भारत हेवी इलेक्ट्रिकल्स लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT HEAVY ELECTRICALS LIMITED
(A Govt. of India Undertaking)

TCN - 01

Ref: PSER:SCT:SDG:C1274:11:TCN-01 Date: 19-11-2011

Sub	Tender Change Notice (TCN- 01).	
Job	(i) Package-C: Civil,Structural,Architectural etc of Civil Superstructure Work of 1x 500 MW unit # 3 for 2x500 MW units at Sagardighi STPP, WB. (ii) Package-D: Civil,Structural,Architectural etc of Civil Superstructure Work of 1x500 MW unit # 4 for 2x500 MW units at Sagardighi STPP, WB.	
Ref	1.0	Tender no PSER:SCT:SDG:C1274:11
	2.0	BHEL's NIT, vide reference no PSER:SCT:SDG:C1274 Date: 05-11-2011
	3.0	Other References,if any.

With reference to above in line with Pre- bid discussion (held on 17-11-2011), following points/ documents relevant to tender may please be noted and complied with while submitting the offer.

1) Revised Pre-Qualification criteria attached herewith, superseding earlier PQ criteria (Annexure-1) along with NIT.

2) Introduction of following clause(under Clause No.27) in NIT

The offers of the bidders who are on the banned list as also the offer of the bidders , who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL Website(www.bhel.com).

3) Revised Volume-IF (Rev-01)-(Technical Conditions of Contract) , superseding Volume-IF issued earlier along with NIT.

4) 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 Offer from bidders in superseded price schedule (Vol-III, REV-00) shall not be considered.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).

5) Due date of submission of tender extended from 28-11-11 up to 05-12-2011 (15=00 Hrs). Bidders are requested to submit their offer by extended due date positively.

6) Revised Construction Schedule (in terms of Clause No 37.0 OF VOLUME-IF-R-1) is being issued shortly.

7) Revised `No deviation certificate' is attached. Bidder to submit `No deviation certificate' as per attached format only.

8) All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,
for BHARAT HEAVY ELECTRICALS LTD

ENGINEER(SCT)

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

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)
POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091
फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : 23211798/ 1691

PRE-QUALIFICATION CRITERIA

JOB	(i) PACKAGE-C: CIVIL, STRUCTURAL, ARCHITECTURAL ETC OF CIVIL SUPERSTRUCTURE WORK OF 1x500 MW UNIT # 3 FOR 2x500 MW UNITS AT SAGARDIGHI STPP, WB. (ii) PACKAGE-D: CIVIL, STRUCTURAL, ARCHITECTURAL ETC OF CIVIL SUPERSTRUCTURE WORK OF 1x500 MW UNIT # 4 FOR 2x500 MW UNITS AT SAGARDIGHI STPP, WB.
Tender no	PSER:SCT:SDG:C1274:11

BIDDER SHALL NOTE & COMPLY WITH THE POINTS REFERRED UNDER `NOTE' BELOW.

SL NO	CRITERIA
1.0	BIDDER SHOULD HAVE AVERAGE MINIMUM ANNUAL TURNOVER OF Rs 27.30 CRORE FOR PACKAGE-C & Rs 26.10 CRORE FOR PACKAGE-D DURING THE LAST 3 (THREE) YEARS, ENDING ON 31-03-2011 AND MUST HAVE EARNED PROFIT IN ANY ONE OF LAST 3 (THREE) FINANCIAL YEARS, ENDING ON 31-03-2011 & SHOULD HAVE POSITIVE NET WORTH AS ON 31-03-2011. AUDITED BALANCE SHEET AND PROFIT & LOSS ACCOUNT OF THE COMPANY NEED BE SUBMITTED FOR LAST 3 (THREE) FINANCIAL YEARS, ENDING ON 31-03-2011 IN SUPPORT OF THIS REQUIREMENT. IN CASE AUDITED FINANCIAL STATEMENTS HAVE NOT BEEN SUBMITTED FOR ALL THE THREE YEARS AS INDICATED ABOVE, THEN THE APPLICABLE AUDITED STATEMENTS SUBMITTED BY THE BIDDERS AGAINST ABOVE 3 (THREE) YEARS, WILL BE AVERAGED FOR 3 (THREE) YEARS.
2.0	BIDDER SHOULD HAVE EXECUTED/ EXECUTING `ENABLING' OR `PILING' OR `CIVIL' OR `STRUCTURE' OR `CIVIL & STRUCTURE' OR `CHIMNEY' WORK IN ANY POWER/ INDUSTRIAL PROJECT DURING LAST 7 (SEVEN) YEARS, ENDING ON LATEST DUE DATE OF OFFER SUBMISSION, VALUE OF WHICH SHALL BE EITHER OF FOLLOWING. IN CASE OF ONGOING JOBS, THE VALUE OF EXECUTED PORTION OF THE JOB AS ON LATEST DUE DATE OF OFFER SUBMISSION SHALL CORRESPOND TO AT LEAST TO THE RESPECTIVE VALUES SPECIFIED BELOW. RELEVANT SUPPORTING DOCUMENT SHALL BE SUBMITTED.
2.1	1 WORK OF VALUE NOT LESS THAN Rs 72.80 CRORE FOR PACKAGE-C AND Rs 69.60 CRORE FOR PACKAGE-D.
2.2	2 WORKS, EACH OF VALUE NOT LESS THAN Rs 45.50 CRORE FOR PACKAGE-C AND Rs 43.50 CRORE FOR PACKAGE-D.
2.3	3 WORKS, EACH OF VALUE NOT LESS THAN Rs 36.40 CRORE FOR PACKAGE-C AND Rs 34.80 CRORE FOR PACKAGE-D.
3.0	BIDDER SHOULD HAVE EXECUTED/ EXECUTING FOLLOWING JOBS FOR A UNIT OF RATING OF 190 MW OR ABOVE IN A POWER/ INDUSTRIAL PROJECT DURING LAST 7 YEARS, ENDING ON LATEST DUE DATE OF OFFER SUBMISSION. RELEVANT SUPPORTING DOCUMENT SHALL BE SUBMITTED.
3.1	COMPLETED 17,400 CUM FOR PACKAGE-C AND 11,700 CUM FOR PACKAGE-D OF CONCRETING WITHIN A PERIOD OF TWELVE CONSECUTIVE MONTHS IN ONE OR CUMMULATIVE OF TWO CONCURRENT RUNNING CONTRACTS AND SHOULD HAVE COMPLETED AND HANDED OVER STG DECK OF ONE UNIT FOR MECHANICAL ERECTION.
3.2	COMPLETED STRUCTURAL FABRICATION & ERECTION WORK OF 3,800 MT FOR PACKAGE-C AND 5,300 MT FOR PACKAGE-D WITHIN A PERIOD OF TWELVE CONSECUTIVE MONTHS IN ONE OR CUMMULATIVE OF TWO CONCURRENT RUNNING CONTRACTS AND COMPLETED FABRICATION & ERECTION OF MILL BUNKER STRUCTURE.
4.0	BIDDER SHOULD HAVE VALID PAN. RELEVANT SUPPORTING DOCUMENT SHALL BE SUBMITTED.
5.0	IN CASE OF CONSORTIUM BIDDING, FOLLOWING POINTS SHALL BE COMPLIED. RELEVANT SUPPORTING DOCUMENT SHALL BE SUBMITTED.
5.1	NO OF PARTNERS INCLUDING PRIME BIDDER SHALL NOT BE MORE THAN 2.
5.2	PRIME BIDDER ALONG WITH CONSORTIUM PARTNER SHALL ENTER INTO AGREEMENT.
5.3	PRIME BIDDER SHOULD COMPLY WITH CRITERIA UNDER SL NO 1.0 & 2.0.
5.4	PRIME BIDDER SHALL COMPLY WITH CRITERIA AT 3.1 AND CONSORTIUM PARTNER SHALL COMPLY WITH CRITERIA AT SL NO 3.2.

5.5	PRIME BIDDER AND CONSORTIUM PARTNER EACH SHALL COMPLY WITH CRITERIA UNDER SL NO 4.0.

NOTE:
(BIDDER SHALL SPECIFICALLY NOTE FOLLWING POINTS WHICH ALSO FORM MANDARTORY REQUIREMENT FOR CONSIDERATION/ PROCESSING OF OFFER)

A	IN CASE OF CONSORTIUM BIDDING, PRIME BIDDER SHALL BE RESPONSIBLE FOR OVERALL EXECUTION OF THE CONTRACT.
B	IN CASE OF CONSORTIUM BIDDING, CONSORTIUM BIDDER SHALL DEPOSIT SECURITY DEPOSIT OF 2 % OF TOTAL CONTRACT PRICE IN ADDITION TO SECURITY DEPOSIT TO BE SUBMITTED BY PRIME BIDDER FOR THE TOTAL CONTRACT PRICE.
C	PRIME BIDDER WHO HAVE NOT INDIVIDUALLY EXECUTED/ EXECUTING THE COMPLETE WORK INVOLVING ABOVE AREAS (3.1 & 3.2) BUT HAVE EXECUTED THE COMPLETE WORKS INVOLVING ABOVE AREAS (3.1 & 3.2) ALONG WITH CONSORTIUM PARTNER/ ASSOCIATE, UNDER DIRECT ORDER OF BHEL, FOLLOWING SHALL BE APPLICABLE FOR CONSIDERING THE PRIME BIDDER QUALIFIED STANDALONE BIDDER (IE WITHOUT CONSORTIUM) FOR PRESENT JOB. PRIME BIDDER SHOULD HAVE EXECUTED AT LEAST 2 JOBS IN CONSORTIUM WITH SAME CONSORTIUM PARTNER/ ASSOCIATE FOR THE ABOVE AREAS (3.1 & 3.2) IN WHICH THEY HAVE DONE AT LEAST ONE AREA (OUT OF 3.1 & 3.2) INDEPENDENTLY. BIDDER TO SUBMIT CONFIRMATION FROM PURCHASER/ END USER TOWARDS SUCCESSFUL/ SATISFACTORY EXECUTION OF THE COMPLETE WORK AND ACTIVE INVOLVEMENT OF PRIME BIDDER .
D	AFTER SATISFACTORY FULFILLMENT OF ALL THE ABOVE CRITERIA, OFFER SHALL BE CONSIDERED FOR FURTHER EVALUATION AS PER NIT AND ALL OTHER TERMS OF THE TENDER.
E	CONSIDERATION OF OFFER WILL BE SUBJECT TO CUSTOMER'S APPROVAL OF BIDDER (IN CASE OF SOLE BIDDING) OR PRIME BIDDER ALONG WITH CONSORTIUM PARTNER (IN CASE OF CONSORTIUM BIDDING).
F	THE TENDER COMPRISES OF 2 PACKAGES, PACKAGE-C & PACKAGE-D. BIDDER MAY SUBMIT OFFER FOR EITHER OF PACKAGES OR FOR BOTH PACKAGES. PACKAGE-C & PACKAGE-D SHALL BE EVALUATED SEPARATELY. REVERSE AUCTION/ PRICE BID OPENING OF PACKAGE-C WILL BE DONE FIRST, FOLLOWED BY PACKAGE-D. SUCCESSFUL BIDDER OF PACKAGE-C WILL NOT BE CONSIDERED FOR PACKAGE-D.
G	BIDDER SHOULD FURNISH INFORMATIONS REGARDING PROJECTS IN HAND, CURRENT LITIGATION, ORDERS REGARDING EXLUSION/ EXPULSION OR BLACK LISTING.
H	BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.
I	PERFORMANCE SHALL BE EVALUATED FOR PRIME BIDDER AND THE CONSORTIUM PARTNER FOR THEIR RESPECTIVE SCOPE OF WORK. AFTER EXECUTION OF WORK, THE WORK EXPERIENCE SHALL BE ASSIGNED TO THE PRIME BIDDER AND THE CONSORTIUM PARTNER FOR THEIR RESPECTIVE SCOPE OF WORK
J	IN CASE THE CONSORTIUM PARTNER BACKS OUT, ANOTHER CONSORTIUM PARTNER MEETING THE AFORESAID PERTIENT QUALIFYING REQUIREMENTS, HAS TO BE ENGAGED BY PRIME BIDDER AND IF NOT, THE RESPECTIVE WORK WILL BE WITHDRAWN AND EXECUTED AT THE RISK & COST BASIS OF THE PRIME BIDDER.
K	IN CASE PRIME BIDDER WITHDRAWS, THE WHOLE CONTRACT SHALL BE CONSIDERED CANCELLED AND SHORT CLOSED

CONTENT

This volume shall be construed as part of tender document and shall be read along-with others volumes of tender. Unless otherwise specified, in case of any confusion of any clause/ provision of this volume or any conflict/ inconsistency of any clause/ provision of this volume with that of other volume, the same shall be brought out by the bidder in writing to BHEL for clarification or during pre-bid discussions, if applicable, failing which most stringent interpretation in favour of BHEL shall be adopted and the same shall be binding to the bidder. Unless otherwise specified, all terms & conditions shall be applicable for entire scope and for each part/ package of the tender.

