedments, inserts with angle/ plates/channels /ISMB etc. as required as per drawing etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete. BHEL will supply plate /channel / beam/angle free of cost as per TCC.	MT	160		
702	Transport, assembly, welding, fixing BHEL supplied fabricated material free of cost including loading, unloading etc. all complete from BHEL store to plant site. BHEL will supply fabricated material free of cost.	MT	5		
704	Transportation, erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete. .	MT	4		
705	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 materials at site - 70%; b) On completion of erection & fixing - 30%.				
a	MS pipes of all diameters	Quintal	8		
b	PVC pipes / conduits of all diameters	Quintal	7		
c	UPVC pipes / conduits of all diameters	Quintal	2		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
d	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:				
i	Upto 250 kg	Each	6		
ii	Beyond 250 Kg and upto 500 kg	Each	6		
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	Upto 250 kg	Each	10		
ii	Beyond 250 Kg and upto 500 kg	Each	10		
iii	Beyond 500 Kg and upto 750 kg	Each	10		
A705e	Expansion fasteners chemical adhesive type (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with expansion sleeve of stainless steel:				
i	Upto 250 kg	Each	16		
ii	Beyond 250 Kg and upto 500 kg	Each	10		
iii	Beyond 500 Kg and upto 1000 kg	Each	10		
800	GROUTING				
	Grouting including all labour, material, equipment, roughening surface, cleaning, ramming, curing etc. at any level unless otherwise specified as per specification, 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 minimum 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. BHEL will supply cement free of cost as per TCC.	SQM	23		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
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. BHEL will supply cement free of cost as per TCC.	CUM	18		
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. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor). BHEL will supply cement free of cost as per TCC.	CUM	12		
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. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	10		
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. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	2		
900	DOORS, WINDOWS, VENTILATORS, LOUVERS				
	Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material, equipments, transportation, handling, preparation of working drawings etc. at any level as per specification, drawings and as directed by engineer - in - charge.				
901	Providing and fixing wooden frame conforming to IS 4021 made of best quality seasoned CP teakwood free from large or loose knots, cracks or other defects including sand paper smoothening, hold fasts, beading, primer and finish painting / polishing etc. all complete with proper wood joinery, accurately set to required lines or levels and rigidly secured in place. (Finish painting / polishing paid separately)	CUM	3		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
902	Providing and fixing teakwood frame panel door shutter as per IS 1003 with 35 mm x 150 mm vertical rail & 35mm x 125 mm horizontal rail and 12 mm thick interlocked panels of teakwood with proper wood joinery including beading, 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 fitting shall be anodised aluminium color dyed), screws, primer and finish painting / polishing etc. all complete. (Finish painting / polishing paid separately)	SQM	10		
903	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 synthetic paint 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	60		
904	Providing and fixing single or double steel door shutters with 45mm thk flush design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	SQM	210		
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	151		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
906	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 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. (Glazing shall be paid separately)	SQM	157		
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 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 toughened 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. (Glazing shall be paid separately)	SQM	44		
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. Payments: a) on receipt of materials at site-70%, b) on fixing-30%.	SQM	40		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
908	Providing and fixing steel windows/ventilator with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision.including all fittings, metal beadings, hold fasts, shop and final painting ,glazing etc. all complete. (Glazing shall be paid separately). Payments: a) on receipt of materials at site-70%, b) on fixing-30%.				
a	openable type	SQM	954		
b	fixed type	SQM	311		
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-mettalic protection etc.including preperation of working drawings, aluminium cleat angle, aluminium snap-on-beading for glazing/panelling, stair case tread nosing, with all fittings and fixtures (like tower bolts, handles, door stopper with rubber shoes, 'L' drops, stays, floor springs, hydraulic door closures etc.), CP brass/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	2590		
911	Providing and fixing of door closers as per IS 3564 ,of approved make & quality all complete of following type :				
a	Over head hydraulic door closures	Each	10		
b	Floor mounted Hydraulic door closers	Each	5		
912	Providing and fixing pressed steel frames fabricated from 16 gauge M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars ,paintings etc all complete as per specifications.	Kg	2640		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
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). Payments: a) on receipt of materials at site-70%, b) on fixing-30%.				
b	Mechanically Operated	SQM	56		
c	Electrically operated	SQM	325		
914	Providing and fixing PVC doors(25 thk double skin) of sintex or equivalent make including all fitting & fixtures as per specification, drawing and instructions of engineer in charge.	SQM	38		
915	Providing, fixing and fitting of glazing of first grade class in steel/aluminium/wooden frames, where ever required, cleaning after fixing including hardware, gaskets, clips, beadings etc. all complete.				
b	4 mm thick clear float glass	SQM	65		
c	5.5 mm thick clear float glass	SQM	308		
d	6 mm thick wired glass	SQM	1555		
f	4 mm thick ground glass	SQM	25		
g	6 mm thick tinted heat reflecting type float glass	SQM	10		
i	Two nos. 6 mm thick clear toughened float glass hermetically sealed and separated by 12 mm thick air gap for thermal insulation (only single elevation area to be measured)	SQM	50		
l	6 mm thick laminated glass	SQM	5		
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	10		
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	12		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
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	5		
920	Roof skylight structure for atrium with 6mm thick Polycarbonate sheet multi (twin) wall fire retardant and ultra violet resistant with sealed open edges for sky light for approved shape like dome, pyramidal etc. Joints are properly sealed with sealent, screws with pvc cap, self tapping screws, epdm rubber gasket.etc all complete as per detailed drawing and specification.	SQM	100		
1000	BRICKWORK				
	Brickwork masonry including all labour, material, equipment, transportation, handling, scaffolding etc. at all levels as per specification, drawings and as directed by engineer - in - charge. BHEL will supply cement free of cost as per TCC.				
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.				
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	1220		
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.				
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	3779		
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.				
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	SQM	1428		
1005	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 flat bricks.				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	SQM	1030		
1006	Breaking/dismantling of 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	21		
1007	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 including cost of Chicken wire mesh ,	CUM	20		
1009	Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar etc. complete.	CUM	32		
1010	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	15		
1011	Filling existing brick wall/ partition wall opening at all level including making good the broken edges/surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/supporting at any level, removal of debris upto a lead of 1 km including loading, unloading, transportation etc. all complete.	SQM	22		
1012	Providing and filling brick bats in soak pits all complete.	CUM	8		
1100	DAMP PROOF COURSE				
	Damp proof course including all labour, material, equipment, transportation, handling, shuttering, centering, curing etc at any level as per specification, drawings and as directed by engineer - in - charge.				
1101	Providing Damp Proof Course 40mm thick 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. BHEL will supply cement free of cost as per TCC.	SQM	790		
1200	CEMENT MORTAR PLASTER				
	Cement mortar plaster including making grooves wherever required including all labour, material, scaffolding, curing etc at any level as per specification, drawings and as directed by engineer - in - charge. BHEL will supply cement free of cost as per TCC.				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1201	Providing 18mm thick plaster in two layers outside the building/boundary 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	15014		
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	22504		
1203	Providing 12mm thick plaster in cement mortar 1:6 on walls with rough finish all complete.	SQM	845		
1204	Providing 6mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.	SQM	7813		
1205	Providing 12mm thick plaster in walls, drains/culverts with a paste of neat cement @ 1kg/sqm and rubbed smooth with trowel etc. all complete.	SQM	935		
1207	Forming groove of uniform size from 12X12 mm upto 20X15 mm in plastered surface as per approved pattern, using wooden battens nailed to the under layer, including removal of wooden battons, 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	100		
1208	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	311		
1209	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)	SQM	410		
1300	FINISHES TO CONCRETE / PLASTERED SURFACES				
	Finishes, painting to concrete, plastered surfaces including all labour, material, equipment, surface preparation, scaffolding etc. at any level as per specification, drawings and as directed by engineer - in - charge.(PAINTS OF REPUTED BRAND OF REPUTED MANUFACTURER LIKE ICI/BURGER/ASIAN PAINTS OR EQUIVALENT)				
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	1000		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1302	Two or more coats of Exterior masonry paint (water or solvent base) of special resins, adhesives and additives mixed with fine, hard stone aggregate and suitable pigment. The paint shall be applied on a coat of primer over dried, prepared plaster surface as manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellent, alkali resistant and extremely durable with color fastness as per specification.	SQM	9651		
1303	Providing and applying two or more coats of oil bound distemper as per IS 428 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline.	SQM	26842		
1304	Two or more coats of acrylic distemper of approved brand and manufacture to give an even shade including a priming coat with distemper primer complete.	SQM	1445		
1305	Providing and applying two or more coats of acrylic emulsion paint as per IS 5411 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline.	SQM	1320		
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	3000		
1307	Two or more coats of fire resistant transparent paint 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.	SQM	100		
1308	Two or more coats of black anti-corrosive bitumastic painting of approved brand and manufacture to give an even shade complete.	SQM	100		
1309	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.	SQM	3100		
1310	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	11950		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1312	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	15720		
1313	Providing and applying ready made Epoxy Paint over areas other than steel structure 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, splash, spillage & acidic environment. The epoxy paint coating shall be of 150micron thickness over epoxy primer.	SQM	1340		
1315	Providing and applying two or more coats of Acrylic based weather coat paint of approved brand and manufacture and required shade over one coat of primer after necessary cleaning/ washing, preparing the surface using coir brush/ wire brush, sand paper, including filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellent and extremely durable with color fastness as per specification.	SQM	800		
1400	FLOORING AND SKIRTING				
	Flooring and skirting at any level including base layer, labour, material, equipments, transportation, handling, curing, polishing etc. at any level as per specification, drawings and as directed by engineer - in - charge. (Under bed concrete will be paid seperately under relevant item). (Cement will be supplied by BHEL as per TCC free of cost).				
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 12.5mm 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 4mm thick glass joint strips).	SQM	9377		
A1401	Providing and laying 50 mm thick IPS heavy duty cement concrete in flooring. cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing 4mm glass joint strips):	SQM	514		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1403	Providing and laying precast polished heavy duty cement concrete tiles (Carborundum topping) of size 300X300X25 thick of approved shade as per IS 1237, including cement mortar bedding of 1:3 (1 cement : 3 sand) jointed with neat cement slurry 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. all complete for following:				
a	Laid in floors	SQM	10		
1404	Providing and laying interlocking M30 Grade concrete blocks in paving with approved colour and pattern and should be laid on the subbase and bedding as per specifications and recommendations of manufacturer.				
a	60mm	SQM	800		
1405	Providing and laying 50 mm thick floor finish with 25mm thk Terrazo Tiles including cement mortar bedding of 1:3 (1 cement : 3 sand) with neat cement slurry etc. all complete.	SQM	20		
1406	Providing and laying polished Kota stone 18mm to 20mm thk in flooring . Under bed shall average 30mm thk of 1 cement : 2 sand : 4 stone aggregates by volume and brought to proper level. The kota 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, granite polishing etc. all complete.	SQM	300		
1407	Providing and laying polished Kota stone 14mm to 16mm thk in flooring . Under bed shall average 35mm thk of 1 cement : 2 sand : 4 stone aggregates by volume and brought to proper level. The kota 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, granite polishing etc. all complete.	SQM	20		
1408	Providing polished Kota stone 18mm to 20mm thk in skirting projecting 6mm from adjacent plaster including cutting brickwall upto the required depth, edging, finishing etc. all complete.	SQM	30		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1410	Marble stone Flooring laid in 50mm overall thickness with 18-20mm thick marble slabs (grade -1) with minium 30mm thick underbed of 1 cement : 2 sand : 4 stone aggregate by volume and brought to proper level.The marbel slabs/tiles laid over underbed with mortar 1:3, 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, granite polishing etc. all complete.	SQM	60		
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 with neat cement slurry etc. all complete for following				
b	10mm thick tiles In flooring	SQM	2450		
c	7mm thick tiles In skirting and dado upto specific height	SQM	200		
1417	Providing and laying vitrified ceramic tiles of matt finish of size 600x600mm from reputed / approved manufacturer including underbed of cement mortar 1:3 with neat cement slurry etc. all complete for following.				
a	7mm thick tiles In flooring	SQM	475		
b	10mm thick tiles In flooring	SQM	50		
1418	Providing and laying 10 mm thk non-skid fully vitrified tiles of make 'MARBONITE' or 'FERRASTONE of BOSS Profile limited' or equivalent in flooring and skirting over 30 mm thick underbed of 1 part cement and 3 parts coarse sand by weight mixed with sufficient water, complete as per specification laid in pattern of following sizes				
b	600X600 mm	SQM	8		
Ac	600X300 mm	SQM	8		
1419	Providing and laying granite stone slab of 20mm thickness single piece for wash basin / sink slab /facia of black or approved colour with cutting,making corners,moulding and opening etc. all complete.	SQM	150		
1420	Providing and laying Heavy Duty dust pressed Ceramic Tiles of 7mm thick of reputed manufacturer of approved finish shade and colour including underbed of cement mortar 1:3 with neat cement slurry etc. all complete.				
a	300X300 mm	SQM	265		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12mm thick (to be laid in layers of 6mm each). The tiles shall be applied with 6mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing etc. all complete for following thicknesses. The tiles should be abrasion resistant & durable.				
a	20mm thick	SQM	1150		
b	38mm thick	SQM	275		
Ac	25mm thick	SQM	150		
1423	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado bedded and jointed with epoxy mortar all complete for following thicknesses. The tiles should be abrasion resistant & durable.				
a	20mm thick	SQM	830		
b	38mm thick	SQM	5		
1424	Providing & fixing chemical resistant (AR) (Acid / Alkali) bricks (75mm thick) conforming to IS:4860 in the floor of neutralization pit. Surface on which lining to be applied shall be prepared in accordance with IS:2395. Bitumen primer as per IS:158 followed by 18mm thick bituminastic followed by 6mm thick potassium silicate mortar bedding shall be provided before laying AR bricks. The joints between AR 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	400		
1428	Providing and laying 3mm thick antistatic PVC flooring / skirting of approved shade, as per IS:3462 and laying as per IS:5318 all complete.	SQM	55		
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.				
b	Aluminium strips 40 mm wide and minimum 3 mm thick	RM	100		
1500	ROOFING / SIDE CLADDING				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
	Roofing / side cladding work including all labour, material, equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at any level as per specification, drawings and as directed by engineer - in - charge.				
A1501	Transport and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to class3 of IS 14246 over roof purlins for cast-in-situ roof slab as per relevant IS code and specification. Bare metal thickness of deck plate shall be minimum 0.8mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the roof slab 100mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 150 kg/sqm during construction between purlins as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to purlins, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyster paint of minimum 20 micron DFT on exposed surface (facing operating floor) and minimum 7 micron on other face over epoxy primer applied over hot dipped galvanising @ 275 gm/sqm including fixing of sheet to purlin with self drilling white zinc plated heat treated carbon steel screws of minimum 5.6 mm dia @ 260mm c/c in the trough and stich screws between two adjacent sheets and sealing with epoxy sealant. Measurement of profile sheeting shall be of the plan area of roof covered by MS trough metal decking.				
a	Span Upto 1800mm	SQM	1801		
1502	Transport and fixing shear connectors of mild steel studs having 16mm dia and minimum 75 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.	QUINTAL	13		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1503	Transport and fixing External sheet of Permanent colour coated metal cladding with troughed M.S. sheets of 0.6mm bare metal thickness having minimum yield strength 250 MPa and zinc-aluminium alloy coating not less than 275 gm/sqm total on both sides including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum DFT 7 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	150		
1504	Transport and fixing External sheet of Permanent colour coated metal cladding with high strength tensile steel sheet 0.5mm bare metal thickness having minimum yield strength 350 MPa and zinc-aluminium alloy coating not less than 275 gm/sqm total on both sides including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum DFT 7 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	5845		
1508	Providing and installing under deck insulation using minimum 0.05 mm thick aluminium foil on exposed surface followed by 0.56 mm dia and 25 mm mesh GI wire netting, fixed at various elevations with rawl plugs including clips but excluding cost of insulation.	SQM	300		
1510	transport 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	200		
1600	FALSE CEILING				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
	False ceiling including all labour, material, equipment, transportation, handling, suspension system etc at any level as per specification, drawings and as directed by engineer - in - charge.				
1601	Providing and fixing glass fibre reinforced gypsum plaster board (GRG) ceiling (having gypsum core mixed with glass fibre) system consisting of metal supporting grid system forming panels of specified size, suspended from RCC slab/structural steel or catwalkway grid above with 4 mm (minimum) galvanised wires (rods) with special height adjustment clips, including preparation of working drawing, providing openings for AC ducts, return air grills, light fixtures etc (but excluding the cost of catwalkway grid) all complete as per drawings, specification and instructions of the engineer.				
a	12 mm thick GRG board with galvanised light gauge steel load bearing supporting GI frame and finished flat (seamless).	SQM	570		
1602	Providing, fixing and laying light weight mineral fiber tile false ceiling of minimum thickness 15 mm and exposed surface semi-perforated with depth of perforation as 4 mm and humid resistance of 95% RH and fire performance of class 0/1 as per BS 476 with metal suspension grid system with galvanized Tees of section 24 X 38 mm for main runners of approved colour and make as per specification including 50mm thick mineral wool insulation (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.	SQM	50		
1700	RAIN WATER DOWN TAKE PIPES				
	Rain water down take pipes including all labour, material, transportation, 2 coats of approved paint over one primary coat, fixtures, accessories etc at any level as per specification, drawings and as directed by engineer - in - charge.				
1702	Transport and fixing galvanised MS down take pipes of 100 mm dia- Medium quality as per IS:1239(part-I) / IS:3589 all complete.	RM	50		
1703	Transport and fixing HCl down take pipes of 150mm dia with water tight lead joint etc. all complete.	RM	579		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1704	Transport and fixing galvanised MS down take pipes of 150 mm dia- Medium quality as per IS:1239(part-I) all complete.	RM	120		
1705	Providing and fixing UPVC down take pipes of 110mm diameter- Class 3 as per IS:4985 all complete.	RM	300		
1706	Providing and fixing UPVC down take pipes of 160mm diameter- Class 3 as per IS:4985 all complete.	RM	585		
1707	Transport and fixing GI down take pipes conforming to IS:1239 /IS:3589 of medium duty all complete for following diameters.				
b	150 mm Dia	RM	405		
1800	MISCELLANEOUS WORKS				
	Miscellaneous works including all labour, material, equipment etc. at any level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge.				
1801	Providing and Filling in trenches, plinths, area paving and other underground structures with graded stone aggregate of size range 63 mm to 45 mm in layers not exceeding 230 mm in thickness including breaking of stone boulders to required sizes, filling the interstices with selected sand and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	9422		
1803	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	100		
1804	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		
1805	Providing 50mm thick premix carpet surfacing laid to slope in two layers 30mm and 20mm respectively with 12mm downgraded stone chips mixed with 80/100 grade bitumen @ 52 Kg/Cu.M including compaction etc. all complete.	SQM	1000		
1806	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	1000		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1809	Providing Chemical injection grouting with pressure pump for water retaining concrete structures conforming to IS:6494, including fixing nozzles, cost of approved cement, admixture, curing etc. all complete . Payment shall be made as per the consumption of chemical grout. Cement will be supplied by BHEL free of cost.	Kg	50		
1810	Transport, laying and fixing transformer rail and guide rails in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	MT	10		
1812	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	100		
1812B	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).	NO	10		
1812C	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		
1812D	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		
1812E	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.)	NO	10		
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. Cement will be supplied by BHEL free of cost.	EACH	20		
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. Cement will be supplied by BHEL free of cost.	EACH	2		
1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	25		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1816	Providing and fixing PVC pressure release valve of minimum dia 90mm in water retaining structure including 160 mm dia housing pipe of minimum length 3.75 m with perforation as per IS4558, nylon jali, perforated end plug, collar, graded filter, excavation, fixing in concrete slab/wall etc. all complete.	EACH	40		
1817	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	10		
b	100 mm dia	RM	5		
c	150 mm dia	RM	5		
d	200 mm dia	RM	5		
1818	Providing and laying dry stone pitching of 230 mm thickness for slope protection in cement mortar 1:6 including hammer dressing, raking of joints, pointing, preparing the bedding surface and voids filling with stone aggregate etc. all complete. Cement will be supplied by BHEL free of cost.	SQM	50		
1819	Transportation to site of stoplog gates in CW pumps with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, all materials such as structural steel, cast steel, stainless steel, bronze used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fasteners etc, cleaning, blasting (sand/shot) as per IS, painting IS:14177 (application of Zinc rich primer and epoxy paint) with a second stage concreting to true plumb and levels, submission of drawings/ fabrication drawings for engineers approval etc, all complete as per specifications and approved drawings. The leakage through rubber seal shall not be more than 5 lit/ min/ metre length of seal under maximum head. Stainless Steel component shall be measured & paid separately as per relevent item.	MT	81		
1820	Stainless Steel component mentioned under ST No. 1819.	MT	5		
1821	Transportation to site bolted and/ or welded structural steel work at all levels for stationary screens made out of rolled sections and/ or plates including cutting, straightening if required, edge preparation, bolting/ welding of joints, cleaning, blasting (sand/ shot) as per IS, painting IS:14177 (application of Zinc rich primer and epoxy paint), complete as per drawing and directed.	MT	35		
1822	Cutting of groove of 10mm X 40mm size with groove cutting machine in concrete paving all complete.	RM	296		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1825	Supply and laying approved quality Stone aggregate 40mm size in transformer yards.	CUM	20		
1826	Supply and laying approved quality rounded pebbles / gravels of 40mm size in transformer yards.	CUM	20		
1834	Transport, fabrication, erection of stoplog/sluiice/screw gates gates in Pumps Houses with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, 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, sand blasting, applying Two Coates of ZINC RICH Premier (EPILUX 4 or equivalent) of 30 Micron each followed by Two Coates of ZINC RICH Premier Intermediate Paint (MIO) (60 Micron Each) followed by three Coates of coal tar epoxy 30 Microns each 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. Stainless Steel component shall be measured & paid separately as per relevent item.	MT	10		
1835	Stainless steel component mentioned under ST No. 1834.	MT	2		
2000	FENCING AND GATES				
	Fencing and gates including all labour, material, equipment etc at any level as per specification, drawings and as directed by engineer - in - charge.				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2003	Supplying and erecting in position 2.4 m high PVC coated galvanised chain linked fencing of minimum 8 gauge (including PVC coating) of mesh size 75mm x 75mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 12 gauge. 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 separately under ST No. 2007). Contractor to supply all materials. Payment terms - a) On receipt of chain link fencing at site - 50%; b) On completion of erection & fixing - 50%.	RM	694		
2007	Supply and fixing of hot dip galvanised mild steel posts for fencing. Rate of zinc coating shall not be less than 710 g/m ² on steel posts. Contractor to supply all materials.	MT	4		
2009	Supply, fabrication and installing in position and testing galvanised MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffeners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete. Contractor to supply all materials.	MT	6		
2100	WATER SUPPLY				
	Water supply work including men, material, equipment etc. at any level as per specification, drawings and as directed by engineer - in - charge.				
2101	Providing and fixing in position tested heavy duty type chromium plated (CP) brass long neck bib cocks including sockets, union, nuts etc all complete - 15mm nominal bore.	EACH	17		
2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.	EACH	17		
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.	EACH	17		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrosive paint, complete for internal works with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc all complete for following sizes:				
a	15 mm nominal bore.	RM	63		
b	20 mm nominal bore.	RM	113		
c	25 mm nominal bore.	RM	53		
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	6		
b	20 mm nominal bore.	RM	6		
c	25 mm nominal bore.	RM	6		
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.	EACH	10		
2108	Providing and fixing 25 mm diameter stainless steel towel rails (600mm X 25mm) all complete.	EACH	15		
2109	Providing and fixing 20mm dia chromium plated M.S. pipes wall mounted towel rod with C.P. Brackets etc all complete.	EACH	8		
2110	Providing and fixing C.P. soap holder mounted with C.P. screws etc all complete.	EACH	13		
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.	EACH	6		
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. sll complete.	EACH	8		
2113	Providing and fixing chromium plated brass shower rose with 15 or 20 mm inlet all complete.	EACH	1		
2114	Providing & fixing in position P.V.C. water tank of Syntex or approved equivalent including making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete for following capacities. GI pipes shall be paid separately under ST No. 2105.				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
a	1000 litres capacity	EACH	2		
b	2000 litres capacity	EACH	3		
Ad	500 litres capacity	EACH	12		
2115	Providing and fixing approved stainless steel sink with integrated drainboard as per IS:13983 of size 915x460x178mm with CI brackets, stainless steel chain with rubber plug 40mm, cp brass waste trap with necessary union complete including painting the fittings, cutting and making good the wall where required etc. all complete.	EACH	2		
2200	SANITARY WORKS				
	Sanitary work including all labour, material, equipment etc. at any level as per specification, drawings and as directed by engineer - in - charge.				
2201	Supply and fixing glazed vitreous china Wash Basin 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	21		
b	Colored	EACH	4		
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, 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	8		
2203	Providing and fixing stainless steel kitchen sink of size 610x510x200mm conforming to IS: 13983 including all fittings etc. all complete.	EACH	3		
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	18		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
b	Wall mounted	EACH	10		
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	4		
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	10		
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	33		
b	110mm dia pipes	RM	193		
c	160mm dia pipes	RM	153		
d	200mm dia pipes	RM	200		
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. Excavation and backfilling shall be paid saperately as per respective items. Cement will be supplied by BHEL free of cost. Payment terms - a) On receipt of material at site - 50%; b) On completion of erection & fixing - 50%.				
a	200mm dia	RM	2020		
b	300mm dia	RM	1813		
c	450mm dia	RM	20		
b	600mm dia	RM	240		
e	900mm dia	RM	10		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
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. Excavation and backfilling shall be paid saperately as per respective items. Cement will be supplied by BHEL free of cost. Payment terms - a) On receipt of material at site - 50%; b) On completion of erection & fixing - 50%.				
a	150mm dia	RM	1500		
b	250mm dia	RM	10		
c	300mm dia	RM	1113		
d	500mm dia	RM	10		
2211	Providing and fixing C.I Manhole heavy duty cover of size 600mmx450mm including frame from reputed manufacture etc. all complete.	EACH	11		
2212	Providing and fixing circular heavy duty C.I. manhole cover of 600 mm dia with frame etc. all complete.	EACH	2		
2213	Providing and fixing square mouth S.W Gully trap grade 'A' complete with CI grating, brick masonry chamber 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	18		
b	150x100mm P or S Type.	EACH	18		
2214	Providing and fixing square mouth S.W Gully trap grade 'A' complete with CI grating, brick masonry chamber and water tight CI cover with 300x300mm (inside). The weight of cover to be not less than 4.53 Kg and frame to be not less than 2.72 Kg etc all complete for following sizes: Cement will be supplied by BHEL free of cost.				
a	100x100mm P or S Type.	EACH	15		
b	150x100mm P or S Type.	EACH	8		
2216	Providing and fixing heavy duty UPVC floor traps with C.P jalli all complete.	EACH	8		
2217	Providing and installing approved brand single tap water cooler of 80 L cooling capacity all complete.	EACH	3		
2219	Providing and fixing white viterous urinal partitions of size 675x325x85mm all complete.	EACH	2		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2220	Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS: 10592) all complete as per specification.	EACH	2		
2221	Providing, laying sand CI pipes with lead joints conforming to IS 1729 complete for following.				
a	50mm dia	RM	65		
b	75mm dia	RM	65		
c	100mm dia	RM	55		
d	150mm dia	RM	18		
2222	Providing, laying spun CI pipes with conforming to IS 1536 complete for following.				
a	75mm dia	RM	65		
b	100mm dia	RM	65		
c	150mm dia	RM	38		
2223	Laying and fixing GI/CI pipes upto 150mm dia below concrete (earth work will be measured and paid separately as per relevent item). GI /CI Pipes and other jointing materils (if any) shall be supplied by BHEL.	MT	1.5		
2224	Laying and fixing M S/CI pipes 150mm to 900mm dia below concrete (earth work will be measured and paid separately as per relevent item). M S /CI Pipes and other jointing materils (if any) shall be supplied by BHEL.	MT	5		
2300	STRUCTURAL STEEL				
	Structural steel works including all labour, material, equipments, transportation, handling etc. at any level as per specification, drawings and as directed by engineer - in - charge. BHEL will supply plates, chnnels, angles, beams,chqd plates free of cost as per TCC.				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2301	<p>Transport, fabrication and erection 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, ladders, etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection) (DFT not less than 25 Microns for each coat), 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),</p>	MT	1931		
	<p>assembly, edge preparation, preheating (min preheat and interpass temperature of 200 C for welding over 20 mm and upto 40 mm & 660 C for welding over 40 mm and upto 63 mm & 1100 C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL. Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.</p>				
A2302	<p>Extra over ST NO. A2301 for blast cleaning of steel structures to near white metal surface(Sa 2 1/2) before applying the primer all complete.</p>	MT	1929		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2304	Providing and applying two coats of synthetic enamel paint with minimum 50 micron total dry film thickness (DFT) of approved make and shade to achieve an even shade over steel sections already having primer coats and keeping overall DFT with primer not less than 110 microns including protection and cleaning, scaffolding etc. all complete.	MT	1929		
2307	Transport fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel (having minimum galvanisation of 610 g/sqm) conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.	MT	47		
2308	Transport, fabrication, erection and alignment of factory made welded grating units with mild steel conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection) , fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete. Contractor to supply all materials.	MT	39		
2309	Extra over above ST NO. 2301/2308 for finishing the grating units with hot dipped galvanisation @ 610 gm/sqm over blast cleaned steel surfaces instead of painting with two coats of red oxide zinc-chromate primer all complete.	MT	10		
A2309	Extra over above ST NO. 2301/2308 for finishing the grating units/bolts/inserts with Cold galvanisation @ 610 gm/sqm over blast cleaned steel surfaces instead of painting with two coats of primer all complete.	MT	10		
2310	transporting and fixing in position of permanent mild steel bolts (class 4.6 as per IS : 1367 and grade `C' as per IS: 1363) and nuts, washers etc. up to and inclusive of 39 mm diameter and upto 300mm long for structural steel work etc all complete. Contractor to supply all materials.	Quintal	2		
2311	transporting and fixing in positing of high strength structural bolts (of property class 8.8 and product grade `C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class `8' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete. Contractor to supply all materials.	Quintal	12		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2312	Dismantling of steel structure , lowering of material and carriage of the dismantled material up to field fabrication shop / projects storage including temporary dismantling, cutting, re-welding, supporting, and restoring to correct position all temporarily dismantled members, re-alignment of all adjacent connected members to their correct positions (weight of such adjacent members and temporarily dismantled members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	5		
2313	Addition to, alterations in and/or modification of " Erection Marks " including cutting of parts, gauging of welds, cutting, grinding, fabrication, welding, drilling holes, straightening, removal of bends, raising to the required level, painting, transportation, return of unutilised steel pieces to the project store, temporarily dismantling, cutting, re-welding, supporting and restoring to correct position of all the temporarily dismantled members, realignment of adjacent connected members (weight of such temporarily dismantled and adjacent members not payable) etc all complete for the following:				
a	In erected position	MT	5		
b	In fabrication yard	MT	5		
2314	Re-erection of dismantled fabricated structural steel members including carriage of modified "Erection Marks" from the field fabrication shop to erection site, lifting to required position, aligning in position, tack welding, final welding and touch up painting including temporary dismantling and re-erection of temporarily dismantled members, cutting, rewelding, supporting and restoring to the correct position of all temporarily dismantled members, re-alignment of adjacent connected members (weight of such temporarily dismantled members and adjacent members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	5		
2320	Transporting, fabrication and fixing of GI pipe hand railing (900/1000 mm high) of 32 mm/40 mm dia (Medium Grade) including transportation, loading/unloading, painting etc. all complete. Contractor to supply all materials.	MT	12		
2400	ROAD WORKS				
	Providing Road Work including necessary material, labour, machinery, transportation etc as per specification, drawing, relevant IRC & IS codes and as directed by the Engineer-in-charge for the following.				