CLAUSE NO	DESCRIPTION
1.0	**PROJECT SYNOPSIS AND GENERAL INFORMATION**
1.1	DETAILS OF PROPOSED STAGE/ UNITS
	Project name: Sagardighi Thermal Power Eextension Project, unit # 3 & 4, 2 x 500 MW. No of units x capacity: 2 x 500 MW (Sub-critical). Project setting up by: West Bengal Power Development Corporation Ltd. Design ambient dry bulb temp: 50 deg max, 5 deg min. Max relative humidity: 84%. Average rainfall: 1389 mm.
1.2	APPROACH TO SITE
	The site is located at Manigram, about 13 km north of Sagardighi town by the side of the SMGR (Sagardighi-Manigram-Gankar-Raghunathgunj) road at a distance 20 km. from National Highway 34 in Murshidabad district in W.B and around 240 km from Kolkata. Nearest railway station is Manigram adjacent to the site on Bandel-Barhawara branch line and 6.5 km from Sagardighi Railway Station on Sainthia-Azimgunj line of Eastern Railway. From Sagardighi railway station a railway line will branch off to the site for material unloading and coal marshalling. Nearest Airport: NSC Bose Air Port, Kolkata. Nearest Seaport: Haldia/ Kolkata.
2.0	**NAME OF WORK**
2.1	The scope broadly covers providing labour, supervision, materials (except those which will be supplied by BHEL free of cost), T&Ps, consumables etc as per technical specification and terms & conditions of tender taking into account all clarifications, confirmations and agreements till date for civil, structural, architectural work for the following packages.
2.2	PACKAGE-C (UNIT # 3)
	Notwithstanding broad scope enumerated in Volume-II (Section-A), major areas of work shall be, but not limited to following areas of unit # 3 and specified common areas of unit # 3 & 4.
2.2.1	Civil, architectural, finishing work of power house building (Column 1 to 9).
2.2.2	Power house building structural work, except mill & bunker bay (Column 1 to 9).
2.2.3	Mill and bunker bay.
2.2.4	ESP control building.
2.2.5	TG colum, deck.
2.2.6	Superstructure of mill.
2.2.7	Super structure of ID fan.
2.2.8	Super structure of PA fan.
2.2.9	Super structureof FD fan.
2.2.10	BFP.
2.2.11	CW duct.
2.2.12	CW chlorination system.

2.2.13	Compressor house.
2.2.14	Fuel oil pump house.
2.2.15	Fuel oil pressurising pump house.
2.2.16	Fuel transfer pump house including unloading area.
2.2.17	Fuel oil storage tank foundation including dyke area.
3.2.18	DG building.
2.2.19	Condensate storage tank.
2.2.20	Condensate transfer pump house.
2.2.21	Transformer yard.
2.2.22	Mill reject system.
2.2.23	CW electrical annex.
2.2.24	Cable/ pipe rack including for common areas.
2.2.25	Trenches.
2.2.26	Duct banks.
2.2.27	Paving including roads and drains.
2.2.28	CW pump house.
2.2.29	Septic tank.
2.2.30	Civil, piping etc work of large dia LP piping.
2.2.31	Civil work of boiler elevator machine room.
2.2.32	Misc civil work/ building/ structures/ misc enabling work.
2.3	PACKAGE-D (UNIT # 4)
	Notwithstanding broad scope enumerated in Volume-II (Section-A), major areas of work shall be, but not limited to following areas of unit # 4 and specified common areas of unit # 3 & 4.
2.3.1	Civil, architectural, finishing work of power house building (Column 9A to 22).
2.3.2	Power house building structural work, except mill & bunker bay (Column 9A to 22).
2.3.3	Mill and bunker bay.
2.3.4	ESP control building.
2.3.5	TG colum, deck.
2.3.6	Superstructure of mill.
2.3.7	Super structure of ID fan.
2.3.8	Super structure of PA fan.
2.3.9	Super structureof FD fan.
2.3.10	BFP.
2.3.11	Transformer yard.
2.3.12	Mill reject system.
2.3.13	Cable/ pipe rack.
2.3.14	Trenches.
2.3.15	Duct banks.
2.3.16	Paving including roads and drains.
2.3.17	ARCW building.
2.3.18	CPU regeneration building.
2.3.19	Fire water pump house.
2.3.20	Septic tank
2.3.21	Civil work of boiler elevator machine room.
2.2.22	Civil, piping etc work of large dia LP piping.
2.2.23	Misc civil work/ building/ structures/ misc enabling work.
2.4	BHEL reserve the right to exclude any of the aforesaid work/ structures/ building from or include any additional work/ structucture/ building to the scope of PACKAGE-C/ PACKAGE-D of this tender. Decision of BHEL shall be final & binding to contractor.
2.5	BHEL also reserve the right to get the balance job of partially executed structures/ buildings done thru the successful bidder of PACKAGE-C/ PACKAGE-D of this tender. Decision of BHEL shall be final & binding to contractor.
2.6	The work of Package-C & Package-D shall be awarded to different bidders.
3.0	**BROAD SCOPE OF WORK**
	Broad scope of work shall be, but not limited to following.

3.1	Providing all labour, materials, consumables, equipment, temporary works, temporary storage sheds for contractors own use, temporary colony for labour & staff, temporary site offices, constructional plant's transportation/ handling and all incidental items not shown or specified but reasonably implied or necessary for 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.
3.2	Testing of all materials at site laboratory or approved laboratory outside, submitting test reports, arranging supervision etc and execution of the contract.
3.3	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.
3.4	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 proposed site, climatic conditions including monsoon pattern, soil conditions, local conditions & site specific parameters and shall include for all such conditions & contingent measures in the bid, including those which may not have been specifically brought out in the specifications.
3.5	Setting up by the bidder a testing laboratory (one AC lab size 4.5 mtr x 6 mtr 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 relevant annexure of this tender is to be arranged by the contractor within quoted/ accepted rate. For conducting day to day test, one no chemist to be deployed as necessary
3.6	Removal of any buried pipe/ cable coming in the working fronts safely by the contractor. Payment in this regard shall be made as per relevant item of Volume-III.
3.7	Civil enabling works (if included) covers site office, temporary stores for equipment & cement, pre-assembly yards, construction & maintenance of temporary roads and drains etc.
3.8	Maintenance of construction water network, construction power network, under the contractor's custody.
3.9	All quality standards, tolerances, welding standards & other technical requirements shall be strictly adhered to. The bidder shall fully apprise themselves of the prevailing conditions at the 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.
3.10	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 relevant latest BIS.
3.11	Drawings, documents attached along with the tender are for guidance and tender purpose only.
3.12	The scope shall include other related works although may not be specifically mentioned along with incidental items, but are necessary for completion of the work as a whole.
3.13	Topographical survey and geo-technical investigation report/ data, if furnished along with tender, may be used for reference purpose only. No claim/ compensation whatsoever in tthis regard shall be entertained by BHEL at a later date.
4.0	**SITE VISIT**
	Contractor should visit project site and acquire full knowledge and information about site conditions together with all the statutory, obligatory, mandatory requirements of various authorities before submission of offer.
5.0	**DEVIATIONS/ CLARIFICATIONS**
	Normally no deviation with respect to tender is acceptable to BHEL. However, in case of unavoidable circumstances, the bidder may submit their quary for seeking clarifications of BHEL as per modality stipulated in NIT or may submit the same along with his offer as per rescribed 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.
6.0	**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.
7.0	**GENERAL TECHNICAL REQUIREMENTS (CODES AND STANDARDS)**
7.1	Except where otherwise specified, the plant/ equipment shall comply with appropriate Indian Standard or an agreed internationally accepted Standard Specification as mentioned elsewhere in tender, each incorporating the latest revisions at the time of tendering. Where no internationally accepted standard is applicable, the bidder shall give all particulars and details as necessary; to enable BHEL to identify all of the plant/ equipment in the same detail as would be possible had there been a standard specification.
7.2	Where the bidder proposes alternative codes or standards he shall include in his tender one copy (in English) of each standard specification to which materials offered shall comply. In such case, the adopted alternative standard shall be equivalent or superior to the standards mentioned in the specification.
7.3	In the event of any conflict between the codes & standards referred above, and requirements of this specification, the requirements which are more stringent shall govern.
7.4	Tools used during erection and commissioning/ completion shall not be accepted except with the specific approval of the engineer.
7.5	Wherever specified or required the plant/ equipment shall conform to various statutory regulations such as Indian Boiler Regulation, Indian Electricity Rules, Indian Explosive Act, Factories Act etc, wherever required, obtaining approval for plant/ equipment supplied under the specification from statutory authorities shall be the responsibility of the contractor.
8.0	**GENERAL SERVICES TO BE RENDERED BY THE BIDDER**
8.1	Services for construction, fabrication, equipment erection, testing, trial run, commissioning/ completion of various equipment & accessories/ items under the contract shall include but not be limited to the following.
8.2	Collecting materials from store/open yard from time to time for fabrication / erection as per the construction program and unloading of cement & steel as per flow of consignment. The contractor shall be the custodian of all the materials issued till the plant/equipment is officially taken over by the owner/ BHEL after complete erection and commissioning/ completion. The contractor shall maintain adequate security personnel and security measures for proper precaution and safety of material.
8.3	Deployment of all skilled and unskilled manpower required for erection supervision, watch & ward, for commissioning/ completion and other services to be rendered under this specification.
8.4	Deployment of all erection tools & tackle, construction machinery, transportation vehicles and all other implements in adequate number and size, appropriate for the erection work to be handled under scope of this specification except otherwise specified.
8.5	Supply of all consumables, eg welding electrodes, etc as well as materials required for temporary supports, scaffolding etc as necessary for such construction work, unless specified other wise.
8.6	Providing support services for the contractor's erection staff eg construction of site offices, temporary stores, residential accommodation and transport to work site for erection personnel, watch and ward for security and safety of the materials under the contractor's custody etc, as required.