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
A2401	Preparation of sub grade by excavating earth to required depth in all types of soil including ash, dressing to camber and consolidating the base including making good the undulation etc and disposal of surplus earth within a lead upto 1km etc all complete as per specification.	CUM	135167		
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	107235		
2403	Providing, stacking & laying granular morrum for shoulder including watering, compaction with road roller to required camber etc all complete.	CUM	5984		
2404	Providing & laying water bound macadam sub base course in layers of required thickness with crushed stone aggregates 90 to 40 mm down size, stone screening & blinding material including screening, sorting, spreading to template & consolidation with road roller including carriage, spreading & consolidation of blinding material moorum etc all complete.	CUM	14229		
2405	Providing & laying water bound macadam base course in layers of required thickness with stone aggregate 63mm to 40mm size, stone screening and blinding material including screening sorting, spreading to template and consolidation with road roller including carriage, spreading and consolidation of blinding material moorum etc all complete.	CUM	4642		
2406	Providing & laying water bound macadam base course with stone aggregate 50mm to 20mm size stone screening & binding material including screening, sorting, spreading to template & consolidation with road roller including carriage spreading & consolidation of blinding material moorum etc all complete.	CUM	9284		
2408	Providing & applying tack coat of low viscosity liquid bitumen of grade 80/100 conforming to IS 73, 217 or 454 as applicable @ 6 kg/ 10 sqm for bituminous surface including cleaning with compressed air etc all complete.	SQM	56250		
2409	Providing, mixing & laying of dense bituminous macadam (DBM) course of specified thickness using bitumen of grade 60/70 conforming to IS 73, aggregates and binder material including hot mixing, hot laying, rolling etc all complete for the following.				
2409.a	55mm compacted thickness	SQM	56250		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2410A	Providing, mixing & laying 25 mm thick semi dense bituminous concrete(SDBC) in a single course composed of suitable small size aggregate premixed with bituminous binder using medium setting grade bitumen on a prepared base including mixing, applying, rolling etc all complete.	SQM	56250		
2411	Providing and applying liquid seal coat comprising of an application of a layer of bituminous binder using medium setting grade bitumen at the rate of 9.8kg/10sqm followed by a cover of stone chips at the rate of 0.09 cum/10sqm including rolling etc all complete.	SQM	56250		
2412	Supplying and laying 400mmx150mmx350mm deep precast concrete kerb stone of grade M-20 with 20 mm nominal size stone aggregate and of shape as per detailed drawing including fixing with cement mortar (1:2) in 13mm thick joints, finishing of joints with neat cement paste, making drainage opening where required etc all complete. BHEL will supply cement free of cost as per TCC.	RM	2200		
2414	Supply and laying 150mm dia R.C.C NP-2 type Hume pipe in raised shoulders as rain water drains as per detailed drawing including fixing with cement mortar (1:2) in 13mm thick joints, finishing of joints with neat cement paste etc all complete. Cement will be supplied by BHEL free of cost.	RM	2925		
REINFORCEMENT					
2420	supply, transporting and fixing in position MS dowel bar reinforcement including surface painted with bitumen and greasing, dowel end caps with cotton fills etc all complete as per specification, drawing and as directed by Engineer. Contractor to supply all materials.	MT	15		
MISCELLANEOUS					
2423	Providing & installation of bitumen impregnated fibre board 25 mm thick & 200mm wide of specified thickness confirming to IS 1838 as joint filler including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete as per specification, drawing and as directed by engineer.	RM	400		
2424	Providing and filling in position hot applied bitumen sealing compound (Grade A) of specified thick confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints, sealant primer etc all complete as per specification, drawing and as directed by Engineer.	RM	400		
2425	Providing and laying debonding strip/tape 50mm width of specified thickness before applying sealant including cleaning etc all complete as per specification, drawing and as directed by Engineer.	RM	150		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2426	Providing & laying 75 mm thick precast interlocking concrete pavers of approved colour and pattern as per specification and recommendation of manufacturer.	SQM	1250		
2427	Providing and laying 50mm thick sand layer below concrete pavers including compaction etc all complete as per specification, drawing and as directed by Engineer.	SQM	4500		
2500	PILING WORKS				
2501	Mobilisation of one set of Driven cast in situ RCC piling rigs and accessories capable of installing 550mm diameter piles in all types of soil to project site and demobilisation of the same after completion of piling works etc all complete. Payments: a) mobilisation and commissioning of rig- 80%, b) demobilisation- 20%)	LS	2		
2503	Installation of driven cast-in-situ RCC vertical pile as per IS 2911 (Part 1, Sec. 1) by driving a suitable MS casing pipe (removable) having detachable MS shoe (flat/conical) at the bottom and driving using atleast 5 MT hammer for the length as specified (length to be measured from pile cut-off level to the bottom of pile)/for the desired set criteria (to be finalised during contract stage) so as to acheive the safe load carrying capacity as mentioned using cement concrete grade M30 conforming to IS:456 with 20 mm nominal size stone aggregates with a minimum cement content of 400Kg per cum of concrete including providing all materials (but excluding reinforcement steel for which payment shall be made as per item403 separately), providing plasticser wherever required, breaking pile head to cut off level and exposing pile reinforcement for embedment in pile cap, empty driving etc including providing approved MS shoe(design and drawing of MS shoe shall be submitted by bidder for approval without extra cost to BHEL/Owner) etc all complete as per specification, drawing and as directed by the engineer-in-charge for the following. (Cement & Reinforcement will be supplied by BHEL as per SCC free of cost).				
a	Pile with 550 mm diameter and 18 m length below cut off level	Each	670		
2504	Extra over ST. No. 2503 for pile length more than the specified length of 18m below cut off level for the following.				
a	For 550 mm diameter pile	Rm	670		
2505	Rebate on ST.No.2503 for pile length less than the specified length of 18m below cut off level for the following.				
a	For 550 mm diameter pile	Rm	1005		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2507	Conducting initial load test upto a maximum test load of 2.5 times the safe load capacity on single pile as specified in accordance with IS 2911 Part-4 including preparation of pile head for testing, necessary excavation, all arrangements of loading, unloading, test equipments/ accessories, jacks, recording of results, labour, submission of test report but excluding the cost of installation of pile (installation of pile shall be paid separately) etc. all complete as per specification, drawing and as directed by engineer in- charge for the following:				
a	For vertical compression test by cyclic load method				
i	550 mm diameter pile	Each	2		
b	For lateral load test				
i	550 mm diameter pile	Each	2		
c	For tension/uplift test				
i	550 mm diameter pile	Each	2		
2508	Conducting routine load test on single job pile as specified in accordance with IS 2911 (Part-4) including preparation of pile head for testing, necessary excavation, providing all arrangements of loading, unloading, test equipments/accessories, jacks, recording of results, labour, submission of test report etc but excluding the cost of installation of job pile complete as per specification, drawing and as directed by the engineer-in-charge for the following.				
	For vertical compression test by maintained load method				
a	For vertical compression test				
i	550 mm diameter pile	Each	7		
b	For lateral load test				
i	550 mm diameter pile	Each	7		
2509	Carrying out pile integrity test on 550mm diameter pile including all arrangements for test, equipments/accessories, materials, labour, submission of test report etc but excluding the cost of installation of job pile all complete as per specification and as directed by the engineer-in-charge.	Each	670		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2511	Driving a 550mm diameter empty MS casing pipe with bottom closed with approved detachable MS shoe down to a maximum depth of 20 m below ground level using at least 5MTweigh drop hammer and furnishing the set calculation to establish a safe load carrying capacity of 115 MT in vertical compression including providing detachable MS shoe etc all complete	Each	2		
2700					
2742	Providing manpower, Consumable, T&P etc. For running and maintenance of three nos BOREWELL pump set without supply of major equipment / parts.	Man-month	48		
2743	General purpose crawler crane (100T) with lattice boom & minimum 10M length jib suitable for power house strutural erection. (crane should be available at site for continuous and erection work including sundays and holidays without any additional cost).				
2743A	Mobilisation and de-mobilisation charge. Payments: a) 50% on mobilisation, b) Balance 50% on demobilisation.	LOT	1		
2743B	Monthly lumpsum crane hire charge including fuel, opertor and all other charges.	CRANE-MONTH	8		
3000	GROUND IMPROVEMNET BY COMPACTION STONE COLUMN				
3001A	Providing and installing 500 mm diameter and 12 m long driven cast-in-situ compaction stone column by driving of suitable MS casing pipe (removable) having a detachable M.S.shoe (flat/conical) at the bottom and filling inside the casing pipe in layers of 1m using 1 (sand) : 2 (gravel; gravel shall be 50mm & down) and each layer be well compacted by dynamic compaction method (before compaction, lift the casing for about 800mm from bottom and then the backfill shall be thoroughly compacted. This procedure shall be repeated for every layer till the ground level is reached) for ground improvement of pond ash deposit at desired location including all materials, equipments etc complete as per specification, drawings and as directed by the engineer-in-charge.	Each	16766		
3001B	Providing and installing 500 mm diameter and 12 m long driven cast-in-situ compaction stone column using vibro compacting rig filling gravel shall be 50mm & down and each layer be well compacted by dynamic compaction method thoroughly compacted. This procedure shall be repeated for every layer till the ground level is reached for ground improvement of pond ash deposit at desired location including all materials, equipments etc complete as per specification, drawings and as directed by the engineer-in-charge.	EACH	2000		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
3002	Conducting plate load Test at specified depth using 600mmx600mmx25mm Mild steel plate as per IS-1888 and submission of approved test report etc as per specification. (earth work in excavation and back filling shall be paid extra as per relevant applicable item)	Each	5		
3003	Conducting Dynamic cone penetration Test at specified location as per IS-4968,Part-1 for a maximum depth up to 15m below ground level submission of approved test report etc as per specification .	Each	20		
3004	Making 150mm nominal diameter bore hole up to a maximum depth of 15 m below ground level at various locations in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 1.0m interval alternate to collection of undisturbed soil samples up to 15m depth below ground level ; collection of undisturbed sample (UDS) at every 1.0m interval alternate to conducting standard penetration test up to 15 m depth below ground level; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer-in-charge for depth below ground level as given below .	Rm	75		
3005	Conducting laboratory test on soil samples at an approved laboratory including preparation of soil samples to determine the following properties etc all complete as per specification.				
	a)Bulk density and moisture content	Each	15		
	b) Relative Density	Each	15		
	LEVELLING & GRADING				
L1	Earth work in stripping of top soil upto a minimum depth of 0.30m 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.	SQM	50000		

ST. NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
L2	Earth work in excavation upto any depth below ground level in all types of soil including moorum, pond ash/fly ash which can be excavated by any means for grading including setting out, levelling, dewatering (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	50000		
L3	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300mm loose thickness with selected approved quality of pond ash/fly ash/soil from compulsorily excavated soil available within a lead upto 1km and compacted as specified including re-excavation of stacked earth, all lifts, 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 for the following.				
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	50000		
L4	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300 mm loose thickness with approved borrowed soil (borrowed soil to be arranged by the bidder) and compacted as specified including supplying boorowed soil, 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, all lead and lifts etc all complete as per specification, drawing and as directed by the engineer for the following.				
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	15000		
	TOTAL				
3100	Quote % above or % below or at par for items not covered as above of this schedule. The rate shall be derived from Delhi schedule of rate 2007 (reprinted in 2010) .				
.	(a) Rate of complete item			____%	
	(b) Rate of supply of material at site only			____%	
	(c) Rate for execution complete excluding supply of materials.			____%	

**VOLUME-III
PRICE SCHEDULE-REV 01**

JOB:CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS INCLUDING PILING AND GROUND IMPROVEMENT FOR CW PH , FOREBAY AND CHANNEL, CLARIFIED WATER PH AND RESERVOIR, RAW WATER RESERVOIR, RAW WATER PUMP HOUSE, ADMINSTRATIVE BUILDING , WORK SHOP, CABLE/PIPE RACKS, CABLE TRENCHES, ROAD AND DRAINS, HYDROGEN GENERATION PLANT,CANTEEN ,DG BUILDING, CAR PARKING WITH OPEN AREA, FIRE WATER PUMP HOUSE, FIRE STATION, CHEMICAL LAB , STORE, PRESSURISING & HEATING PH, FOAM PUMP HOUSE, FUEL OIL UNLOADING AREA, FO TANK FDN AND DYKE & FUEL OIL TANK FARM AREA , DM PLANT SHED, CW TREATMENT AREA,CHLORINATION BUILDING, WATCH TOWER, PTP, ETP AND STP (EXCLUDING POWER BLOCK, CHIMNEY AND COOLING TOWER) OF 2X250 MW BARAUNI EXTENSION PROJECT,BIHAR AND BALANCE CIVIL WORKS FOR BOILER AUXILIARIES FOUNDATION FOR R&M JOB OF 2X110 MW BARAUNI THERMAL POWER STATION AT BIHAR

TENDER NO PSER:SCT:BRM:C1302:11

(PART-2)

PACKAGE-3- AUX BUILDING(SUPPLY PART)

ST .NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
401 S	Supplying of mild steel reinforcements conforming to grade 1 of IS:432 part 1 for concrete, masonry, encasing etc. As per specifications & drawings. (Reinforcement to be supplied by contractor from SAIL/ RINL/ TISCO or as approved by BHEL/cutomer).	MT	100		
704 S	Supply and delivery at site mild steel foundation bolt of various diameter conforming to IS:2062 and grade 1 of IS:432 along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete.	MT	4		
1501 S	Designing and supply permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to class3 of IS 14246 over roof purlins for cast-in-situ roof slab as per relevant IS code and specification. Bare metal thickness of deck plate shall be minimum 0.8mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the roof slab 100mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 150 kg/sqm during construction between purlins as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to purlins, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyster paint of minimum 20 micron DFT on exposed surface (facing operating floor) and minimum 7 micron on other face over epoxy primer applied over ho BHEL.Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.Iling white zinc plated heat treated carbon steel screws of minimum 5.6 mm dia @ 260mm c/c in the trough and stich screws between two adjacent sheets and sealing with epoxy sealant. Measurement of profile sheeting shall be of the plan area of roof covered by MS trough metal decking.				
a	Span Upto 1800mm	SQM	1801		

ST .NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1502 S	supply shear connectors of mild steel studs having 16mm dia and minimum 75 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.	QUINTAL	13		
1503 S	Designing and supply External sheet of Permanent colour coated metal cladding with troughed M.S. sheets of 0.6mm bare metal thickness having minimum yield strength 250 MPa and zinc-aluminium alloy coating not less than 275 gm/sqm total on both sides including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum DFT 7 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	150		
1504 S	Designing and supply External sheet of Permanent colour coated metal cladding with high strength tensile steel sheet 0.5mm bare metal thickness having minimum yield strength 350 MPa and zinc-aluminium alloy coating not less than 275 gm/sqm total on both sides including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum DFT 7 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	5845		
1510 S	supplying 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	200		
1702 S	supplying galvanised MS down take pipes of 100 mm dia- Medium quality as per IS:1239(part-I) / IS:3589 all complete.	RM	50		
1703 S	supplying HCI down take pipes of 150mm dia with water tight lead joint etc. all complete.	RM	579		
1704 S	supplying galvanised MS down take pipes of 150 mm dia- Medium quality as per IS:1239(part-I) all complete.	RM	120		

ST .NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1707 S	supplying GI down take pipes conforming to IS:1239 /IS:3589 of medium duty all complete for following diameters.				
b	150 mm Dia	RM	405		
1810 S	supplying transformer rail and guide rails in concrete for transformer, rail track including lugs, transport to site etc all complete.	MT	10		
1819 S	Design, manufacturing/ fabrication, supply, stoplog gates in CW pumps with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, all materials such as structural steel, cast steel, stainless steel, bronze used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fastners etc, cleaning, blasting (sand/shot) as per IS, painting IS:14177 (application of Zinc rich primer and epoxy paint) with a second stage concreting to true plumb and levels, submission of drawings/ fabrication drawings for engineers approval etc, all complete as per specifications and approved drawings. The leakage through rubber seal shall not be more than 5 lit/ min/ metre length of seal under maximum head. Stainless Steel component shall be measured & paid separately as per relevent item.	MT	60		
1820 S	Stainless Steel component mentioned under ST No. 1819 S.	MT	5		
1821 S	Design, manufacturing/ fabricating, supply, bolted and/ or welded structural steel work at all levels for stationary screens made out of rolled sections and/ or plates including cutting, straightening if required, edge preparation, bolting/ welding of joints, cleaning, blasting (sand/ shot) as per IS, painting IS:14177 (application of Zinc rich primer and epoxy paint), complete as per drawing and directed.	MT	35		
1834 S	Design and supply stoplog/sluiice/screw gates gates in Pumps Houses with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, 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, sand blasting, appling Two Coates of ZINC RICH Premier (EPILUX 4 or equivalent) of 30 Micron each followed by Two Coates of ZINC RICH Premier Intermediate Paint (MIO) (60 Micron Each) followed by three Coates of coal tar epoxy 30 Microns each 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. Stainless Steel component shall be measured & paid separately as per relevent item.	MT	10		
1835 S	Stainless steel component mentioned under ST No. 1834 S	MT	2		

ST .NO	DESCRIPTION OF ITEM	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2307 S	Supplying factory made electroforged galvanised grating units with mild steel (having minimum galvanisation of 610 g/sqm) conforming to IS:2062 as per drawing and specification etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation etc. all complete.	MT	47		
2308 S	Supplying of factory made welded grating units with mild steel conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete. Contractor to supply all materials.	MT	39		
2310 S	supplying permanent mild steel bolts (class 4.6 as per IS : 1367 and grade `C' as per IS: 1363) and nuts, washers etc. up to and inclusive of 39 mm diameter and upto 300mm long for structural steel work etc all complete. Contractor to supply all materials.	Quintal	2		
2311 S	supplying high strength structural bolts (of property class 8.8 and product grade `C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class `8' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete. Contractor to supply all materials.	Quintal	12		
2320 S	Supply GI pipe hand railing (900 mm high) of 32 mm/40 mm dia (Medium Grade) including transportation, loading/unloading, painting etc. all complete. Contractor to supply all materials.	MT	12		
	TOTAL				
3100 S	Quote % above or % below or at par for items not covered as above of this schedule. The rate shall be derived from Delhi schedule of rate 2007 (reprinted in 2010) .				
.	(a) Rate of complete item			____%	
	(b) Rate of supply of material at site only			____%	
	(c) Rate for execution complete excluding supply of materials.			____%	

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TENDER NO PSER:SCT:BRM:C1302:11

(PART-3)

R & M JOB-1

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1	PILE WORK				
1.1	Boring, providing and installing bored-cast-in-situ reinforcement cement concrete pile of specified diameter and length below the pile cap, M25 in cement concrete, to carry a safe working load not less than specified, (reinforcement work will be paid as per relevant item) cement concrete, boring with, bentonite solution and temporary casing of appropriate length for setting out and removal of same and the length of the pile to be embedded in the pile cap, breaking of pile head to cut-off level, exposing pile reinforcement for embedment in pile cap, test pile etc. all materials & labour complete, including removal of excavated earth with all lifts and leads (length of pile for payment shall be measured from Cut-off Level to bottom of pile) . Cement will be supplied by BHEL free of cost.				
a)	500 MM DIA. BORED CAST-IN-SITU PILE	M	6400		
2	TESTS FOR PILE				

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2.1	Initial load tests on single vertical test piles in accordance with IS 2911 with loading equal to 2 times the proposed capacity, including all necessary arrangements such as jacks, measuring devices, structural frame work for platform, kentledges, loading, unloading recording of results, preparation of pile head, cap and dismantling of test cap after test etc. and submission of test report , excavation upto cut off level and back filling if required, all complete as required (boring, providing and installing of piles shall be measured and paid for separately as per relevant item for following sub-items:				
a)	Vertical Load test				
i	500 mm dia pile	NO	1		
b)	Pull out Load test				
i	500 mm dia pile	NO	1		
c)	Lateral Load test				
i	500 mm dia pile	NO	1		
2.2	Carrying out routine load tests on single vertical piles in accordance with IS2911. Routine test shall be carried out to one-and-a-half times the estimated safe load or 12 mm total displacement whichever is earlier. including all necessary arrangements such as jacks, measuring devices, structural framework for platforms and kentledges for following sub-items				
a)	Routine Vertical Load test				
i	500 mm dia. pile	NO	2		
b)	Routine Lateral Load Test				
i	500 mm dia. pile	NO	2		
2.3	Carrying out low strain pile integrity test on 500 mm diameter pile after engaging third party agency approved by BHEL site engineer including all arrangements for test, equipments/ accessories, materials, labour, submission of test report etc but excluding the cost of installation of job pile all complete as per specification and as directed by the engineer.	EACH	425		
3	Earth Work				