8.7	Maintaining proper documentation of all site activities undertaken by the contractor as per the proforma mutually agreed with BHEL, submitting monthly progress reports as also any such document as and when desired by BHEL/ owner, taking approval of all statutory authorities e.g., Factory Inspector, Provident Fund authority etc. for respective portions of work under the jurisdiction of such statutes of laws.
8.8	As part of overall project management activity, the contractor shall be responsible for proper co-ordination of erection activities during various phases of execution of the contract. The contractor shall identify a person designated as construction manager, with whom BHEL shall interact on matters related to execution of the contract. The construction manager shall be the single point contact person on behalf of the contractor. BHEL shall interact with the construction manager only on all matters on co-ordination between BHEL and the contractor. For timely completion of work the contractor may have to work in one or more shifts. He will not be eligible for any extra charge on this account.
8.9	The contractor shall confine all his field operations to those works which can be reformed without subjecting the equipment and materials to adverse effects, during inclement weather conditions, like monsoon, storms etc and during other unfavourable construction conditions. No field activities shall be performed by the contractor under conditions which might adversely affect the quality and efficiency thereof, unless special precautions or measures are taken by the contractor in proper and satisfactory manner in the performance of such works and with the concurrence of the engineer. Such unfavourable construction conditions in no way relieve the contractor of his responsibility to perform the works as per the schedule.
8.10	The contractor shall supply all the skilled workmen like mill-wright fitters, welders, gas cutters, electricians, riggers, sarangs, erectors, carpenters, pipe fitters, masons, laggers, tin-smiths, instrument machanics etc, in addition to other skilled, semi-skilled and unskilled workmen required for all works of handling and transportation from site store to erection site, erection, testing and commissioning/ completion contemplated under this specification. Only fully trained and competent men with previous experience on the job shall be employed. They shall hold valid certificates wherever necessary. BHEL reserve the right to decide on the suitability of the workers and the other personnel who will be employed by the contractor. BHEL reserves the right to insist on removal of any employee of the contractor at any time, if they find him unsuitable and the contractor shall forthwith remove him.
8.11	The supervisory staff employed by the contractor shall be technically qualified and experienced in the area of work. They shall ensure proper out turn of work and discipline on the part of labour put on the job by the contractor and in general see that the works are carried out in a safe and proper manner and in coordination with other labour and staff employed directly by BHEL or other contractors of BHEL and BHEL's client.
8.12	The contractor shall also furnish daily labour report showing by classification the number of employees engaged in various categories of work a progress report of work as required by BHEL engineer.
8.13	The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall co-operate with other personnel, and other contractors, co-ordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.
8.14	The contractor's supervisory staff shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship conform to the dimensions and tolerance given in the drawing / instruction given by BHEL Engineer from time to time.
8.15	It is the responsibility of the contractor to engage his workman in shifts or on overtime basis for achieving the target set by BHEL during erection, commissioning/ completion and testing period. Contractor's quoted rate shall include all these contingencies.
8.16	Any other service, although not specifically called for but required for a contract of

	the size and nature indicated in the specification.
9.0	**PROTECTION**
9.1	Equipment having anti-friction or sleeve bearings shall be protected by weather tight enclosures. Coated surfaces shall be protected against impact, abrasion, discoloration and other damages. Surfaces which are damaged shall be repainted.
9.2	Electrical equipments, controls and insulations shall be protected against moisture and water damages. All external gasket surfaces and flange faces, couplings, rotating equipment shafts, bearings and like items shall be thoroughly cleaned and coated with rust preventive compound and protected with suitable wood, metal or other substantial type covering to ensure their full protection. All exposed threaded parts shall be greased and protected with metallic or other substantial type protectors
9.3	All piping, tubing and conduit connections on equipment and equipment openings shall be closed with rough usage covers or plugs. Female threaded openings shall be closed with rough usage covers or plugs or forged steel plugs. The closures shall be taped to seal the interior of the equipment. Open ends of piping, tubing and conduit shall be sealed and taped.
9.4	All other consumables including wire brush, emery papers, painting brush etc to be supplied by the contractor within the quoted rate.
10.0	**GENERAL GUIDELINES FOR FIELD ACTIVITIES**
10.1	The contractor shall execute the works in a professional manner so as to achieve the target schedule without any sacrifice on quality and maintaining highest standards of safety and cleanliness.
10.2	The contractor shall co-operate with owner/ BHEL and other contractors working in site and arrange to perform his work in a manner so as to minimise interference with other contractor’s works. BHEL's engineer shall be notified promptly of any defect in other contractors’ works that could affect the contractor’s work. If rescheduling of contractor’s work is requested by the owner's/ BHEL's engineer in the interest of overall site activities, the same shall be compiled with by the contractor. In all cases of controversy, the decision of BHEL shall be final and binding on the contractor without any commercial implication.
10.3	The engineer shall hold weekly meeting of all the contractors working at site at a time and a place to be designated by the engineer. The contractor shall attend such meetings and take notes of discussions during the meeting and the decisions of the engineer and shall strictly adhere to those decisions in performing this work. In addition to the above weekly meeting, engineer may call for other meetings either with individual contractors or with selected number of contractors and in such a case the contractor, if called will also attend such meetings.
10.4	Time is the essence of the contract and the contractor shall be responsible for performance of his work in accordance with the specified construction schedule. If at any time the contractor is falling behind the schedule, he shall take necessary action to make good of such delays by increasing his work to comply with the schedule and shall communicate such action in writing to the engineer, satisfying that his action will compensate for the delay. The contractor shall not be allowed any extra compensation for such action.
10.5	The engineer shall however not be responsible for provision of additional labour and or materials or supply of any other services to the contractor except for the co-ordination work between various contractors as set out earlier.
10.6	The works under execution shall be open to inspection & supervision by BHEL's / Owner's engineer at all times. The contractor shall give reasonable notice to BHEL before covering up or otherwise placing beyond the reach of inspection any work, in order that same may be verified, if so desired by owner/ BHEL.
10.7	Every effort shall be made to maintain the highest quality of workmanship by stringent supervision and inspection at every stage of execution. Manufacturer's instruction manual and guidelines on sequence of erection and precautions shall be strictly followed. Should any error or ambiguity be discovered in such documents the same shall be brought to the notice of BHEL's engineer. Manufacturer's interpretation in such cases shall be binding on the contractor.
10.8	The contractor shall comply with all the rules and regulations of the local authorities,

	all statutory laws including Minimum Wages, Workmen Compensation etc. All registration and statutory inspection fees, if any, in respect of the work executed by the contractor shall be to his account.
10.9	All the works such as cleaning, checking, levelling, blue matching, aligning, assembling, temporary erection for alignment, opening, dismantling of certain equipment for checking and cleaning, surface preparation, edge preparation, fabrication of tubes and pipes as per general engineering practice at site, cutting, grinding, straightening, chamfering, filling, chipping, drilling, reaming, scrapping, shaping, fitting-up, bolting/ welding, etc as may be applicable in such erection and necessary to complete the work satisfactorily, are to be treated as incidental and the same shall be carried out by the contractor as part of the work.
10.10	It is the responsibility of the contractor to do the alignment etc if necessary, repeatedly to satisfy engineer, with all the necessary tools & tackles, manpower etc. The alignment will be complete only when jointly certified so, by the contractor's engineer and BHEL. Also the contractor should ensure that the alignment is not disturbed afterwards.
10.11	Equipment and material, in case wrongly installed, shall be removed and reinstalled to comply with the design requirement at the contractor expense, to the satisfaction of BHEL/ owner.
10.12	After identification of erection materials by BHEL at BHEL's store/ storage yard, it shall be the responsibility of the contractor to take delivery of materials from BHEL's store/ storage yard by contractor's own manpower and re-stack the leftover materials as per erection sequence at BHEL store at their own cost. The entire activities are to be carried out under supervision of BHEL's engineer.
11.0	**QUALITY CONTROL & QUALITY ASSURANCE**
	Contractor’s engineers & 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.
12.0	**QUALITY ASSURANCE PROGRAMME**
12.1	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 & shall be finally accepted by BHEL. A quality assurance programme of the contractor shall generally cover the following
12.2	Organization structure and qualification data for key personnel of the contractor for the management and implementation of the proposed quality assurance programme.
12.3	The procedure for source inspection, incoming raw material inspection, verification of material purchased etc.
12.4	System for maintenance of records.
12.5	GENERAL REQUIREMENTS – QUALITY ASSURANCE
12.5.1	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.
12.5.2	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.
12.6	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.
12.7	Quality audit/ approval of the results of test & inspection will not prejudice the right of BHEL to reject an equipment service not giving 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.	
12.8	Repair/rectification procedure to be adopted to make any job acceptable shall be subject to the approval of BHEL.	
12.9	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 or otherwise specified by Construction Manager/ Project Manager, BHEL.	
13.0	**HEALTH, SAFETY & ENVIRONMENT**	
13.1	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.	
13.2	Round the clock experienced paramedical personnel with first aid facility & one ambulance including driver, fuel etc, and shall be available at site, being provided by other agency. The above facilities will be shared by various BHEL contractors working at site (actual cost will be distributed among various contractors under BHEL at site propotionally to their contract price). The subject facility will be strengthened as per the requirement during peak work progress at site. Individual contractor may co-ordinate with the supplying/ providing agency in this regard. No medical facility within/ near the site shall be provided by BHEL. In case such facilty is not provided by the contractor of this tender, BHEL will recover cost as applicable. Decision of BHEL in this regard shall be final & binding on the contractor.	
13.3	No staff quarter shall be provided by BHEL.	
13.4	No borrow area for earth shall be arranged/ provided by BHEL.	
13.5	Common road shall be provided by BHEL free of cost, however, temporary approaches for erection/work spots under the scope of work, as required for movement of cranes, trailers, trucks, transit mixers, dumpers, etc. shall be arranged by the contractor at his own cost.	
13.6	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.	
13.7	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.	
13.8	Passenger lift for construction purpose should have safety cage with multiple rope, ie with safety rope & limit switch.	
13.9	Safety nets with hand railings must be provided on all both inside & outside hanging platform of slip-form equipment & hanging platform from brickwork.	
13.10	Emergency vehicle must be provided & kept separately as stand-by.	
13.11	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)
13.11.1	Not wearing safety helmet at site.	50
13.11.2	Not wearing safety shoes at site.	50
13.11.3	Not wearing safety belt while working at higher elevation	100
13.11.4	Not providing lifeline of safety belt	100
13.11.5	Not using grinding goggles while doing grinding operations	50
13.11.6	Not using 24V supply for lighting in confined spaces.	500
13.11.7	Improper earthing of welding & other electrical machines.	500
13.11.8	Electrical plug not used for hand machines	100
13.11.9	Not slinging properly	200
13.11.10	Using damaged slings	200
13.11.11	Using frayed/ broken welding cables	200
13.11.12	Non removal of scarp from platforms	200
13.11.13	Lifting cylinders without cage	500
13.11.14	Gas cutting without taking proper precautions or not using sheet below	200

13.11.15	Not maintaing electrical winches properly	500
13.11.16	Shorting of fuse links by thick wire	500
13.11.17	Over speeding of vehicles within in site premise	200
13.11.18	Not having valid driving license for type of vehicle being driven	500
13.11.19	Not having valid registration for the vehicle	500
13.11.20	Not providing proper barricades/ caution boards	200
13.11.21	Not displaying SWL on the lifting equipment	200
13.11.22	Sub-contractor not attending safety meeting	1000
13.11.23	Improper ladder for climbing up	500
13.11.24	Improper scaffolding arrangement	500
13.11.25	Engaging child labour for construction work	1000
13.11.26	Using domestic LPG cylinder for gas cutting/ welding operations	500
13.11.27	Not maintaining first aid box	500
13.11.28	Working without work permit/ clearance	5000
13.11.29	Working at height without full body harness, using non-standard/ rejected scaffolding and not arranging fall protection arrangement as required like safety rules.	3000
13.11.30	Unsafe handling of compressed gas cylinders (No trolley, jubilee clips double gauge regulator, improper storage/ handling etc)	100
13.11.31	Non-fencing of/ barricading excavated areas.	1000
13.11.32	Not providing shoring/ strutting/ proper slope and not keeping the excavated earth at least 1.5 mtr away from excavated area.	5000
13.11.33	Non display of caution borad, list of hospitals, emergency services available at work locations.	500
13.11.34	Traffic rules violation like over-speeding of vehicle, rash driving, not using seat belts, vehicle not fitted with reverse warning alarms.	1000
13.11.35	Absence of contractor's concerned representative at site safety meeting, whenever called by BHEL/ owner.	5000
13.11.36	Failure to maintain safety records.	1000
13.11.37	Failure to conduct daily safety site inspection. HSE meeting and HSE audit at predefined frequencies.	1000
13.11.38	Failure to submit monthly HSE report as per stipulated schedule to BHEL.	5000
13.11.40	Degradation of environment (Not confining toxic spills, spiling oil/ lubricants onto ground.	1000
13.11.41	Not medically examining workers before allowing them to work at height, nott providing ear muffs while allowing them to work in noise polluted areas, made them to work in air polluted areas without repiratory protective devices, etc.	1000
13.12	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.	
13.13	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.	
13.14	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.	
13.15	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.
13.16	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.
13.17	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.
13.18	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.
13.19	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.
13.20	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.
13.21	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.
13.22	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.
13.23	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.
13.24	Before the contractor connects any electrical appliances to any plug or socket belonging to the other contactor or BHEL, he shall fulfill following.
13.24.1	Satisfy BHEL that the appliance is in good working condition.
13.24.2	Inform BHEL of the maximum current rating, voltage and phases of the appliances.
13.24.3	Obtain permission of BHEL detailing the sockets to which the appliances may be connected.
13.25	The BHEL will not grant permission to connect until following are complied with.
13.25.1	The appliance is in good condition and is fitted with suitable plug;
13.25.2	The appliance is fitted with a suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.
13.26	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.

13.27	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.	
13.28	The contractors shall employ necessary number of qualified, full time electricians/ electrical supervisors to maintain his temporary electrical installations.	
13.29	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.	
13.30	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.	
13.31	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.	
13.32	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.	
13.33	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.	
12.34	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.	
13.35	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.	
13.36	These insurance covers have to be taken prior to start of his work at subject project and he shall make available the Policy to Construction Manager, BHEL for necessary verification before commencement of work. However, irrespective of such verification/ acceptance, 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 Insurance Company for all matters regarding the insurance in his scope.	
13.37	If the contractor does not take all safety precautions and/or fails to comply with the Safety Rules as prescribed by BHEL or under the applicable law for the safety of the equipment and plant and for the safety of personnel and the contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other contractors, or BHEL's employees or any other person who are at site or adjacent thereto, the contractor shall be responsible for payment of compensation to employer as per the following schedule.	
13.37.1	Fatal injury or accident causing death	Rs.2,00,000 per person
13.37.2	Major injuries or accident causing 25% or more permanent disablement to workmen or employees.	Rs 50,000 per person
14.0	**SPECIFIC REQUIREMENTS FOR ISO 9002**	
14.1	Contractors shall ensure that all their staff/ employees are exposed to periodical training programmes conducted by qualified agencies/ personnel on ISO 9002 Standards.	

14.2	Contractor shall ensure that the quality is maintained in all the works connected with this contract at all stages of the requirement of BHEL.
14.3	Contractor shall ensure that all Inspection, Measuring and Testing equipment that are used, whether owned by the contractors or used on loan, are calibrated by the authorized agencies and the valid calibration certificate will be available with them for verification by BHEL. A list of such instruments possessed by the contractor at site with its calibration status is to be submitted to BHEL Engineer for control.
14.4	Contractor shall ensure that fitness certificate of the tools & plants, that are in use, whether owned by contractor or issued on loan, are tested by authorised agency and the valid fitness certificate is available for verification by BHEL.
14.5	Contractors shall arrange for the inspection of the works at various stages as required by BHEL. The contractors shall take immediate corrective action for the non-conformances if any, observed and pointed out by BHEL.
15.0	**PROJECT MANAGEMENT/ CONSTRUCTION MANAGEMENT**
	To meet the need of construction management at site, contractor shall provide the following services within quoted/ accepted rates.
15.1	PLANNING & MONITORING
15.1.1	The bidder shall prepare detail construction schedule (L-3) in consultation with Construction Manager, BHEL as per completion/ milestone schedule of the project. This schedule must include all milestone and key activities for each sub-systems/ components in the areas of engineering (wherever applicable), procurement, manufacture (wherever applicable), excavation/ construction/ erection. This network must conform to the overall project schedule. The bidder should also ensure monitoring of these activities at least weekly basis to start with and on daily basis whenever required by BHEL. The project schedule might ungergo revision/ modification periodically, for which the contractor may have to prepare/ modify construction schedule periodically in consultation with BHEL..
15.1.2	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.
15.1.3	The bidder will have to install 2 nos PCs (multimedia PC work station Pentium-core-2 Duo, with a processor of 1 GHz or above, Min 320 GB HDD, 4 GB RAM, 100/ 1000 MBPS LAN card) of HCL/ HP/ ZENITH/ DELL or equivalent make with Window 7 O/S and required software like MS Office 2010 Professional, AutoCAD 2010 or higher, PageMaker (7.0) etc, ADOBE PDF CREATOR with one no. laserjet printer compatible for A3 size printing (ink/ cartridge for which to be supplied as and when required), one no. laserjet printer compatible for A4 size printing (ink/ cartridge for which to be supplied as and when required) with power backup at places, as per instruction of BHEL for exclusive use of BHEL. The contractors may consider about 500 pages of printing per month in order to estimate the consumption of ink/ cartridge etc. These computers/ printers 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 2 nos computer operators and 4 numbers service staff for miscellaneous service for BHEL's use at site/ Kolkata for reconciliation, progress review & day-to-day planning purpose, documentation etc. These facilities are to be provided within 30 days from date of intimation of BHEL to start the work, 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 prorate basis, from contractor's RA bill or any other dues.
15.1.3.1	@ Rs 12,000 (Twelve thousand)/ month for each computer operator or at actual (rate +30%) if BHEL arranges this facility, whichever is lower.
15.1.3.2	@ Rs 8,000 (Eight thousand)/ month for each computer with printer or at actual (rate +30%) if BHEL arranges this facility, whichever is lower.

15.1.3.3	@ Rs 8,000 (Eight thousand)/ month for each service staff or at actual (rate +30%), if BHEL arranges this facility, whichever is lower.	
15.1.4	The contractor's site office must have facilities of communications like Fax, E-mail, and telephone with STD facility within a month from LOI.	
15.2	PROGRESS REPORTING	
15.2.1	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.	
15.2.2	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.	
15.2.3	The daily work force reports shall clearly indicate the work force deployed, category-wise specifying also the activities in which they are engaged.	
15.2.4	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.	
15.2.5	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 ensuring that suitable steps are taken to meet various targets decided upon such meetings.	
15.2.6	During construction contractor shall take an average forty colour digital photograph/ slides (indicating date) each month (not less than nine per week) of the works during progress. In case of failure in providing such photograph in each month, an amount of Rs 20,000 per month shall be deducted from contractor's RA bill.	
15.2.7	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.	
15.3	SITE ORGANIZATION	
15.3.1	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 contractor 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 schedule without any commercial implication to BHEL. The organization chart is to be submitted within 10 days from the date of LOI.	
15.3.2	Following (minimum) engineering manpower with power plant construction background to be deployed at site by the successful bidders for their day to day supervision etc from date of start of work.	
15.3.2.1	Planning engineer.	1 no.
15.3.2.2	Qualified safety officers with assistants (exclusive for safety supervision for project jobs).	Officer – 2 nos. Assistant – 2 nos.
15.3.2.3	Site engineer and supervisors for supervision of civil work.	Enigineers – 4 nos. Supervisors – 8 nos.
15.3.2.4	Site engineer and supervisors for supervision of structural job.	Enigineers – 4 nos. Supervisors – 4 nos.

15.3.2.5	Site engineer and supervisors for quality inspection.	Engineer – 3 nos. Supervisors – 4 nos.
15.3.2.6	Chemist for civil laboratory.	1 no.
15.3.3	Engineer/ supervisor for other functions like store & purchase, material management, planning, FIN, administration etc are to be provided as per site requirement and not referred above.	
15.3.4	In the event of non deputation of engineer/ supervisor/ draftsman by the bidder, BHEL shall reserve the right to deduct Rs 50,000 per man-month for engineer and Rs 30,000 per man-month for the supervisor/ safety/ quality officer, Rs 22,000 per man-month for draftsman 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.	
15.3.5	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.	
15.3.6	In addition to above, a well experienced qualified engineer to be designated, as 'Project Co-ordinator', 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 complete execution period of contract.	
15.3.7	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.	
15.3.8	The contractor should also submit network programs for the erection of various items. These networks shall show owner/ BHEL hold points (CHP), which have to be cleared by owner/ BHEL, or their authorized representatives before further erection can take place. These programs for the erection would clearly identify responsibilities of the contractor and owner/ 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.	
15.4	CONSTRUCTION MANAGEMENT	
15.4.1	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 owner/ BHEL to tie up detailed resources mobilization plan over the period of the contract matching with the performance targets.	
15.4.2	The program would be jointly finalized by the site in-charge of the contractor with BHEL/ owner's project coordinator as well as the site-planning representative. The erection program will also identify sequential events matching financial turnover.	
15.4.3	The contractor is liable to furnish all documentary evidences towards payment of Works Contract Tax as and when required by BHEL.	
15.5	HEALTH SAFETY & ENVIRONMENT	
15.5.1	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.	
15.5.2	Towards enhancing employee satisfaction under Total Quality Movement (TQM), special thrust is being put on maintaining good health of all the employees deployed in project execution and as a first step towards this, a small health club is proposed to be established and maintained at site. While BHEL would provide required space for the health-club, successful bidder of Package-C have to install & maintain 1 no Heavy Duty Motorised Treadmill (Model SF-250-SPIRIT or equivalent), 1 no Recumbent Bike (Model R-4700, MAGNUM or equivalent) and 1 no 4-weight Station Multi-gym (Model Fusion 400 or equivalent) of reputed make along with associated	

	accessories. The health-club equipment will remain property of the contractor and they can take these back on completion of their contract.
15.5.3	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 be provided by BHEL. However, BHEl/ owner shall provide one room (without furniture) for use as first aid.
15.5.4	No staff quarter shall be provided by BHEL.
15.5.5	No borrow area for earth shall be arranged/ provided by BHEL.
15.5.6	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.
15.5.7	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.
16.0	**LAND**
16.1	Land will be provided free of cost by BHEL to the extent available/ considered necessary by BHEL to the contractor for their office, store, cement store, within plant premises. Availability of land within plant boundary is very limited and the contractor has to plan and use the existing land considering the use of land by other civil/ mechanical/ electrical contractors and storage of plant machineries & materials. The existing land shall be shared by all erections agencies.
16.2	Land, as available, may be provided for labour colony within the plot boundary by BHEL/ owner. The contractor should visit the site to asses the site condition regarding feasibility of use of land for the purpose. The contractor to construct temporary labour colony/ hutment as per his requirements after obtaining approval of formalities from statutory body
16.3	The contractor shall provide minimum 1 no overhead water tank with minmum 20 nos. tap in their labour colony for drinking/ washing etc purpose. One no cemented area of suitable width, length, with tap(s) for washing purpose etc also to be provided.
16.4	The contractor shall provide minimum 20 nos of Indian type toilet in their labour colony.
16.5	The contractor will be responsible for handing back all lands, as handed over to him by BHEL/ owner.
17.0	**WATER**
17.1	BHEL will provide construction as well as drinking water at one strategic point within plant premises free of cost to the contractor for contractor's site office, store.
17.2	Further necessary network for construction & drinking water system for construction work shall be arranged by the bidder at his own cost.
17.3	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.
17.4	Contractor will have to arrange for storage of water to meet day-to-day requirement. Contractor will ensure & make necessary arrangement for adequate supply of construction water to meet the requirement of water during major concreting.
17.5	The availability of water (construction as well as drinking) in project site is limited. Contractor shall ensure that no water is wasted. In this regard the contractor shall take all necessary measure towards preservation of water.
17.6	Contractor shall make their own arrangement of water for labour hutment.
18.0	**ELECTRICITY**
18.1	CONSTRUCTION POWER & GENERAL ILLUMINATION NETWORK
	BHEL will provide construction power free of charges at 415V level at one strategic point within plant premises, each for batching plant, fabrication yard and power house area. Contractor shall make their own distribution arrangement to draw electricity. General illumination system shall be provided by BHEL. However, privision of

	suitable temporary lights at different floors/ working areas for execution of the work & safety of workmen shall be provided by the contractor, within the quoted rate. The illumination should be such that minimum illumination requirement as spefied by Indian standards for general illumination is maintained.
18.2	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, 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 & 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.
18.3	The contractor shall have to provide earth leakage circuit breaker at each point wherever human operated electrical drives/ T&Ps are deployed.
18.4	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.
18.5	Cotractor will have to arrange sufficient illumination at their own work areas.
18.6	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.
18.7	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.
18.8	Though the contruction power is provided free of charge, it is the responsibility of the contractor to ensure efficient utilization of electricity. Suitable audit shall be carried out jointly by BHEL & contractor on a periodic basis to ensure the same. In case at any point of time it is found that contruction power is being used inefficantly or for any other purpose thanthe intended use, the contractor will be suitably penalized as per the provision of the contract. The maximum penalty that can be imposed on the contractor shall be limited to one month's electricity charges (as will be obtained from the energy meter at drawal point) per incident of inefficient use or misuse.
18.9	Contractor shall make their own arrangement of electricity for labour hutment.
19.0	**CONSUMABLE**
19.1	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.
19.2	All consumables to be used for the job shall have to be approved by owner/ BHEL prior to use.
19.3	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.
20.0	**IMTE**
	The contractor shall ensure deployment of reliable & 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.