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
3.1	Earthwork in excavation in all kinds of soils, mooram, earth mixed with stone soling, plant debris in foundation of structures, Equipments, drains, walls, columns etc. to required levels, grades and complete dressing as per specifications and direction of engineer-in-charge in both dry and wet conditions including stacking the excavated earth (to be used in back filling) as directed by the Engineer, disposal surplus earth lead upto 2KM, levelling & dressing disposal area , lift/depth up to 2m including dewatering if required, strutting, shoring/ sheet piling, dressing of sides and slope stability etc. complete.	CUM	33000		
a)	Earthwork in excavation in all kinds of soils, mooram, earth mixed with stone soling, plant debris in foundation of structures, Equipments, drains, walls, columns etc. to required levels, grades and complete dressing as per specifications and direction of engineer-in-charge in both dry and wet conditions including stacking the excavated earth (to be used in back filling) as directed by the Engineer, disposal surplus earth lead upto 2KM, levelling & dressing disposal area , lift/depth from 2M to 4M including dewatering if required, strutting, shoring/ sheet piling, dressing of sides and slope stability etc. complete.	CUM	9500		
b)	Earthwork in excavation in all kinds of soils, mooram, earth mixed with stone soling, plant debris in foundation of structures, Equipments, drains, walls, columns etc. to required levels, grades and complete dressing as per specifications and direction of engineer-in-charge in both dry and wet conditions including stacking the excavated earth (to be used in back filling) as directed by the Engineer, disposal surplus earth lead upto 2KM, levelling & dressing disposal area , lift/depth from 4M to 6M including dewatering if required, strutting, shoring/ sheet piling, dressing of sides and slope stability etc. complete.	CUM	1000		
c)	EXTRA FOR EVERY ADDITIONAL LEAD OF 50M OR PART THEREOF BEYOND 50M UPTO 9 SUCH ADDITIONAL LEADS	m ³	200		
3.2A	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth: consolidating each deposited layer by ramming, watering, re-excavation, transport from a lead of 2KM and for all depth, compacting the layers to give at least 95% of maximum dry density as per IS:2720	CUM	15770		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
a)	EXTRA FOR EVERY ADDITIONAL LIFT OF 2M OR PART THEREOF IN ALL KIND OF SOILS	m ³	600		
b)	EXTRA FOR EVERY ADDITIONAL LEAD OF 50M OR PART THEREOF BEYOND 50M UPTO 9 SUCH ADDITIONAL LEADS	m ³	600		
3.2B	Providing, laying and compacting dry rubble soling 150mm thick compacted thickness below foundations, of all structures, rafts, Grade slab etc. including handpacking in regular lines, filling the interstices with stone chips/grits and murrum/stone dust.	CUM	400		
3.3	Supplying and filling in plinth with sand under floors including, watering, ramming consolidating and dressing complete.	CUM	50		
4	Concrete Work (Plain & Reinforced Cement Concrete). Cement will be supplied by BHEL free of cost.				
4.1	Providing and laying plain cement concrete 1:3:6 (1 cement: 3 coarse sand: 6 stone aggregate 40mm and down graded) in foundations excluding shuttering, ramming and curing complete.	cum	615		
4.2	Providing and laying plain cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 stone aggregate 20mm nominal size) in all work upto and above plinth level excluding cost of centering and shuttering but including ramming and curing etc. complete.	cum	218		
4.3	Providing 1000 mm wide Plinth Protection consist of 100mm thick PCC 1:2:4 (1 cement : 2 coarse sand :4 stone aggregate 20mm and down graded) over 100mm thick PCC 1:3:6 (1 cement : 3 coarse sand :6 stone aggregate 20mm and down graded) complete as per direction of Engineer In-charge.	sqm	800		
4.4	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size) including using water proofing material in cement concrete work @ 1 kg per 50kg of cement and applying a coat of hot bitumen grade 80/100 with application rate as 1.45 kg/sqm with spreading of dry coarse sand on top of it for proper bonding with superstructure.	m ²	70		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
4.5	Providing and laying in position precast reinforced cement concrete covers, like on Drains, Trench etc of M25 grade using 20mm & down graded aggregates including all centering, shuttering, reinforcement, vibrating, compacting, curing, lifting hook arrangement.	CUM	3		
4.6	Providing and laying in position machine batched, machine mixed and machine vibrated design mix concrete M25 grade reinforced cement concrete for all type of foundations including machine foundations including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and reinforcement but including the cost and provision of Admixtures in recommended proportion as per IS9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of incharge at all heights.	CUM	7695		
4.7	Transport, cutting, bending, placing, binding in position Reinforcement of grade Fe500 (TMT BARS) for RCC work including straightening, binding wire etc. at all levels. BHEL will supply reinforcement steel free of cost.	Mt	1145		
4.8	Dismantling concrete/ masonry work for all types of structures with mechanical means (Hilti/Bosch cutting tools) at all levels including disposal to a lead of 500 m including 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	20		
b)	Reinforced cement concrete of all grades	CUM	20		
c)	masonry work	CUM	20		
6	Providing pocket hole depth up to 1500mm in concrete at all heights as per drawings including all necessary tools complete.				
a)	POCKET SIZE ABOVE 200X200MM AND UP TO 400X400MM	NOS	35		
b)	POCKET SIZE UP TO 200X200MM	NOS	15		
7	Fixing anchor bolts in position as per drawings in column pedestal including all tools complete.				

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
a)	Anchor bolts DIA UP TO 32MM	kg	4500		
b)	Anchor bolts DIA MORE THAN 32MM	kg	750		
8	Transport, fabrication & Fixing plate/angle inserts in position as per drawings in beams/slabs/column pedestal, cover slab, trenches etc. including all tools complete (PLATE / angle / channel / ISMB will be supplied by BHEL free of cost).				
a)	PLATE / angle / channel / ISMB INSERTS	MT	5		
9	Making openings in existing RCC slab of required size as per drawings and as directed by Engineer.(Rate is based on area measured as perimeter of opening multiplied by thickness)				
a)	Openings in floor thk. 150mm to 300mm,	Sqm	4		
b)	Openings in floor thk. 150mm to 300mm, at feeder floor	Sqm	4		
10	Approved non shrink quality Grout material (premix type), free flow grout of brand 'TILO GROUT' make equivalent make as approved by customer/BHEL shall be provided for all anchor bolt sleeves, pockets and spaces under column bases, shoe plates and for strengthening RCC in any other area. with a crushing strength of (28 days) minimum 30 MPa.	m3	20		
11	Fixing Rebars with proper anchorage as per standards using provision of full utilisation capacity of 8mm dia to 32mm dia reinforcing bars. Testing of sample rebar for full utilisation capacity and subsequent routine test for working load capacity shall be included in the rates. Contractor shall refer to clause no.06.00.00 for more information.(Rates to be given for each dia bar i.e. 8mm, 10mm, 12mm, 16mm, 20mm, 25mm, 28mm, 32mm). Reinforcement steel will be supplied by BHEL free of cost.				
a)	8Dia	Nos.	2		
b)	10Dia	Nos.	2		
c)	12Dia	Nos.	2		
d)	16Dia	Nos.	2		
e)	20Dia	Nos.	2		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
f)	25Dia	Nos.	2		
g)	32Dia	Nos.	2		
12	EMBEDMENTS				
a	Transport from store, Assembly, welding, Fixing anchor bolts, fastner , embedments, etc in position as per drawings in column pedestal including all tools complete. BHEL will supply fabricated materials.	MT	30		
b	Providing and fixing embedments made of pipe sleeve / plate/angle/channels/flat etc inserts etc in position as per drawings in concrete including all tools complete. (all materials to be supplied by vendor).	MT	30		
13	SHUTTERING WORK				
13.1.1	Providing centering with good quality ply wood fairface form work including struting, propping, bracing etc. and removal of form for foundations, footings, base of columns etc. below finish floor level. (All machine foundations shall be paid under this item)	SQM	8950		
13.1.2	Providing centering & steel shuttering including struting, propping, bracing etc. at all heights and removal of form for lintels, foundations, trenches, drain, plnth beams, girders, bressumers, cantilevers, columns, piers, abutments, posts and struts, suspended floors, beams, cols, roof slab etc. at all height.	SQM	15800		
13.2	Providing centering & fair face form work including struting, propping, bracing etc. and removal of form for machine foundations etc above finish floor level at all heights.	SQM	500		
14	Brick Work. (Cement will be supplied by BHEL free of cost).				
a)	Brick work with first class bricks having minimum strength of 105 Kg per sqcm in cement mortar 1:5 (1 cement : 5 coarse sand) in foundation, plinth & superstructure etc as per specifications complete in all respect.	m ³	871		
b)	Half brick masonry with bricks of class designation 105 in foundation, plinth and super structure in cement mortar 1:4 (1 cement : 4 coarse sand)	Sqm	200		
c)	Extra for providing and placing in position 2 Nos. 6mm dia. M.S. bars at every third course of half brick masonry (with F.P.S. brick).	sqm	100		
15	Door/Window/False ceiling/Wall cladding				

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
a)	Providing, fabricating and fixing in position door made out of Hollow Metal Pressed Steel(HMPS) main frame 60mm x 125mm x 16 guage sheet, shutter frame & stiffeners 40mm x 40mm x 16 guage sheet on both side and 5mm thick glass view panel. Doors shall be painted with 2 coats of zinc chromate primer and 2 coats of synthetic enamel paint of approved colour and brand be provided with Brass Oxidised butt hinges and powder coated accessories complete in all respect.	m ²	125		
b)	Providing & fixing in position M.S. Steel windows and ventilators (fully open/partly open/fixed) as per IS:1038 with standard rolled sections including 5mm thick plain sheet glass with necessary holdfasts, oxidised brass fixtures/fasteners, putty glazing clips, peg stay, handles, screws etc. complete as per drawing and specifications including two coats of red oxide zinc chromate primer and two coats of synthetic enamel paint(1st Quality) of approved make and colour including providing 12mm x 12mm square guard bars at spacing of 125mm complete as directed by Engineer In-charge.	m ²	300		
c)	Providing & Fixing partly paneled & partly glazed partition using anodised aluminium section (Minimum anodic coating of grade AC 15) of 100mmx 44mm x12 gauge with glazing of 5.5 mm thick clear glass and panelling of 12 mm thick prelaminated Nova Pan particle board grade I, type II conforming to IS:12823 with necessary rubber gasket, aluminium beading clips etc. The rate also includes cost for providing all necessary fittings screws cleats etc. all complete as per the direction of Engineer-in charge. Panel size shall be as per the architectural drawings. All hardwares like clamps holding down bolts shall be of properly treated materials. All gaskets, packing shall be EPDM, neoprene or Nylon for long life. Brackets to be fixed to slab/beam after properly marking the layout of verticals. Main frame will be fixed to these brackets and then aligned to get perfect panel openings. Proper sealing shall be ensured to ensure air/water tightness.	m ²	150		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
d)	Providing & Fixing single leaf partly paneled partly glazed door made of anodised aluminium (Minimum anodic coating of grade AC 15) section 100 mmx44mmx12 gauge as bottom , middle & top rail and 85 mmx44 mmx12 gauge as styles. The rate also to include 12 mm thick prelaminated Nova Pan board upto required height as per architectural drawing and providing and fixing 5.5 mm thick clear glass on upper portion with necessary Al beading, rubber gaskets, one number 200 mm tower bolt ,two numbers disc type Al handles, Godrej make mortice lock-01 no, approved make (Derma/Sevax/Ozone or Equivalent) heavy duty hydraulic door closer/floor spring-01 no. Heavy Duty SS butt hinges 125 mm-04 Nos (This may not be required in case of floor spring is provided), door stopers etc as directed. Sealing shall be done using proper sealent for making the door air/water tight(The door is to be fitted in Al partition work).	m ²	325		
e)	<p>False ceiling/Wall Cladding work with Armstrong, acoustical ceiling, 15mm exposed grid system for Microlook edge detail tiles to the Silhouette/Interlude reveal profile suspension system. Ceiling tiles shall be Armstrong Fissused RH 90/ Prima Adria RH95 tiles, lightly textured with microperforations, size 600x600x15mm.</p> <p>Suspension system shall be the Armstrong Trulok Silhouette reveal profile grid system with 15mm wide flanges incorporating a 6 mm central recess. Silhouette main runners and cross tees to have mitred ends and "birdsmouth" notches to provide mired cruciform junction.</p> <p>Installation to comprise main runners spaced at 1200mm centres securely fixed to the structural soffit by approved hangers at 1200mm maximum centres and not more than 150mm from spliced Joints. The last hanger at the end of each main runner should not be greater than 600mm from the adjacent wall. 1200mm long cross ties to be interlocked between main runners at 600 mm centres to form 1200x600 mm module, cross ties longer than 600mm long cross tees.The 1200mm cross ties to have central "birdsmount" notches to facilitate fitting of 600mm cross tees. Perimeter trim to be Armstrong trulok.</p>	m2	1600		
16	Structural Steel Work. (BHEL will supply ISMB / channel / angel /plate /chqd plates)				