21.0	**TEST CERTIFICATE FOR T&P**
	All T&P, lifting tackles, pulling devices and other material to be deployed/ supplied by the contractor must bear valid/ latest test certificates for their suitability before their use/ application and the documents shall be preserved at site.
22.0	**T&P TO BE PROVIDED BY BHEL**
22.1	Subject to free availability at site, BHEL will provide one no 150 T or above class crane for power house structural erection and one no high capacity (250 T class or above capacity) crawler crane for mill bay including bunker structural erection work, on three months advance notice. The crane shall be provided for a perod of about 11 (eleven) months each on sharing basis free of cost. The above high capacity crane to be provided by BHEL shall be shared by various other contractors and contractor shall plan his activities accordingly in co-ordination with BHEL site engineers.
22.2	Crane returned in defective/ damaged condition (defect/ damage occurred during use due to negligence of contractor) shall be rectified promptly to the full satisfaction of BHEL engineer failing which suitable recovery along with BHEL overheads will be made from contractor's bills/ dues.
22.3	BHEL shall provide fuel, lubricants, mobil, cardium compound, hydraulic oil, air and fuel filter etc on free of cost basis for these cranes. Regular maintenance and Break down maintenance (not attributable to the contractor) of the BHEL crane is excluded from the scope of the contractor. However, necessary services as required for shortening/ extending of crane boom are included in the scope of contractor.
22.4	In case of exigency leading to crane operator not being available with BHEL, the contractor will have to deploy experienced crane operator (limited to total 30 man-days) after due permission of BHEL engineers. During such operation, the contractor shall have to take the full responsibility of safe operation of crane.
22.5	In case of non-availability of high capacity crane to be provided by BHEL due to break down, major overhauls distribution pattern or any other reason, the contractor shall plan/ augment/ alter his activities to meet erection/ commissioning targets in consultation with BHEL and no compensation will be admissible on above ground.
22.6	Consolidation of ground and arrangement of sleepers/ sand bag filling etc. for safe operation/ movement of equipment including cranes/trailers etc shall be the responsibility of the contractor at his cost.
22.7	In the event of BHEL issued T&P, measuring instruments etc the contractor and BHEL shall maintain joint protocol about the condition of all T&P, instruments etc taken from BHEL's custody and return to BHEL after use. The contractor shall not use this equipment for purposes other than the scope of work given in this tender document. It is the responsibility of contractor to keep these equipments always in working condition and ensure their safe return in working condition to BHEL's store subject to normal wear & tear.
22.8	After use of T&P items issued by BHEL the same shall be returned to BHEL in good working condition subject to normal wear & tear failing which recoveries at the book value of the item or the market rate prevailing at the time of returning the items, whichever is higher shall be made from the payments due to the contractor from BHEL from this contract or from any other contract.
23.0	**TOOLS & PLANTS (TO BE PROVIDED BY CONTRACTOR)**
23.1	Tentative list of T&P to be deployed by contractor for successful completion of work is detailed below.
23.2	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, if any) 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/ accepted rate shall be inclusive of such requirements.
23.3	In the event of any failure on the part of the contractor and as a result progress of work suffers, 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 line with, in the event of failure of contractor to deploy necessary & sufficient T&P/

	IMTEs, BHEL also reserve the right 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, in case progress of work is suffered. Decision of BHEL in this regard will be final & binding on contractor.	
23.4	Following major T&Ps to be arranged by contractor within the time as indicated against each T&P (Applicable for Package-C and Package-D each).	
	Major T&P items	Mobilisation time (from the date of written intimation by BHEL to start the work)
23.4.1	1 no minimum 100 T capacity crawler crane for power house structural erection.	As per site requirement prior to A row column erection.
23.4.2	1 no minimum 75 T capacity crawler crane for fabrication or gantry crane of min 45T capacity.	Within 30 days.
23.4.3	2 nos minimum 40/ 45 T capacity crawler cranes or gantry crane for fabrication.	Both within 30 days.
23.4.4	2 nos minimum 20/ 25 T capacity crawler crane.	1st – Within 25 days. 2nd – As per site requirement.
23.4.5	5 nos minimum 10/ 12 T capacity hydra.	1st – Within 25 days. Balance – Progressively as per site requirement
23.4.6	4 nos all cut/ radial drill machine.	Within 30 days.
23.4.7	4 nos submerged arch welding machine.	Within 30 days.
23.4.8	8 nos MIG machine.	Within 30 days.
23.4.9	40 nos welding rectifier.	Within 30 days.
23.4.10	30 nos welding rectifier.	As per site requirement.
23.4.11	1 no long bed 20 T trailor.	Within 30 days.
23.4.12	4 nos torque tightening m/c (2 no capacity up to 30 dia HSFG bolt tightening).	As per site requirement
23.4.13	Sufficient quantity of steel ladders for approach up to the top of each erected column to be required during erection of columns.	As per site requirement.
23.4.14	4 nos 3 T power winch for structural erection.	Within 90 days
23.4.15	2 nos 5 T power winch for structural erection.	Within 90 days
23.4.16	1 no ultra-sonography testing machine for structural work.	Within 60 days.
23.4.17	3 nos painting equipment sets complete with compressor, hopper, screen, blasting hose pipe, nozzle airless/conventional spray (within CGI temporary cover shed).	With shed within 30 days.
23.4.18	1 no hydraulic excavator/ Poclain.	As per site reuirement
23.4.19	1 no JCB.	As per site requirement
23.4.20	1 no minimum 15 cum/ hr capacity portable automatic concrete batching plant.	To be commissioned within 20 days start of work.
23.4.21	1 no minimum 35 cum/ hr capacity automatic concrete batching plant with printing facility (To be commissioned at site).	To be commissioned within 45 days from start of work.
23.4.22	4 nos transit mixer (4.5/ 5/ 6 M3 capacity), peak period 5 nos transit mixer.	1st – Within 25 days. Balance – 3 nos within 45 days.
23.4.23	1 no truck mounted concrete mixer cum pump alongwith placing boom minimum 40 m high.	Within 60 days.
23.4.24	2 nos minimum 20 cum/ hr, lift 70 mtr capacity concrete	Within 60 to 75 days.

	pump.	
23.4.25	1 no concrete cutting power tools (DD2E of HILTI/ BOSCH make).	As per site requirement
23.4.26	1 no concrete coring machine for drilling in concrete upto 150 mm dia alongwith diamond bits.	As per site requirement.
23.4.27	1 no minimum 250 cfm capacity air compressor.	Within 45 to 75 days.
23.4.28	2 nos minimum 5 HP self priming dewatering pump (diesel/ electric).	Within 20 days.
23.4.29	2 nos minimum 10 HP submersible mono-block electric pump (KOS-1040+of Kirloskar or equivalent).	Within 60 days.
23.4.30	2 nos minimum 2 HP self priming dewatering pump (diesel/ electric).	Within 30 days.
23.4.31	2 nos minimum 1.5/ 2 HP capacity curing pump (pump for curing at heights).	Within 60 days.
23.4.32	1 no dozer.	Within 25 days.
23.4.33	12 mm thick min ply shuttering board (Around 9000 sqm).	4500 sqm – Within 60 days. Balance – Within 200 days.
23.4.34	4 nos dumper.	2 nos – Within 20 days. Balance – Within 50 days.
23.4.35	2 nos reinforcement bending machine.	Within 30 days.
23.4.36	2 nos reinforcement cutting machine.	Within 30 days.
23.4.37	40,000 RM MS scaffolding pipe/ ACROW PIPE preferably with cup lock system.	As per site requirement.
23.4.38	2 nos power driven earth rammer.	Within 60 days.
23.4.39	1 no vibromax	Within 45 days.
23.4.40	1 no minimum 200 T capacity compression testing machine.	Within 30 days.
23.4.41	Civil laboratory equipments as per list attached in Annexure-A with temporary building one AC lab, size – 4.5 mtr x 6 mtr and 1 non AC lab, size – 4.5 mtr x 4.5 mtr.	Within 45 days.
23.4.42	3 nos electric winch with building hoist.	Within 220 days.
23.4.43	2 no total station with adequate arrangement for surveyors.	Within 15 days.
23.4.44	1 no theodolite 1 second accuracy.	Within 15 days.
23.4.45	2 nos auto level & staff + 2 nos as required.	Within 15 days.
23.4.46	125 nos concrete cube moulds.	Within 15 days.
23.4.47	TG scaffolding materials/ structural steel (approx 90 T).	At the time of TG raft casting.
23.4.48	Adequate no of small trucks 2T/ 5T for movement within site.	As per requirement.
23.4.49	2 nos drinking water tank (Around 5000 lit capacity).	Within 30 days.
23.4.50	1 nos truck mounted water tank (minimum 5000 lit) capacity with sprinkler arrangement.	Within 30 days.
23.4.51	1 no minimum 125 KVA electric generator.	Within 60 days
23.4.52	10 nos concrete vibrator with adequate needle (3 nos diesel driven + 7 nos electric driven).	4 nos (at least 2 nos diesel driven) – Within 30 days. Balance (diesel/ electric) – Within 60 to 75 days.
23.4.53	Portable fire extinguishers as below: Soda acid – 10 sets. Dry chemical powder – 10 sets CO2 – 5 sets.	Within 90 days.

	Water & sand bucket (4 buckets in one stand) – 5 sets. Fire hose with nozzle (50 m length) – 4 sets.	
23.4.54	Installation of minimum 3 nos ash cement brick manufacturing plants (As per specification provided in this tender).	As per requirement.
23.5	T&P shown in the above mentioned list are minimum requirement. Mobilisation schedule as mutually agreed at site for major T&Ps, have to be adhered to so as to meet the project requirement. Further requirement will be reviewed time to time at site and contractor will provide additional T&P/ equipments to ensure completion of entire work within schedule/ target date of completion without any financial implication to BHEL. Contractor will have to give give advance intimation & certification regarding capacity etc prior to dispatch of heavy equipments.	
23.6	In the event of delay in commissioning of batching plant as per above schedule, contractor shall arrange ready mix concrete from BHEL's approved agancies within plant premises.	
23.7	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.	
23.8	In the event of non mobilsation of any T&P by the successful bidder and as a result progress of work suffers, BHEL reserves the right to deduct suitable amount from the dues of the bidder.	
24.0	**MATERIAL HANDLING (BHEL ISSUED MATERIAL)**	
24.1	Cement (OPC/ PPC/ PSC), reinforcement, MS earthing rod, structural steel (plate, ISMB, channel, angle, chequered plate, stainless steel plate), VIS modules only, will be issued free of cost by BHEL for use in the work covered in this contract as per tender terms.	
24.2	Unless otherwise specified/ mentioned, contractor shall provide/ supply all other materials from approved manufacturers/ suppliers and quoted rates/ price shall be in consideration to this.	
24.3	Cement & steel will be issued to the contractor from BHEL/ owner's store within the plant premises, on weighment basis. Receipt from BHEL/ owner's stores, handling/ transportation to work site, unloading etc will be under the scope of work of this tender, within the quoted rates. In exigency, contractor may have to provide escorts from steel yards of SAIL/ RINL at Durgapur/ Kolkata on requisition from BHEL, limited to 5 occassions. No extra payment shall be made on this account.	
24.4	Open obiliz and graded land shall be provided by BHEL on free of cost basis. You shall maintain one centralized fenced store cum bar bending yard (Area approx 70 m x 70 m). Hard surfacing of this yard and all round drain shall be carried out by you at your own cost within the accepted rate. Batching plant area, shall be provided within plant premises and you shall make use of the area for installation and operation of the batching plant at your own cost. You shall make complete arrangement of necessary security personnel, to safeguard all such materials in your custody. Materials issued will be used only for construction of permanent work. You shall take care of material issued by BHEL and shall protect the same from theft, damage and weathering.	
24.5	You 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 you at your 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 & locking arrangement.	
24.6	You 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.	
24.7	Clotting of cement and excessive rusting of steel must be avoided. In case, due to any cause attributable to you, 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.	

24.8	No material shall be issued to you except as those indicated above i.e. cement and steel unless otherwise expressly provided for in the contract. You will have to make your own arrangement at your own cost for procurement of any other material as required for the works and of such quality as acceptable to BHEL.
24.9	You 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.
24.10	You shall solely be responsible for the safety & quality of material after it is handed over and issued to you by BHEL.
24.11	BHEL issued materials shall not under any circumstances taken out of the project site unless otherwise permitted by BHEL.
25.0	**ISSUE OF MATERIALS**
25.1	ISSUE OF CEMENT
25.1.1	Cement as received from the manufacturer/ stockiest will be issued free of cost to you. The theoretical weight of each bag of cement for issued purposes will be considered as 50 kg, you shall be accountable for the cement issued to you on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement.
25.1.2	The empty cement bags duly accounted for against issue shall be your property and the same shall be disposed as per statutory regulation prevailing in the project.
25.2	ISSUE OF STEEL
25.2.1	The steel shall be issued to you free of cost on the following basis.
25.2.1.1	Structural steel (MS plate, ISMB, angle, channel, chequred plate, stainless steel plate) – Weighment basis (unit – MT).
25.2.1.2	Reinforcement steel (TMT), MS earthing rod – Weighment basis (unit – MT).
25.2.2	All the steel (MS plate, ISMB, angle, channel, chequred plate, stainless steel plate), reinforcement (TMT), MS earthing rod 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. The measurement for payment as well as for accounting shall be based on the sectional weights as indicated in the following/ applicable latest 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)
25.2.3	In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding.
25.2.4	The steel issued to you shall be mainly in standard length and sections as received from the supplier. However, you 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.
25.3	You shall satisfy himself of the quality and quantity of the materials at the time of taking delivery from BHEL/ owner stores. No claims whatsoever will be entertained by BHEL because of quality or quantity after the materials are taken by you from BHEL/ owner stores.
25.4	You shall submit to the engineer, a statement indicating estimated quantity of cement and steel required at least two months in advance. In addition, you shall also furnish the estimated requirement of cement and steel during a month by the third week of the previous month indicating your requirement.
25.5	You have 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
25.6	You have to note that all fasteners like MS/ HT/ HSFG bolts/nuts, lock nuts, washers etc shall be supplied by you as per applicable item of price schedule.
25.7	You have to note that cement and steel required for your enabling job like store/ site office etc shall be arranged at your own cost. All TG staging material shall be arranged by you at your own cost. You shall do the design for its structure just immediately after receipt of TG deck drawing and obtain approval from BHEL.

26.0	**RETURN OF MATERIALS**		
26.1	RETURN OF CEMENT		
26.1.1	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.		
26.2	RETURN OF STEEL INCLUDING SCRAP		
26.2.1	All surplus steel and all wastage materials will be taken back on weighment basis.		
26.2.2	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.		
26.2.3	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 charge.		
26.2.4	Scrap for reinforcement steel and structural steel shall be returned separately.		
27.0	**CEMENT AND STEEL CONSUMPTION AND WASTAGE**		
27.1	CEMENT CONSUMPTION		
27.1.1	The theoretical consumption of cement shall be based on the following.		
27.1.1.1	For design mix concrete as per approved design mix.		
27.1.1.2	For nominal mix concrete work, as per minimum cement as specified or as approved by engineer-in-charge.		
27.1.2	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 the DSR-2007 unless otherwise specified in the specifications or the drawing of contract or mutually agreed by engineer-in-charge and you.		
27.1.3	Actual consumption = Issue – Surplus/ unused quantity of cement returned in good condition by you to store. (No sweep cement will be taken back by BHEL).		
27.2	CEMENT WASTAGE		
27.2.1	Allowable wastage: One and half percent (+1.5%) of theoretical consumption of cement unless specified otherwise in the technical specification.		
27.2.2	For any material issued by BHEL to you free of cost, and which is not accounted for by you to BHEL, then recovery for such material shall be effected at penal rates.		
27.2.3	Sl no	Cement consumption	Basis of issue & penal recovery
	C-1	Theoretical consumption (without considering any wastage or loss).	Free
	C-2	Actual consumption being Limited to one and half percent (+1.5%) of aforesaid theoretical consumption towards allowable wastage.	Free
	C-3	Actual consumption beyond one and half percent (+1.5%) of above (C-1).	Penal rate
27.3	REINFORCEMENT STEEL & MS EARTHING ROD CONSUMPTION		
27.3.1	The theoretical consumption of various diameter of reinforcement and MS earthing rod 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 you for any deviation in weights for the different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.		
27.3.2	Actual consumption = Issue – Surplus.		
27.3.3	Surplus = Un-tampered and unused quantity of steel returned by you to BHEL store along-with relevant documents.		
27.3.4	Wastage = Actual consumption – Theoretical consumption.		

27.4	REINFORCEMENT STEEL & MS EARTHING ROD WASTAGE		
27.4.1	Allowable wastage: (+4%) of the theoretical consumption shall be considered as allowable wastage.		
27.4.2	Wastage and scrap shall be as per actual weighment basis.		
	Sl no	Reinforcement steel & MS earthing rod	Basis of issue & penal recovery
	R-1	Theoretical consumption (without considering wastage and scrap or loss)	Free
	R-2	Wastage limited to plus four percent (+4%) of aforesaid theoretical consumption (R-1) towards allowable wastage.	Free
	R-3	Wastage beyond four percent (+4%) of the theoretical consumption above (R-1).	Penal rate
27.5	STRUCTURAL STEEL CONSUMPTION		
27.5.1	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 you for any deviation in weights for the two different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.		
27.5.2	Actual consumption = Issue – Surplus.		
27.5.3	Surplus = Untempered, unused, uncut quantity of steel returned by you to BHEL store.		
27.5.4	Wastage = Actual consumption – Theoretical consumption.		
27.6	STRUCTURAL STEEL WASTAGE		
27.6.1	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).		
27.6.2	Sl no	Structural steel including SS plate	Basis of issue & penal recovery
	S-1	Theoretical consumption (without considering any wastage, scrap or loss) as per specification & drg.	Free
	S-2	Wastage limited to plus four percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage.	Free
	S-3	Wastage beyond four percent (4%) of the aforesaid theoretical consumption (S-1).	Penal rate
27.7	All wastage reinforcement, MS round and structural steel shall be returned to BHEL.		
28.0	**RECONCILIATION OF BHEL ISSUED MATERIALS**		
28.1	You shall submit a reconciliation statement of cement and steel issued to you, once in two months. The same may be submitted alongwith RA bill.		
28.2	You shall properly account for the material issued to you as specified herein to the satisfaction of BHEL certifying that the balance material are available with your custody at site.		
28.3	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 from RA bill.		
28.4	The approved drawings/ bar bending schedules are to be considered for the purpose of reconciliation of materials.		
28.5	Reconciliation of steel shall be done on total issue & consumption basis.		
29.0	**RECOVERY OF MATERIAL**		
29.1	If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA bill at the penal rate stipulated below.		
29.2	PENAL RATE OF MATERIALS		
	Item		Penal rate (Rs)

29.2.1	Cement (OPC/ PPC/ PSC).	7,500 per MT
29.2.2	Reinforcement steel and MS earthing rod etc.	60,000 per MT
29.2.3	Stainless steel plate.	6,00,000 per MT
29.2.4	Structural steel materials.	70,000 per MT
30.0	**CONSTRUCTION OF TEMPORARY OFFICE, STORES ETC**	
30.1	The contractor shall arrange at his own cost cleaning and grading of area allotted, construction of his temporary office, stores, cement godown, fabrication yards etc and also the watch & ward of all the above. Materials required for the same shall be provided by contractor at his own cost.	
30.2	BHEL contemplates to provide fabrication yard at two places (fabrication yard to be developed by the contractor). One will be with in approx 500 mtr from power house and other within distance of approx 1 km from power house. However, during execution, based on actual site conditions, requirement and layout and approaches, the above may change suitably.	
31.0	**CIVIL LABORATORY**	
31.1	Contractor shall establish and maintain civil laboratory with necessary equipment as per relevant annexure to carry out following tests as listed below.	
31.1.1	Compressive strength of cement, concrete cubes, bricks etc.	
31.1.2	Water absorption test of bricks.	
31.1.3	Earth compaction test (proctor density/ dry density and optimum moisture content, etc).	
31.1.4	Conducting of test for setting time and compressive strength of cement.	
31.1.5	Sieve analysis of fine aggregates and coarse aggregates.	
31.1.6	Bulking test of fine aggregates.	
31.1.7	Sieve analysis, moisture content, specific gravity and crushing strength of course aggregates.	
31.1.8	Rapid moisture meter	
31.2	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.	
32.0	**METHOD OF MEASUREMENT**	
	Mode of measurement shall be as per relevant clauses of technical specification of this tender. In case the same is not available the relevant IS 1200 in conjunction of IS code 3385 shall be adopted. In case the same is also not available, 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.	
33.0	**DESIGN OFFICE AND FABRICATION DRAWING**	
33.1	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.	
33.2	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.	
33.3	Contractor shall submit progress report pertaining to fabrication drawing, by 7th 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.	
34.0	**FABRICATION / GALVANISING**	
34.1	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.	
34.2	Bidder, at his own cost, shall supply electrodes required for fabrication, erection of	

	structural steel as per specification and approval of BHEL.
34.3	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, 120 % 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 bank guarantee (BG). Such BG shall be returned depending on the receipt of fabricated/ galvanized steel back to site.
35.0	**INSURANCE**
35.1	BHEL shall arrange comprehensive MCE (marine cum erection) Insurance Policy for total project supply & services including balance of plant package covering transit risks & loss, destruction or damage during handling at site, storage, civil works, erection, testing and commissioning/ completion up to trial operation completion of each unit including theft, sabotage, fire, lightning and other natural calamities.
35.2	Contractor shall timely intimate despatches to the underwriter. The name of the underwriter and Policy No. shall be intimated in due course of time.
35.3	The contractor shall be responsible for timely submission of loss/damage/theft to the underwriter, assistance in lodging & settlement of claim for losses/ damages/ theft/ lodging of FIR with police. Any consequential loss arising out of non-compliance of this stipulation will be borne by contractor.
35.4	It is the entire responsibility of the contractor to insure his workmen against accident and injury while at work as required by the relevant rules and to pay compensation, if any, to their workmen as per workmen's compensation act. The contractor has also to insure his staff against accident/injury. The contractor has to take insurance cover for his tools and plants, assets etc.
35.5	These insurance covers have to be taken prior to start of work at 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.
35.6	The contractor will take necessary precautions/ due care to protect the material at Project site, while in his custody from any damage/loss till the same is handed over to BHEL/ owner at project site. For lodging/ processing of insurance claim the contractor will submit necessary documents. BHEL will reserve the right to recover the loss from the contractor as detailed below in case the damage/loss is due to negligence/carelessness on the part of the contractor. In case of theft of material under contractor's custody, the same shall be reported to police by the contractor immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL/ owner for taking up with insurance. However this will not relieve the contractor of his contractual obligation for the materials in his custody.
35.7	It will be responsibility of the contractor to replenish the items lost/ damaged in time without hampering the schedule of work and without waiting for settlement of insurance claim. Amount received from the underwriters on settlement of insurance claim shall be passed on to the contractor as and when available.
35.8	In case the claim is summarily rejected by the underwriters due to WILFUL NEGLIGENCE of the contractor and contractor's failure to replenish the items lost/ damaged, the entire cost of repair/replacement will be recovered from the contractor.
35.9	Other conditions of Insurance shall be as per relevant clause of GCC.
36.0	**COMPLETION PERIOD**
36.1	The entire work under this scope shall be successfully completed in all respect within 34 (Thirty four) months for Package-C and Package-D each from the date of start of work of the respective packages, as certified by Construction Manager, BHEL.
36.2	Contractor shall mobilise resources to start the work of respective packages, ie within 15 days from date of intimation of BHEL site.
36.3	Contractor shall mobilize resources to start fabrication work of respective packages within 30 days from date of intimation of BHEL site.