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
a)	Transport, Fabricating & Fixing in position structural Steel work in single or built up welded section as per drawing & specification complete in all respect and applying two coats of Zinc chromate primer and two or more coats of synthetic enamel paint of approved make shade and colour.	MT	65		
b)	Transport, by cutting, De-welding corroded structural steel plates, angle, channel of existing structure. Providing and replacing the same by new fabricated member single or built up welded section as per drawing & specification complete in all respect.(Payment of structural steel part replaced shall only be paid) Two coats of Zinc chromate primer and two or more coat synthetic enamel paint of approved make shade and colour to be included in the item	MT	83		
c)	Transport, fixing in position MS chequered plates non slip type of required size and thickness cut & stiffened in floors, trench covers, staircase treads & risers, platform floors as per drawing including two coats of zinc chromate primer & two coats of approved make, colour, shade synthetic enamel paint after surface preparation and inclusive of all clamps, angles, bolts, washers, welding etc. complete as per drawings & specifications.	MT	27		
d)	Supplying & fabricating M.S. anchor bolts conforming to IS:1363 & IS:1367, Grade C property class 4.6 including consumables like washers, nuts, check nuts as per drawings including sleeves with bottom plates complete up to 45mm dia bolts. Contractor will supply all materials.	MT	4		
e)	Providing, fabricating & fixing in position heavy duty GI grating covers for open rectangular drains in panels of required sizes & shapes with flats 40mm x 5mm as main bars at 30mm c/c & 12mm x 3mm cross bars fusion welded to main bars at 100mm c/c & with outer frame of 40mm x 5mm including all consumables such as welding rods etc. complete. Contractor will supply all materials.	MT	3		
f)	providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing and stair case railing including applying a priming coat of approved steel primer. Contractor will supply all materials.	MT	2		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
g)	Flooring shall consists of 100 mm thick with "hard Crete" concrete hardener topping with under layer 88 mm thick RCC(M25) (8 dia tor steel bar @ 200 mm c/c) over 75 mm thick PCC 1:3:6 over 150mm thick boulder soling and top layer 12 mm thick hardcrete cement hardener consisting of mix 1:2(1 cement hardener mix: 2 stone aggregate 6 mm nominal size) by volume in which Hardcrete hardening compound of Snowcem India Ltd. or equivalent shall be mixed with cement in proportion as recommended by manufacturer. Cement & reinforcement will be supplied by BHEL free of cost.	m ²	1000		
h)	Providing and laying anti skid ceramic floor tiles 300x300mm (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except white, ivory, Grey, Fume Red Brown laid on 20mm thick bed of cement mortar 1:4 (1 Cement : 4 coarse sand) including pointing the joints with white cement and matching pigments etc., complete. Cement will be supplied by BHEL free of cost.	m2	600		
i)	for NEW WORK Providing and laying 40 thk Vitrified flooring of size 600X600 mm over 20mm (average) thick base laid over and jointed with white cement slurry mixed with pigment to match the shade of the slab complete with base of 1 : 4 (1 cement : 4 coarse sand). Cement will be supplied by BHEL free of cost.	m2	600		
j)	ON EXISTING WORK providing and fixing vitrified floor tiles with cement based high polymer modified quick set tile adhesive (water based) conforming to IS : 15477, using 5kg. Adhesive per sqm of tile area , in average 3 mm thickness of size 600X600 mm. Cement will be supplied by BHEL free of cost.	m2	500		
k)	Providing and fixing 1st quality ceramic glazed wall tiles (thickness to be specified by the manufacturer) conforming to IS : 15622 of approved make in all colours, shades, except burgundy, bottle green, black of any size as approved by the Engineer-in-Charge in skirting, risers of steps and dados over 12mm thick bed of cement mortar 1:3 (1 cement : 4 coarse sand) and jointing with grey cement slurry @3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete. Cement will be supplied by BHEL free of cost.	m2	200		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
17	Plastering & Finishing. Cement will be supplied by BHEL free of cost.				
a)	Providing 12 mm thick finished cement plaster in mortar 1:4 (1 cement : 4 sand) on brickwork or reinforced cement concrete surfaces internally including scaffolding and curing etc. as per specifications complete in all respect.	M ²	4600		
b)	Providing 20mm thick cement plaster in two coats, under layer 12mm thick in cement mortar (1:4) mix and above layer 8mm thick with water proofing compound in cement mortar (1:4) sand faced including scaffolding and curing etc.complete as per specification.	M ²	5000		
c)	Providing 6 mm thick finished cement plaster on ceiling, soffits to RCC slab, chajjas, stairs etc. internally or externally in mortar 1:3 (1 cement : 4 sand) including scaffolding and curing etc. complete as per specifications complete in all respect.	M ²	4000		
d)	Providing and applying Plastic Emulsion paint of approved brand and manufacture (two or more coats) and of required shade on new work, over and including suitable priming coat. Rate shall include preparation of surface as per specification complete in all respects	M ²	2000		
e)	Providing and applying Oil Bound Distemper of approved brand and manufacture (two or more coats) and of required shade on new work, over and including suitable priming coat. Rate shall include preparation of surface as per specification complete in all respect.	M ²	12000		
f)	Providing and applying Water Proffing Cement Paints "Snowcem Plus" or equivalent (two or more coats) in required shade and colour on exterior surface over and including suitable priming coat as per specification complete in all respect.	M ²	2800		
g)	Providing and Applying priming coat with ready mixed red oxide Zinc chromate primer of approved brand and manufacture on steel work	M ²	1100		
h)	Providing and Applying two or more coats on new work with synthetic enamel paint (1st Quaty) of approved brand and manufacture to give an even shade. On steel work	M ²	200		
18	Roof Work. Cement will be supplied by BHEL free of cost.				

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
a)	Grading roof for water proofing treatment with cement concrete 1:2:4 (1cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) complete as per direction of Engineer In-charge.	m ³	20		
b)	Providing and laying Seven course water proofing treatment with APP (Atactic poly Propylene) modified polymeric membrane manufactured by Bengal Bitumen, Integrated Waterproofing ltd. or general membranes over roof consisting of first coat of bitumen primer @ 0.40 kg per sqm, 2nd, 4th & 6th course of bonding material @ 1.20 Kg/sqm, which shall consists of blown type bitumen of grade 85/25 conforming to IS:702, 3rd and 5th layers of roofing membrane APP modified polymeric membrane 1.5mm thick of 2.25 kg/sqm weight consisting of five layers prefabricated with center core as 20 micron HMHDPE film sandwiched on both sides with polymeric mix and polymeric mix is protected on both sides with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 100 grouted with cement mortar 1 : 3 (1 cement : 3 fine sand) mixed with 2 % integral water proofing compound by weight of cement over a 12mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished	m ²	14		
c)	Providing and Fixing 110mm dia Single Socketed unplasticised rigid PVC rain water pipes Type B With all fittings and fixtures conforming to IS : 13592 including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for thermal expansion complete	m	740		
d)	Providing Khurras of size 450mm x 450mm x 50mm shall be formed of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) for Rain water Pipes. The khurra and the sides of the outlet shall be rendered with 12mm coat	Nos.	16		
19	DISMANTLING WORK				
a)	Demolishing brick work in cement mortar including stacking of serviceable material and disposal of unserviceable material within plant premises as directed by the Engineer In-charge.	m ³	36		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
b)	Demolishing RCC of existing Bowl mill, RCC slab , RCC columns and pedestals in mill bay using concrete saw/diamond wire method (causing least vibrations to adjoining structure and having least noise, including stacking of steel bars and disposal of unserviceable material within plant premises.Rate includes the cost of staking, removing, cleaning and handing over the reinforcing steel. (All Demolishing and dismantling shall be carried out as per attached technical specifications & as directed by the Engineer In-charge).	m ³	750		
c)	Demolishing RCC work in other areas & structures by jack hammer or any other tools including stacking of steel bars and disposal of unserviceable material within plant premises.Rate includes the cost of staking, removing, cleaning and handing over the reinforcing steel (All Demolishing and dismantling shall be carried out as per attached technical specifications & as directed by the Engineer In-charge).	m ³	1639		
d)	Dismantling of concrete flooring ,Paving and disposing within plant premises as directed by the Engineer	m3	479		
e)	Dismantling of false ceiling and wall clading including stacking and disposing within plant premises as directed by the Engineer	m2	260		
f)	Dismantling of toilet fittings like wash basins, seats, water taps, GI pipes, CI pipes and clearing complete toilet fittings including depositing the fitting as directed by the Engineer.(Toilet size 2.8m x4.42m having 2 Nos wash basin, 2 Nos. WC, 2 Nos. Urinals)	ONE TOILET	4		
20	Miscellaneous Work. Cement & reinforcement will be supplied by BHEL free of cost.				
a)	Repairing the damaged RCC Pipe supports (pedestals) by new M25 grade RCC after removing the loose old concrete as per drawing complete in all respects.PAYMENT TO BE DONE ON AMOUNT OF RCC CONSUMED	CUM	10		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
b)	Providing 50 mm thick guniting in patches on to the required area on RCC/PCC columns, beams, stairs, lintels, retaining walls, sunshades, roofing slab etc. of all sizes and shapes at all heights from existing ground floor and all locations with cement and mortar 1:3 (1 cement : 3 sand) under 2 to 2.8 Kg/Cm ² pressure after removing the damaged loose spalt concrete portions by chipping, removal of dust and applying one coat of rust convertor/kp-100 equivalent grade over reinforcement wherever necessary providing and tying in position 75x75x10 g MS welded mesh or smaller size over treated surface ready to receive grouts, curing for 10 days etc, complete operation all as directed including labour charges hire for all tools and plant machineries cost of consumables, scaffolding all types of protective equipments, plant floors, pipelines, vessels, materials etc. so as to do guniting in plant, removing the debris etc. rebound materials etc. to low lying areas in the factory compound and leveling as directed, complete all as directed by Engineer-In-Charge.	SQM	260		
c)	Providing additional/extra reinforcement with steel bars/MS rods for replacing worn out, corroded rods, insert plates removing old corroded steel rods/plates to scrap yard including the cost of 18 guage GI binding wire, straightening cutting bending in position including tying/welding (if necessary). Cement & reinforcement will be supplied by BHEL free of cost.	MT	2		
d)	Repairing cracks in RCC in carbonated zones as directed by Engineer, by fixing M.S. non return nipple of 13mm diameter taper at bottom with epoxy putty including drilling of holes of 14mm to a depth of 100mm to 150mm in concrete or as per requirement at site, including cleaning of cracks and removal of loose particles, providing and injecting with low viscosity pre-approved epoxy grout into nipples with special injuction at a pressure of 3kg/sqcm to 5 kg/sqcm till firm resistance from the surface is received. The rate should include providing all materials, tools, machinery, labour etc. complete in all respects.	cum	4		
e)	Providing & supplying impregnated fibre board SHALITEX or equivalent for expansion joints and joints around equipment foundations to separate them from paving, flooring or other structure and also between the two structures including joint sealant of polysulphide sealant PIDS				
i	20mm thick	m ²	40		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
ii	50mm thick	m ²	76		
f)	providing and laying GI strip for earthing 65mm x8 mm including cost of excavation, backfilling welding, construction of masonry chambers with MS covers (for electrodes),filling with sand, charcoal and salt (for test pits), labour, material etc. complete	m	88		
21	Disposal				
a)	Transportation and disposal of earth / debris etc. including dressing at disposal site complete as directed by the Engineer In-charge lead upto 5 Km from plant boundary.	m ³	5000		
b)	Transportation of loose & excavated earth / debris etc. including dressing at designated disposal site complete as directed by the Engineer In-charge lead upto 2 Km.	CUM	5000		
c)	Laying earthmat and riser including cutting to shape as per drawing, welding, protective painting including cost of labour, electrodes, paint and other T&Ps etc. complete. Excavation, backfilling shall be paid as per relevant items.	MT	5		
22	Sanitary Installations				
a)	Providing and fixing water closet squatting pan (Indian type W.C. pan) with 100 mm sand cast Iron P or S trap, 10 litre low level white flushing cistern with manually controlled device (handle lever) conforming to IS : 7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required. White vitreous china Orissa pattern W.C. pan of size 580 x 440 mm with integral type foot rests.	EACH	8		
b)	Providing and fixing white vitreous china pedestal type water closet European type (EWC) with seat and lead, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS : 7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.	EACH	8		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
c)	Providing and fixing white vitreous china flat back or wall corner type lipped front urinal basin of 430x260x350mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass union and G.I. clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required.	EACH	9		
d)	Providing & fixing in position of white vitreous china large urinal partition with concealed C.I. Bracket including cutting and making good the walls and floors where required.	EACH	8		
e)	Providing and fixing wash basin with C.I./M.S brackets, 15 mm C.P. brass pillar taps, Kingston/Gem/Techno/Parko, 32mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required A)White vitreous china Flat back wash basin size 550 x 400 mm with single 15 mm C.P. brass pillar tap.	EACH	9		
f(i)	Providing and Fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fitting complete.Flexible pipe 32 mm dia .	EACH	10		
f(ii)	40 mm dia	EACH	10		
g)	Providing and fixing mirror thickness not less than 5.5 mm of required shape and size with plastic moulded frame of approved make Modo guard/Atul or equivalent and shade with 6mm thick hard board backing Rectangular shape 453 x 357 mm	EACH	10		
h)	Providing and fixing 600x120x5mm glass shelf with edges round of supported on anodised aluminium angle frame with C.P. brass brackets and gurad rail complete fixed with 40 mm long screws, rawl plugs etc., complete	EACH	7		
i)	Providing and fixing TOWEL RAIL OF C.P. brass with two C.P. brass brackets coated with nickel chromium plating of thickness not less than grade no.2 of IS: 4827	EACH	7		
j)	Providing and fixing soil, waste and vent pipe: 100mm dia. Centrifugally cast SCI S&S pipe				
i	for 100 Dia. Pipe as per IS:3989	RM	16		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
ii	for 75 Dia. Pipe as per IS:3989	RM	12		
k)	providing and fixing M.S holder bat clamps of approved design to sand cast iron/cast iron (spun) pipe embeded in and including cement concrete blocks 10 x 10 cm of 1 : 2 4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including the cost of cutting holes and making good the walls etc.				
i	for 100 Dia. Pipe	EACH	12		
ii	for 75 Dia. Pipe	EACH	12		
l)	providing and filling the joints with spun yarn and cement yarn cement slurry and cement mortar 1:2 (1 cement:2 coarse sand) in S.C.I./C.I. pipes				
i	for 100 Dia. Pipe	EACH	12		
ii	for 75 Dia. Pipe	EACH	8		
m)	Providing and fixing bend of required with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.				
i	for 100 Dia. Pipe as per IS:3989	EACH	12		
ii	for 75 Dia. Pipe as per IS:3989	EACH	12		
n)	Providing and fixing plain bend of required degree.				
i	for 100 Dia. Pipe as per IS:3989	EACH	11		
ii	for 75 Dia. Pipe as per IS:3989	EACH	11		
o)	Providing and fixing terminal guard :				
i	for 100 Dia. Pipe as per IS:3989	EACH	11		
ii	for 75 Dia. Pipe as per IS:3989	EACH	11		
p)	Providing lead caulked joints to centrifugally cast (spun) iron pipes and fittings of diameter				
i	for 100 Dia. Pipe as per IS:3989	EACH	11		
ii	for 75 Dia. Pipe as per IS:3989	EACH	11		
q)	Providing and fixing trap of self cleansing design with screwed down or hinged grating without vent arm complete, including the cost of cutting and making good the walls and floor				
i	100 mm inlet and 75 mm outlet as per IS:3989	EACH	11		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
r)	Providing, laying and jointing glazed stone ware pipes grade 'A' with stiff mixture of cement mortar in the proportion of 1 : 1 (1 cement : 1 fine sand) including testing of joints etc. complete. Cement will be supplied by BHEL free of cost.				
i	150 mm dia pipe	RM	11		
s)	Providing and laying cement concrete 1 : 5 : 10(1 cement :5 coarse sand :10 graded stone agg. 40 mm nominal size) around S.W. pipes including bed concrete as per standard design: Cement will be supplied by BHEL free of cost.				
i	150 mm dia S.W. pipe	RM	11		
t)	Providing and fixing square-mouth 150 x 100 mm size P type S.W. gully trap grade "A" complete with C.I. grating brick masonry chamber with F.P.S. bricks of class designation 75 and water tight C.I. cover with frame of 300 x 300 mm size (inside). The weight of the cover to be not less than 4.5 kg and frame to be not less than 2.70 kg as per standard design. Cement will be supplied by BHEL free of cost.	EACH	10		
u)	Constructing brick masonry manhole with F.P.S. bricks 75 class designation in cement mortar 1:4 (1 cement : 4 coarse sand), R.C.C. top slab with 1 : 2 : 4 (1cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1 : 4 : 8 mix (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick cement mortar 1 : 3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement and making channels in cement concrete 1 : 2 : 4 (1cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design: Cement & reinforcement will be supplied by BHEL free of cost.				
i	Inside size 90 x 80 x 45 cm deep including C.I. cover with frame (light duty) 455 x 610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg.)	EACH	7		
23	Water Supply				
23.1	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. (internal work exposed on wall):				
a)	15 mm dia. nominal bore	metre	70		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
b)	20 mm dia. nominal bore	metre	50		
c)	25 mm dia. nominal bore	metre	50		
23.2	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. (external work):				
a)	15 mm dia. nominal bore	metre	50		
b)	20 mm dia. nominal bore	metre	40		
c)	25 mm dia. nominal bore	metre	44		
d)	32 mm dia. nominal bore	metre	40		
e)	40 mm dia. nominal bore	metre	40		
23.3	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe etc. complete.				
a)	25 to 40 mm nominal bore	each	50		
23.4	Providing and fixing gun metal valve with C.I. Wheel of approved quality (screwed end)				
a)	25 mm nominal bore	each	50		
23.5	Providing and fixing unplasticised PVC connection pipe with brass unions				
a)	45 cm length	each	50		
b)	15 mm nominal bore	each	50		
23.6	Painting G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new exposed work:				
a)	15 mm dia. nominal bore	metre	50		
b)	20 mm dia. nominal bore	metre	50		