36.4	Actual date of start of work shall be recknoned based on certification of Construction Manager, BHEL.
37.0	**CONSTRUCTION SCHEDULE**
37.1	Entire work shall be carried out in accordance with the broad construction schedule given below/ attached, within the stipulated completion period. Within 30 days of LOI, the contractor shall discuss with BHEL site engineer & furnish detail construction schedule (L-3/ L-4) indicating all milestones on the basis of major activities and get it approved from BHEL engineer. This schedule will undergo review and based on progress vis-à-vis project requirement, contractor shall have to submit revised schedule for approval of BHEL.
37.2	Schedule for major activities/ area/ structure covered under the scope of work is attached along with tender.
37.3	Average rate of fabrication & erection of structural steel per month shall not be less than 700 T - 750 T. During peak period, minimum fabrication should be 800 MT - 850 MT per month.
37.4	Contractor shall establish mix design for all concreting either by taking trial mix at site or from a reputed institution (As per BHEL's approval). Contractor shall ensure adding of admixture and minimizing of cement content in line with IS:456.
37.5	The contractor shall plan his work in such a manner so as to meet the overall project schedule, in consultation with BHEL/ owner engineer.
37.6	Contractor shall submit daily work program based on above construction schedule. Defferement of above schedule is not acceptable. Contractor will adhere to schedule and resource planning to be augmented to ensure completion as per schedule.
37.7	Periodic progress reviews on the entire activities of execution in respect of supply & works in scope of contractor will be held once in a month at Kolkata/ 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 ensuring that suitable steps are taken to meet various targets decided upon such meetings.
37.8	The phase gap between PACKAGE-C & PACKAGE-D is 3 months. However, entire work of each package shall be completed within the completion period, stipulated in the tender.
38.0	**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/ owner. The decision of BHEL in this regard shall be final and binding on the contractor.
39.0	**EXTENSION OF TIME FOR COMPLETION**
39.1	If the completion of work as detailed in the scope of work gets delayed beyond the contract/ completion period, the contractor shall request for an extension of the contract and BHEL at its discretion may extend the contract.
39.2	Based on the reviews jointly signed, the works balance at the end of original contract period less the backlog attributable to the contractor shall be quantified, and the number of months of 'Time extension' required for completion of the same shall be jointly worked out. Within this period of 'Time extension', the contractor is bound to complete the portion of backlog attributable to the contractor. Any further 'Time extension' or 'Time extensions' at the end of the previous extension shall be worked out similarly.
39.3	However if any 'Time extension' is granted to the contractor to facilitate continuation of work and completion of contract, due to backlog attributable to the contractor alone, then it shall be without prejudice to the rights of BHEL to impose penalty/ LD for the delays attributable to the contractor, in addition to any other actions BHEL may wish to take at the risk and cost of contractor.
39.4	A joint programme shall be drawn for the balance amount of work to be completed during the period of 'Time Extension', along with matching resources to be deployed by the contractor as per specified format. Review of the programme and record of shortfall shall be done.
39.5	During the period of 'Time extension', contractor shall maintain their resources as per

	mutually agreed program
39.6	At the end of total work completion as certified by BHEL engineer, and upon analysis of the total delay, the portion of time extensions attributable to (i) Contractor, (ii) Force majeure conditions, and (iii) BHEL, shall be worked out and shall be considered to be exhausted in the same order. The total period of time extensions shall be the sum of (i), (ii) and (iii) above and shall be equal to period between the scheduled date of completion and the actual date of completion of contract. LD shall be imposed/ levied for the portion of time extensions attributable to contractor and recoverable from the dues payable to the contractor.
40.0	**INTEREST BEARING RECOVERABLE ADVANCE/ MOBILISATION ADVANCE**
40.1	Interest bearing recoverable advance of 5 (five) % of the contract price in stages is admissible in the following manner. Rate of interest shall be 2 % (two) above PLR of State Bank of India applicable at the time of drawing the advance (compound interest at the rate of SBI PLR plus 2 % (two) shall be calculated as per monthly rest).
40.1.1	One and a half (1.5) % to be released on submission of following.
40.1.1.1	Unqualified acceptance to LOI.
40.1.1.2	Requisite security deposit.
40.1.1.3	Bank guarantee (BG) equivalent to 1.2 times the advance amount valid for a period initially for one year subsequently to be extended till the advance is adjusted.
40.1.1.4	Detailed L-3 network submission & approval by BHEL.
40.1.2	One and a half (1.5) % to be released on following.
40.1.2.1	Submission of bank guarantee (BG) equivalent to 1.2 times the advance amount valid for a period initially for one year subsequently to be extended till the advance is adjusted.
40.1.2.2	Opening of site office, construction of cement store, deployment of minimum 1 no 35 cum/ hr capacity automatic concrete batching plant with printing facility at site and on certification of the same by BHEL site.
40.1.3	Two (2) % to be released as per following.
40.1.3.1	Submission of bank guarantee (BG) equivalent to 1.2 times advance amount valid for a period initially for one year subsequently to be extended till the advance is adjusted.
40.1.3.2	Commissioning of minimum 1 no 35 cum/ hr capacity automatic concrete batching plant with printing facility at site and deployment of minimum tools & plants as per stipulation of detailed bar chart indicated above.
40.2	Recovery of mobilization advance along with interest shall be made at the rate of 10 % from 1st applicable RA bill (gross), till the entire amount is recovered.
40.3	The bank guarantee shall be kept valid till the entire advance amount is recovered.
40.4	Invoice for advance against individual stage as per above to be raised immediately & prior to accomplishment of activities/ event, associated with subsequent stage advance.
40.5	All other terms and conditions of IBRA not mentioned above shall be governed by the pertinent provisions of GCC.
41.0	**OVER RUN CHARGES**
	Not applicable for this tender.
42.0	**REVISION ON ACCEPTED CONTRACT RATE**
	Not applicable in this tender.
43.0	**PRICE VARIATION CLAUSE/ ESCALATION**
	Applicable as per GCC (As per column `A' of civil package) for only SCH-2 (SERVICE) part of this tender. No PVC will be applicable for SCH-3 (SUPPLY) part.
44.0	**EXTRA/ ADDITIONAL ITEMS OF WORK**
	Shall be as per GCC.
45.0	**SECURITY DEPOSIT, PERFORMANCE BOND & FINAL BILL**
45.1	Security deposit shall be applicable as per relevant clause of GCC (Volume-IB).
45.2	Performance bond is not applicable for the tender.
45.3	RELEASE OF SD BG AND FINAL BILL
	In addition to other provisions of tender regarding release of SD and final bill, following provisions shall also be governing to this tender.

45.3.1	For SD BG- further extension beyond date of acceptance of final bill will not be enforced if the following is fulfilled.
45.3.1.1	Contractor discharges their responsibility in r/o of submission of final bill alongwith absolute 'No Demand Certificate' and other documents as detailed below to the satisfaction of BHEL
45.3.1.2	Joint protocol of set of documents as submitted as detailed in below is certified by site & contractor's representative.
45.3.1.3	There is no negative value of the final bill (after release of SD BG) - site to certify the same before release of SD BG.
45.3.1.4	Contractor has returned the property belonging to BHEL - site to certify the same before release of SD BG.
45.3.1.5	Contractor has submitted joint protocol against `Delay analysis', if applicable for delayed execution of job.
45.3.2	List of documents to be submitted & jointly protocoled indicating acceptance of final bill by BHEL.
45.3.2.1	Final bill.
45.3.2.2	Measurement for final bill signed, jointly signed by BHEL & contractor's representative.
45.3.2.3	Statement having cumulative joint measurement for the contract, jointly signed by BHEL & contractor's representative.
45.3.2.4	Claim by contractor for refund of security deposit.
45.3.2.5	Jointly signed material reconciliation statement.
45.3.2.6	Statement of payment received from BHEL – Bill wise (Including RA/ PVC/ ORC/ rate revision/ extra work).
45.3.2.7	No claim certificate by contractor.
45.3.2.8	Clearance certificates wherever applicable, viz clearance certificates from customer, various statutory authorities, like Labour Department, PF Authorities, Commercial Department, etc.
45.3.2.9	Notarized Indemnity Bond as per prescribed format.
46.0	**TAXES, DUTIES ETC**
46.1	TDS under Income Tax, VAT 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/ are furnished.
46.2	All taxes (except Service Tax including Educational Cess and other cess, if any), Works Contract Tax under state VAT Act, charges royalties, duties, Octroi, cess, 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/ accepted rates/ price of shall be inclusive of all such requirements after taking Input Credit, if any, as per provisions of the state VAT Act. The contractor is responsible to furnish all documentary evidences towards payment of Works Contract Tax as & when required by BHEL. Submission of Tax Invoice is a must after Grossing up the Bills as the price is inclusive of VAT and any other documents in connection with state VAT Act, as may be required from time to time.
46.4	The contractor have to make their own arrangement at their cost for completing the formalities, if required, with state VAT Act Authorities, for bringing their materials, plants & machinery at site for execution of the works under this contract, Road Permit/ Way Bill, if required, shall be arranged by the contractor and BHEL 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 bumber must be provided to site RAO.
46.5	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 01-06-07. 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, 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. As such, Service Tax as legally leviable & payable by the contractor under the above provisions of applicable law/ act, shall be paid by BHEL-PSER on contractor's gross bill. The contractor shall furnish proof of Service Tax registration with Central Excise Division covering the services as well as exercising the aforesaid option ie the Composition Scheme under Notification 32/2007 under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by the contractor on BHEL, PSER for this project. BHEL, PSER will not be held to be responsible for non-compliance of various Service Tax Rules, being framed from time to time Contractor is allowed to include the value of free issue of materials mainly steel & cement based on monthly consumption basis to enable them to comply with Notification 23/2009–ST for arriving at gross amount charged.
46.6	New taxes, duties, if imposed subsequent to due date of offer submission as per NIT along with TCN, if any, by statutory authority during contract period (including extension, if the same is not attributable to the contractor), shall be reimbursed by BHEL on production of relevant supporting document to the satisfaction of BHEL. However, the contractor shall obtain prior approval from BHEL before depositing new taxes and duties.
47.0	**TERMS OF PAYMENT**
47.1	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. The balance 5 % shall be payable along with final bill. However, this 5 %, retained from each RA bill, may be released against submission of a separate bank guarantee as per Performance Bank Guarantee format, to be kept valid till final bill & guarantee period, subject to (i) Receipt of certificate that all works are completed in all respects; (ii) Reconciliation of materials/ T&P/ IMTE; (iii) Completion of final bill formalities and (iv) handing over to BHEL/ customer.
47.2	All admissible recovered/ adjustments etc. shall be made from the interim payable amount.
47.3	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 following activity in each month. In case of non-fulfilment of respective activity by contractor 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.
47.3.1	0.7 % shall be paid on compli All admissible recovered/ adjustments etc. shall be made from the interim payable amount.ance of house keeping of contractor's working area and store/ office areas.
47.3.2	0.3 % shall be paid on compliance of general illumination of contractor's working area and stores, office area.
47.3.3	0.2 % shall be paid on compliance of applicable OHSAS requirement as per guidelines of BHEL/ PSER and as specified in the tender.
47.3.4	0.3 % shall be paid on compliance of applicable safety requirement as per guidelines of BHEL/ PSER and as specified in the tender.
47.4	Contractor's RA bill, complete & correct in all respects, certified by BHEL engineer, shall be paid in the following manner.

47.4.1	60 % (sixty percent) of payable amount of RA bill shall be made within 15 days of date receipt of bill certified by the BHEL engineer.
47.4.2	Balance payment within 30 days of receipt of bill.
47.5	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.
48.0	**RETENTION AMOUNT**
	Shall be as per as per terms of payment of this volume.
49.0	**LIQUIDATED DAMAGE**
	Shall be as per GCC, with a ceiling of 5 %.
50.0	**GUARANTEE**
50.1	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.
50.2	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/ owner) 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.
51.0	**CONTRACT PRICE**
51.1	The bidder shall quote their rates strictly in accordance with prescribed rate schedule of Volume-III, separtately for Package-C & Package-D.
51.2	Price schedule of each package is split into 2 parts, service part & supply part, total of which shall be taken into account for evaluation and awarding. Contractor shall supply all material covered under supply part of price schedule. Unless otherwise specified in price schedule, contractor shall obtain prior approval from BHEL/ owner regarding manufacturer/ make of all items under contractor's scope of supply (under service part or supply part of price schedule).
51.3	Evaluation & awarding will be done separately on total price of Package-C & Package-D. Package-C shall be decided first and who-so-ever is successful in Package-C shall not be considered for Package-D (They will not be considered for Reverse Auction/ price bid opening of Package-D).
51.4	The quantities of the various items mentioned in the BOQ cum price schedule (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 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.
52.0	**OTHER TERMS**
52.1	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.
52.2	Cement shall be supplied by BHEL free of cost as per tender for manufacturing of fly ash cement bricks within the plant premises. Contractor shall not be allowed to take out cement outside the plant premises.
52.3	It is clarified that land for labour colony shall be provided between ash pond and boundary wall of the projecrt, depending on availability. However, no claim, whatsoever, in this regard shallbe entertained by BHEL at a later date in case of change in location.