ST. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
c)	25 mm dia. nominal bore	metre	50		
23.7	Providing and fixing C.P. Brass bib cock of approved quality conforming to IS: 8931 (Prayag or equivalent make)				
a)	15mm nominal bore	each	16		
23.8	Providing and fixing C.P. brass angle valve of standard design and of approved make conforming to IS: 8931 .				
a)	15 mm nominal bore	each	16		
23.9	Providing and fixing C. P. brass stop cock of approved quality and make conforming to IS: 8931				
a)	15 mm nominal bore	each	16		
	TOTAL				
24	For items not covered above schedule, quote % below or at par or above with respect to DSR-2007.(Re printed in 2010)				
a)	Rate of complete item.			____%	
b)	Rate of supply of materials at site only.			____%	
c)	Rate for execution complete excluding supply of materials.			____%	

**VOLUME-III
PRICE SCHEDULE-REV 01**

JOB:CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS INCLUDING PILING AND GROUND IMPROVEMENT FOR CW PH , FOREBAY AND CHANNEL, CLARIFIED WATER PH AND RESERVOIR, RAW WATER RESERVOIR, RAW WATER PUMP HOUSE, ADMINSTRATIVE BUILDING , WORK SHOP, CABLE/PIPE RACKS, CABLE TRENCHES, ROAD AND DRAINS, HYDROGEN GENERATION PLANT,CANTEEN ,DG BUILDING, CAR PARKING WITH OPEN AREA, FIRE WATER PUMP HOUSE, FIRE STATION, CHEMICAL LAB , STORE, PRESSURISING & HEATING PH, FOAM PUMP HOUSE, FUEL OIL UNLOADING AREA, FO TANK FDN AND DYKE & FUEL OIL TANK FARM AREA , DM PLANT SHED, CW TREATMENT AREA,CHLORINATION BUILDING, WATCH TOWER, PTP, ETP AND STP (EXCLUDING POWER BLOCK, CHIMNEY AND COOLING TOWER) OF 2X250 MW BARAUNI EXTENSION PROJECT,BIHAR AND BALANCE CIVIL WORKS FOR BOILER AUXILIARIES FOUNDATION FOR R&M JOB OF 2X110 MW BARAUNI THERMAL POWER STATION AT BIHAR

TENDER NO PSER:SCT:BRM:C1302:11

PART-4

R & M JOB-2

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
	Civil / Structural Works -				
1	Earth Work & soling work				
1.1	Earth work in surface excavation not exceeding 30 cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including disposal of excavated earth upto 50 m and lift upto 1.5 m, dispose soil to be levelled and neatly dressed : All kinds of soil	sqm	15		
1.2	Excavation work by mechanical means (hydraulic excavator) manual mean in foundation trenches or drains not exceeding 1.5 m in width or 10 sqm on plan including dressing of sides and ramming of bottoms lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soils as directed, within a lead of 50m. excavation in ordinary rock.	m3	10		
1.3	Hard rock (blasting prohibited)	m3	8		
1.4	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth upto 30 cm measured at a height of 1 m above ground level and removal of rubbish upto a distance of 50 m outside the periphery of the area cleared	sqm	900		
1.5	Clearing grass and removal of the rubbish upto a distance of 50m outside the periphery of the area cleared	sqm	800		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
1.6	Supplying chemical emulsion in sealed containers including delivery as specified. Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	litre	100		
	Diluting and injecting chemical emulsion for POSTCONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion)				
1.7	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration.	sqm	100		
1.8	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor :With Chlorpyriphos/Lindane E.C. 20% with 1% concentration.	sqm	200		
1.9	Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 coarse sand) to the full depth of the hole with Chlorpyriphos/Lindane E.C. 20% with 1% concentration.	m	500		
1.10	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300 mm including excavation channel along the wall & rodding etc.complete: With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	sqm	100		
1.11	Deduct for disposed soil not levelled and neatly dressed	cum	-50		
1.12	Felling trees of the girth (measured at a height of 1 m above ground level including cutting of trunks and branches removing the roots and stacking of serviceable material and disposal of unserviceable material.				
1.12.1	Beyond 30 cm girth upto and including 60 cm girth	each	4		
1.12.2	Beyond 60 cm girth upto and including 120 cm girth	each	4		
1.12.3	Beyond 120 cm girth upto and including 240 cm girth	each	4		
1.12.4	Above 240 cm girth	each	4		
2.0	Concrete Work (Plain & Reinforced Cement Concrete). Cement will be supplied by BHEL free of cost.				

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2.1	PCC WORK				
2.1.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to floor V level :1:1½:3 (1 Cement: 1½ coarse sand: 3 graded stone aggregate 20 mm nominal size)	m ³	12		
2.1.2	Extra for concrete work in superstructure above floor V level for each four floors or part thereof	sqm	10		
2.1.3	Extra for laying concrete in or under water and/or liquid mud including cost of pumping or bailing out water and removing slush etc. complete.	cum	10		
2.1.4	Extra for laying concrete in or under foul positions	m ³	20		
2.2	RCC WORK				
2.2.1	Providing M-30 grade concrete by using 420kg of cement per cum of concrete instead of M-25 grade B.M.C/ R.M.C.. M-30 is used for machine	cum	706		
2.2.2	Providing M-35 grade concrete by using 428kg of cement per cum of concrete instead of M-25 grade B.M.C./ R.M.C	m ³	3		
2.3	Deduct for omitting in R.C.C. work smooth finishing of the exposed surface with 6mm thick cement mortar 1:3 (1 Cement : 3 fine sand)	sqm	-55		
2.4	Extra for rendering smooth the top of suspended floors, landings and staircases (treads and risers) with cement mortar 1:2 (1cement : 2 coarse sand) including a floating coat of neat cement and protecting the surface with a layer of 7.5 cm of earth laid over 15 mm of fine sand in case of suspended floor and bricks laid in mud mortar in case of landings and steps including subsequent removal and cleaning of the same.	sqm	20		
2.5	Providing and fixing sheet covering over expansion joints with iron screws as per design to match the colour / shade of wall treatment. Aluminium fluted strips, 200 mm wide.	m	25		
2.6	Add or deduct for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections.	m	10		
2.7	Extra for laying reinforced cement concrete in or under water and/ or liquid mud including cost of pumping or bailing out water and removing slush etc., complete.	cum	2		
2.8	Extra for laying reinforced cement concrete in or under foul positions	cum	5		

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SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
2.9	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof	m3	1		
3	SHUTTERING WORK				
3.1	Encasing rolled steel sections, in beams and columns, with cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 12.5mm nominal size) including centering and shuttering complete but excluding cost of reinforcement.	cum	4		
3.2	Extra for providing and fixing expanded metal mesh of size 20x60mm and strands 3.25mm wide 1.6mm thick weighing 3.64 kg. per sqm. for encasing of rolled steel sections in beams, columns and grillages excluding cost of hangers	cum	3		
4	Brick Work. Cement will be supplied by BHEL free of cost.				
4.1	Brick work 7 cm thick with F.P.S. brick of class designation 75 in cement mortar 1:3 (1 cement : 3 coarse sand) in superstructure	sqm	110		
5	Door/Window/False ceiling/Wall cladding				
5.1	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths 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 complete including the cost of providing and fixing necessary 27.5cm long wire springs grade No.2 and M.S. top cover of required thickness for rolling shutters. 80x1.25mm M.S. laths with 1.25 mm thick top cover.	sqm	30		
5.2	Extra for providing mechanical device chain and crank operation for operating rolling shutters. Exceeding 10.00 sqm and upto 16.80 sqm in the area.	sqm	4		
5.3	Exceeding 16.80 sqm in area.	sqm	4		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
5.4	Providing and fixing factory made ISI marked steel glazed doors, windows and ventilators side /top /centre hung with beading and all members such as K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted with 15x3mm lugs, 10cm long, embedded in cement concrete blocks 15x10x10cm of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) or with wooden plugs and screws or rawl plugs and screws or with fixing clips or with bolts and nuts as required, including providing and fixing of hinges, pivots, float glass panes with glazing clips and special metal sash putty of approved make and a priming coat of approved steel primer excluding the cost of metal beading and other fittings except necessary hinges or pivots complete as per approved design	kg	50		
5.5	Providing and fixing T-iron frames for doors, windows and ventilators of mild steel Tee-sections, joints mitred and welded with 15x3 mm lugs 10cm long embedded in cement concrete blocks 15x10x10 cm of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) or with wooden plugs and screws or rawl plugs and screws or with dash fastener or with fixing clips or with bolts and nuts as require including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer	kg	70		
5.6	Extra for providing and fixing steel beading of approved shape and section with screw instead of glazing clips and metal sash putty in steel doors, windows, ventilators and composite units	m	38		
5.7	Providing and fixing circular/ Hexagonal cast iron or M.S. sheet box for ceiling fan clamp of internal dia 140mm, 73mm height, top lid of 1.5mm thick M.S. sheet with its top surface hacked for proper bonding, top lid shall be screwed into the cast iron/ M.S. sheet box by means of 3.3mm dia. round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S. bar bent to shape as per standard drawing.	each	20		
5.8	Steel work welded in built up sections/ framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required In stringers, treads, landings etc. of stair cases including use of chequered plate wherever required, all complete.	kg	10		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
6	Steel work welded in built up sections/ framed work including cutting,hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. In gratings, frames, guard bar, ladder, railings, brackets,gates and similar work	kg	30		
7	Flooring. Cement will be supplied by BHEL free of cost.				
7.1	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete.40 mm thick with 20mm nominal size stone aggregate	sqm	600		
7.2	Cement plaster skirting (up to 30 cm height) with cement mortar 1:3 (1cement : 3 coarse sand) finished with a floating coat of neat cement.18 mm thick	sqm	270		
7.3	Deduct for not using 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand) bedding in laying of floor tiles.	sqm	-250		
7.4	Fixing glazed/ Ceramic/ Vitrified floor tiles with cement based high polymer modified quick-set tile adhesive (Water based) conforming to IS: 15477 , using 5kg. adhesive per sqm of tile area, in average 3mm thickness	sqm	200		
8	Plastering & Finishing. Cement will be supplied by BHEL free of cost.				
8.1	Finishing walls with Acrylic Smooth exterior paint of required shade : New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20 kg/ 10 sqm	sqm	1500		
8.2	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade:Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	SQM	90		
8.3	Painting with aluminium paint of approved brand and manufacture to give an even shade - Two or more coats on new work	SQM	150		
9	Roof Work				

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
9.1	Providing and laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer 3mm thick water proofing membrane, black finished reinforced with non-woven polyester matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 ltr/sqm. by the same membrane manufacture of density at 25°C, 0.87-0.89 kg/ltr and viscosity 70-160 cps. Over the primer coat the layer of membrane shall be laid using Butane Torch and sealing all joints etc., and preparing the surface complete. The vital physical and chemical parameters of the membrane shall be as under : Joint strength in longitudinal and transverse direction at 23°C as 650/450N/5cm. Tear strength in longitudinal and transverse direction as 300/250N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be got done through the authorised applicator of the manufacturer of membrane 3 mm thick sqm	SQM	14		
9.2	Providing corrugated G.S. sheet roofing including vertical/curved surface fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead and including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete (up to any pitch in horizontal/ vertical or curved surfaces) excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required 0.80mm thick with zinc coating not less than 275gm/m ²	sqm	165		
9.3	Extra for straight cutting in C.G.S. sheet roofing for making opening of area exceeding 40 sq. decimeter for chimney stacks, sky light etc. 0.80 mm thick	m	10		
9.4	Providing ridges or hips of width 60 cm over all width plain G.S. sheet fixed with polymer coated J. or L hooks, bolts and nuts 8 mm dia. G.I. limpet and bitumen washers complete. 0.80 mm thick with zinc coating not less than 275gm/m ²	m	50		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
9.5	Providing valleys of 90cm wide overall in plain G.S. sheet fixed with polymer coated J, or L hooks, bolts and nuts 8mm dia.. G.I. limpet and bitumen washers complete :60mm thick with zinc coating not less than 350gm/m ² metre	m	20		
9.6	Providing flashing of 40 cm over all width in plain, G.S. sheet fixed with polymer coated J, or L hooks, bolts and nuts, G.I. limpet and bitumen washer complete, bent to shape and fixed in wall with cement mortar 1:3 (1cement : 3 coarse sand). 1.00 mm thick with zinc coating not less than 275gm/m ²	m	50		
9.7	Providing and fixing 15 cm wide 45 cm over all semi circular plain G.S. sheet gutter with iron brackets 40x3mm size, bolts, nuts and washers etc. including making necessary connections with rain water pipes complete. 80mm thick with zinc coating not less than 275gm/m ²	m	40		
10	DISMANTLING WORK				
10.1	Dismantling Structural Steel work in built up section in angles, tees, flats and channels including all gusset plates, bolts, nuts, cutting rivets, welding etc. including dismembering and stacking within 50 meters lead as per direction of Engineer In-charge.	kg	50000		
10.2	Dismantling steel work manually/ by mechanical means in built up sections without dismembering and stacking within 50 metres lead as per direction of Engineer-in-charge	kg	50000		
10.3	Extra for cutting reinforcement bars manually/ by mechanical means in R.C.C. or R.B. work (Payment shall be made on the cross sectional area of R.C.C. or R.B. work) as per direction of Engineer in -charge	sqm	110		
10.4.1	Dismantling G.I. pipes (external work) including excavation and refilling trenches after taking out the pipes, manually/ by mechanical means including stacking of pipes within 50 metres lead as per direction of Engineer-in-charge 15 mm to 40 mm nominal bore	m	300		
10.4.2	Above 40 mm nominal bore	m	140		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
10.5	Dismantling barbed wire or flexible wire rope in fencing including making rolls and stacking within 50 metres lead	kg	120		
10.6	Dismantling old plaster or skirting raking out joints and cleaning the surface for plaster including disposal of rubbish to the dumping ground within 50 metres lead	sqm	14		
10.7	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material with in 50 meters lead as directed by Engineer-in-charge	sqm	50		
10.8	Demolishing C.C. /R.C.C. work by mechanical means and stockpiling at designated locations and disposal of dismantled materials up to a lead of 1000m, stacking serviceable and unserviceable material separately including cutting reinforcement bars	cum	52		
10.9	Dismantling of flexible pavement (bituminous courses) by mechanical means and disposal of dismantled material up to a lead of 1000 metres,as per direction of Engineer-in-charge	cum	13		
10.10	Extra for scrapping, cleaning and straightening reinforcement from R.C.C. or R.B. work	kg	150		
11	Miscellaneous Work. Cement will be supplied by BHEL free of cost.				
11.1	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
11.1.1	150 mm dia. R.C.C. pipe	m	60		
11.1.2	250 mm dia. R.C.C. pipe	m	60		
11.1.3	450 mm dia. R.C.C. pipe	m	60		
11.1.4	600 mm dia. R.C.C. pipe	m	60		
11.1.5	800 mm dia. R.C.C. pipe	m	60		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
11.1.6	1000 mm dia. R.C.C. pipe	m	60		
11.2	Providing and fixing 30mm thick wire gauge shutters using galvanised M.S. wire gauge of average width of aperture 1.4mm with wire of dia. 0.63mm for doors, windows and clerestory windows including ISI marked Stainless Steel butt hinges with necessary screws : Second class teak wood.	sqm	100		
11.3	Providing and placing in position 100 mm thick polystyrene sheet Type-II self extinguish type in expansion joints and between old and new concrete as per requirement.	sqm	500		
13	Sanitary Installations				
13.1	water storage tank ISI:12701 marked indicating the BIS License No. with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes, but without fittings and the base support for tank. (Sintex, Electroplast, Star, Lotus or equivalent having valid ISI Licence).This may be note that maximum storage for single tank is 1000 litre.	PER LITRE	4000		
13.2	Providing and fixing PTMT liquid soap container 109mm wide, 125mm high and 112mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour. weighing not less than 105 gms	EACH	7		
15	DRAINAGE. Cement will be supplied by BHEL free of cost.				
15.1	Providing, laying and jointing glazed stoneware pipes grade 'A' withstiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1fine sand) including testing of joints etc. complete :				
15.1.1	100mm diamete S.W. pipe	m	50		
15.1.2	150 mm diameter S.W. pipe	m	50		
15.2	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) all-round S.W. pipes including bed concrete as per standard design: Cement will be supplied by BHEL free of cost.				

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
15.2.1	100 mm diameter S.W. pipe	m	60		
15.2.2	150 mm diameter S.W. pipe	m	30		
15.3	Dismantling of old S.W. pipes including breaking of joints and bedconcrete stacking of useful materials near the site within 50 m lead and disposal of unserviceable materials into municipal dumps:				
15.3.1	100 mm diameter	m	20		
15.3.2	150mm dia	m	20		
15.4	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks of class designation 75 and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design. With F.P.S. bricks	each	2		
16	ROAD WORK				
16.1	Supplying and stacking at site Stone screening 13.2 mm nominal size	cum	100		
16.2	Laying spreading and compacting stone aggregate of specified sizes to WBM specifications including spreading in uniform thickness, hand picking , rolling with 3 wheeled road / vibratory roller 8-10 tonne in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate watering and compacting to the required density	cum	100		
16.3	Cutting road and making good the same including supply of extra quantities of materials i.e. aggregate, moorum screening, red bajri and labour required. bituminous portion	cum	5		
16.4	Cutting road and making good the same including supply of extra quantities of materials i.e. aggregate, moorum screening, red bajri and labour required. Water Bound Macadam	cum	5		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
16.5	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire 9.38 kg per 100 m (minimum) between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately) :- Payment to be made per metre cost of total length of barbed wire used. With G.I. barbed wire.	m	50		
16.6	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete	kg	15		
16.7	Welded steel wire fabric fencing with posts of specified material and of standard design placed and embedded in cement concrete blocks 45x45x60cm of mix 1:5:10 (1 cement:5 fine sand : 10 graded stone aggregate 40mm nominal size) every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and struts embedded in cement concrete blocks 70x45x50cm of the same mix, provided with welded steel wire fabric fixed between the posts fitted and fixed with G.I. staples on wooden plugs or tied to 6 mm bar nibs with G.I. binding wire (cost of posts, welded steel wire fabric, painting, earth work in excavation and concrete to be paid for separately.	sqm	50		
16.8	Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40 mm nominal size) in pavements, laid to required slope and camber in panels as required including consolidation finishing and tamping complete. Cement will be supplied by BHEL free of cost.	cum	20		
16.9	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 25x25 mm made of G.I. wire of dia. 3mm including strengthening with 2mm dia. wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge.	sqm	75		
17	MARBLE WORK				

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
17.1	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished) machine cut for kitchen platforms, vanitycounters, window sills , facias and similar locations of required size ofapproved shade, colour and texture laid over 20mm thick base cementmortar 1:4 (1 cement : 4 coarse sand) with joints treated with whitecement, mixed with matching pigment, epoxy touch ups, includingrubbing, curing, moulding and polishing to edge to give high gloss finishetc. complete at all levels. raj nagar palin white marble / udaipur green marble / zebra blkmarble Area of slab over 0.50 sqm.Cement will be supplied by BHEL free of cost. Cement will be supplied by BHEL free of cost.	sqm	200		
17.2	Extra for providing edge moulding to 18mm thick marble stone counters, Vanities etc. including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.	m	100		
17.3	Extra for providing opening of required size & shape for wash basins/ kitchen sink in kitchen platform, vanity counters and similar location inmarble/Granite/stone work including necessary holes for pillar taps etc.including rubbing and polishing of cut edges etc. complete	each	20		
18	ALUMINIUM WORKS				
18.1	providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS : 1285, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt etc. Aluminium sections shall be smooth,rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling,C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing and paneling to be paid for separately) . For fixed portion				
18.1.1	Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15).	kg	100		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
18.2	Providing and fixing 12mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS:12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge. Pre-laminated particle board with decorative lamination on both sides.	sqm	24		
18.3	Providing and fixing glazing in aluminium door, window, ventilator,shutters and partitions etc. with PVC/ neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-incharge. (Cost of aluminium snap beading shall be paid in basic item): With float glass panes of 5.50 mm thickness	sqm	105		
18.4	Providing and fixing double action hydraulic floor spring of approved brand and manufacture IS : 6315 marked, for doors including cost of cutting floors as required, embedding in floors and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge. With stainless steel cover plate.	each	35		
18.5	Providing and fixing powder coated aluminium work (minimum thickness of powder coating 50 micron) consisting of tee/ angle sections, of approved make conforming to IS : 733 in frames of false ceiling including aluminium angle cleats with necessary C.P. brass/ stainless steel sunk screws, aluminium perimeter angles fixed to wall with rawl plugs @ 450 mm centre to centre and fixing the frame work to G.I. level adjusting hangers 6 mm dia. with necessary cadmium plated machine screws all complete as per approved architectural drawings and direction of the Engineer-in-charge (level adjusting hangers, ceiling cleats and expansion hold fasteners to be paid for separately).	kg	30		
18.6	Providing and fixing 6 mm dia. G.I. level adjusting hangers (upto 1200 mm length) fixed to roof slabs by means of ceiling cleats made out of G.I. flat 40x3mm size 60mm long and expansion hold fasteners 12.5 mm dia. 40mm long complete as per direction of Engineer -incharge.	each	125		

SL. NO.	WORK DESCRIPTION	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)
18.7	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete. Upto 5mm depth and 5 mm width	KG	13		
18.8	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side having 12 mm air gap including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete	each	20		
18.9	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steelscrews etc. to the side hung windows as per direction of Engineer-inchargecomplete. 205 X 19 mm	each	105		
18.10	Providing and fixing aluminium tubular handle bar 32 mm outer dia, 3.0 mm thick & 2100 mm long with SS screws etc .complete as per direction of Engineer-in-Charge. Anodized (AC 15) aluminium tubular handle bar	each	7		
18.11	Providing fixing aluminium round shape handle of outer dia 100mm with SS screws etc. complete as per direction of Engineer-in-charge Anodized (AC 15) aluminium	each	10		
	TOTAL				
19	For items not covered above schedule, quote % below or at par or above with respect to DSR-2007.(Re printed in 2010)				
a)	Rate of complete item.			____%	
b)	Rate of supply of materials at site only.			____%	
c)	Rate for execution complete excluding supply of materials.			____%	

NO DEVIATION CERTIFICATE

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Sub : **No Deviation Certificate**

Ref : 1) Tender no PSER:SCT:BRM:C1302:11

2) BHEL's NIT, vide reference no PSER:SCT:BRM:C1302:11 Date: 03/01/2012.

3) BHEL's TCN-01, vide reference no PSER: SCT:BRM:C1302:TCN-01 Date: 11-01-2012.

4) BHEL's TCN-02, vide reference no PSER: SCT:BRM:C1302:TCN-02 Date: 19-01-2012

5) All other pertinent issues till date.

We hereby confirm that we have not changed/ modified/materially altered any of the tender documents as downloaded from the website/ issued by BHEL and in case of such observance at any stage, it shall be treated as null and void.

We also hereby confirm that we have neither set any Terms and Conditions and nor have we taken any deviation from the Tender conditions together with other references applicable for the above referred NIT/Tender Specification.

We further confirm our unqualified acceptance to all Terms and Conditions, unqualified compliance to Tender Conditions, Integrity Pact (if applicable) and acceptance to Reverse Auctioning process.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized representative of the bidder)

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION DJ-9/1, SALLAKE CITY, KOLKATA - 700 091

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