52.4	It is clarified that access road inside project premises shall be provided as available. Necessary strengthening, extension upto work front, etc, as required for execution of work, shall be done by contractor at no extra cost to BHEL.
52.5	Drawings issued, if asny, are for tender purpose only. No additional financial implication will be ebntertained by BHEL at a later date on account any alteration to this.
52.6	For all brick work under this tender, ash cement brick shall be used as per specification, for which ash will be supplied by BHEL free of cost from existing units of Sagardighi project. Contractors have to transport the same after paying necessary statutory charges (if any).
52.7	In addition to prevalent statutory laws, act, etc, bidder shall also take into account of statutory guidelines regarding The Building and Other Construction Workers (Regulation of Employment & Condition of Service) Act, 1996 along with associated Central/ State Govt Rules.
52.8	Bidders have the option to submit offer for either of Package-C or Package-D or both. While bidder may submit common techno-commercial offer for both packages, price offer shall be submitted in separate sealed envelopes for respectgive packages.
52.9	All other term & conditions of this specification, not mentioned above shall be governed by the pertinent provisions of GCC, Volume-IB.

ANNEXURE - A
LIST OF EQUIPMENTS FOR CIVIL SITE LABORATORY

SL NO	NAME OF TEST	NAME OF EQUIPMENT	SIZE OF EQIPMENT	IS REF
I. CONCRETE TESTING EQUIPMENT				
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 appratus 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 appratus	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 motor cube casting	Mortor 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 concereting 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 mortor cube vibrating	Motorised vibration machine for cement testing	Standard	IS 4031
15	Course agregate 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 agregate 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	Seive Shaker	Motorised Sieve shaker	Mfg. Catalogue	

18	Silt content check	Sand silt content beaker	Standard	
19	Ultrasonic pulse velocity test	UPV appratus for concrete	Standard	
II. 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
III. 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	Spatula	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 morter 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 masanory/concrete painting measurement	02 nos	150 micron range	

VOLUME-III
PRICE SCHEDULE, REV-1
(PACKAGE-C)

Civil, structural, architectural etc of civil superstructure work of 1x500 MW unit # 3 for 2x500 MW units at Sagardighi STPP, WB.

TENDER NO - PSER:SCT:SDG-C1274:11

PREAMBLE

1.0	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with various volumes of tender as per NIT together with subsequent changes/ modifications etc thereto as applicable as on date of submission of price offer.
2.0	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions.
3.0	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4.0	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, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, 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.
5.0	Unless otherwise specified & except for tender on lumpsum basis, for all item rate based tenders, the quantities of the various items mentioned in price schedule 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.
6.0	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
7.0	Rates shall be quoted 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.
8.0	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted.
9.0	The tender shall be deemed to have studied the specifications, details of work to the done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
10.0	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.
11.0	Evaluation & awarding will be done seperately on PKG-C & PKG-D. PKG-C shall be decided first and who-so-ever is successful in PKG-C shall not be considered for PKG-D (They will not be considered for Reverse Auction/ price bid opening of PKG–D).

VOLUME-III
PRICE SCHEDULE, REV-1
(PACKAGE-C)

Civil, structural, architectural etc of civil superstructure work of 1x500 MW unit # 3 for 2x500 MW units at Sagardighi STPP, WB.

TENDER NO - PSER:SCT:SDG-C1274:11

SCH-1 - TOTAL PRICE

SL NO	DESCRIPTION	AMOUNT (Rs)
1.0	TOTAL PRICE AS PER SCH-2 (SERVICE PART).	
2.0	TOTAL PRICE AS PER SCH-3 (SUPPLY PART).	
3.0	**GRAND TOTAL PRICE (SCH-2 & SCH-3 TOGETHER)**	

NOTE

1.0	Bidder's quoted grand total price at SL NO 3.0 above shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.
2.0	Price format shall not be changed by bidder in any case, since it may lead to cancellation of offer.

VOLUME-III
PRICE SCHEDULE, REV-1
(PACKAGE-C)

Civil, structural, architectural etc of civil superstructure work of 1x500 MW unit # 3 for 2x500 MW units at Sagardighi STPP, WB.

TENDER NO - PSER:SCT:SDG-C1274:11

SCH-2 - SERVICE PART

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.0	**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 for the following)**				
1.1	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.				
1.1.1	a	Depth from ground level but not exceeding 2 m.	74531	CUM		
1.1.2	b	Depth exceeding 2 m but not exceeding 4 m.	34958	CUM		
1.1.3	c	Depth exceeding 4 m but not exceeding 6 m.	22316	CUM		
1.1.4	d	Depth exceeding 6 m but not exceeding 8 m.	13631	CUM		
1.1.5	e	Depth exceeding 8 m but not exceeding 10 m.	8531	CUM		
1.1.6	f	Depth exceeding 10 m but not exceeding 15 m.	262	CUM		
1.2	102	Extra over ST NO 101 for dewatering of ground water by well point method as per IS:9759.	4872	CUM		
1.3	103	Earth work in excavation in soft rock (rock without any recovery of exacavated materials in the form of hard stone/ boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc but does not require chiselling or blasting including setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/ compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 500 m, spreading/ levelling of disposed materials etc all complete for following depths below ground level.				
1.3.1	a	Depth from ground level but not exceeding 2 m.	850	CUM		
1.3.2	b	Depth exceeding 2 m but not exceeding 4 m.	590	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.3.3	c	Depth exceeding 4 m but not exceeding 6 m.	500	CUM		
1.3.4	d	Depth exceeding 6 m but not exceeding 8 m.	400	CUM		
1.3.5	e	Depth exceeding 8 m but not exceeding 10 m.	200	CUM		
1.3.6	f	Depth exceeding 10 m but not exceeding 15 m.	175	CUM		
1.4	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 500 m and compacted as specified including re-excavation of stacked earth, watering, ramming/ compaction by manual/ mechanical means, dressing etc all complete.for the following.				
1.4.1	a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII).	971	CUM		
1.4.2	b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII).	16302	CUM		
1.4.3	d	Each layer compacted so as to achieve at least 75% relative density as per IS-2720 part XIV in case of sandy soils.	12134	CUM		
1.5	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.				
1.5.1	a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII).	8450	CUM		
1.5.2	b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII).	12560	CUM		
1.5.3	d	Each layer compacted so as to achieve at least 75% relative density as per IS-2720 part XIV in case of sandy soils.	8660	CUM		
1.6	109A	Extra over ST NO 101 and 103 to 107 for carriage of excavated earth/selected materials for 500 m to 1KM beyond an initial lead of 500 m.	86656	CUM		
1.7	119B	Extra over ST NO 101 and 103 to 107 for carriage of excavated earth/selected materials from 1KM to 2KM	10000	CUM		
1.8	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, ramming/ compaction by manual/ mechanical means, dressing etc all complete for the following.				
1.8.1	a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII).	1250	CUM		
1.8.2	b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII).	6860	CUM		
1.8.3	c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII).	2	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.8.4	d	Each layer compacted so as to achieve at least 75% relative density as per IS-2720 part XIV in case of sandy soils.	4100	CUM		
1.9	111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/ compaction by manual/ mechanical means, dressing, royalty (if any) etc all complete.	550	CUM		
2.0	**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 for the following. Unless specified otherwise, cement will be supplied by BHEL free of cost as per tender)**				
2.1	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.	300	CUM		
2.2	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.	1850	CUM		
2.3	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.	250	CUM		
2.4	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.				
2.4.1	a	M15 grade.	80	CUM		
2.4.2	b	M20 grade.	3000	CUM		
2.5	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.				
2.5.1	a	M25 grade.	22575	CUM		
2.5.2	b	M30 grade.	3550	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.6	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.				
2.6.1	a	M25 grade.	27172	CUM		
2.6.2	b	M30 grade.	400	CUM		
2.7	207	Providing and laying design mix cement concrete confirming to IS:456 & IS:10262-2009 for reinforced concrete works of grade M30 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 125 mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing.	2650	CUM		
2.8	208	Providing and laying design mix cement concrete as per IS:456 & IS:10262-2009 of grades mentioned below for reinforced concrete works using graded aggregate in top decks of all machine foundations supported on vibration isolation system (excluding supply and installation of vibration system) and top deck of TG foundation at all levels including addition of suitable plastisizers conforming to IS:9103 to achieve a slump more than 125 mm in concrete as per manufacturers recommendation, preperation of scheme for concreting, getting it approved by engineer, labour, materials, equipment, handling, batching, transporting, mixing, pumping, placing, leveling, vibrating, compacting, curing, testing, cleaning and rendering the exposed surface with cement sand mortar to give a smooth and even surface, maintaining and submitting records of concreting, petrographic examination and potential reactivity of aggregate etc all complete as per specification, drawing and instructions of engineer, including UPV testing as directed by engineer, rectification of the defects in concreting observed by ultra-sonic pulse velocity (UPV) testing by cement/ epoxy grout etc, but excluding formwork, staging, reinforcement, embeddments and temperature control of concrete. Payment terms - a) After casting 75%; b) After receipt of ultrasonic test report - 25%.				
2.8.1	a	M30 grade (with 20 mm nominal size graded stone aggregate).	800	CUM		
2.8.2	b	M35 grade (with 20 mm nominal size graded stone aggregate).	2050	CUM		
2.9	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.	1950	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.10	210	Extra over ST NO 205 to 207 for conducting UPV test for concrete at all levels including all equipments, making necessary arrangements, staging, submission of report etc all complete as directed by engineer and as per specification.	250	CUM		
2.11	211	Providing and encasing of structural steel member with concrete using nominial aggregate size of 12.5 mm 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.				
2.11.1	b	M25 grade.	580	CUM		
2.12	212	Screed concrete conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5 mm/ 6 mm nominal size on the roof at any level or thickness, drains etc complete as per following.				
2.12.1	a	1:2:4 (1 part cement, 2 part sand, 4 parts of aggregate by volume).	580	CUM		
2.13	213	Providing and laying design mix cement concrete as per IS:456 & IS:10262-2009 for reinforced concrete works using graded aggregate for concrete in precast works like roof slabs /trench covers, fins, lintels, chajas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/ moulds, curing, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transpoting, all leads, erection without damage, setting in position with cement sand mortar (1:3), filling the gaps between adjacent preacast units with M30 grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc complete with graded aggregate (20/ 12.5/ 10 mm) and as per specification and drawing for following grades.				
2.13.1	a	M25 grade.	150	CUM		
2.14	214	Providing and laying design mix cement concrete as per IS:456, IS:3370 & IS:10262-2009 for reinforced concrete works using graded aggregate for concrete in water retaining/ conveying structures including addition of suitable plastisizer cum waterproofing cement additives confirming to IS:9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS:2545 and specification with 20 mm nominal size graded aggregate for following grades.				
2.14.1	a	M25 grade.	6550	CUM		
2.15	215	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer.				
2.15.1	a	Plain cement concrete of all grades.	150	CUM		
2.15.2	b	Reinforced cement concrete of all grades.	200	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.16	216	Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer including equipment, safety precautions, making good the broken surface etc all complete as per specification, drawing, instructions of engineer but excluding cutting of reinforcement.	1	CUM		
2.17	217	Extra over and above ST NO 216 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer. Measurement shall be on the cross sectional area of reinforcement cut.	150	SQCM		
2.18	218	Cutting reinforced concrete with mechanised tools like core drilling machine etc for cutting pockets, holes, cores in slab, beam, column or foundation as per direction of engineer. Core dia - maximum 100 mm, Length/ depth - Maximum 200 mm.	150	NO		
2.19	218A	Cutting of existing concrete/ RCC work (Maximum thickness of concrete is 300 mm) inside existing control room/ existing pump house/ or any existing structures without disturbing routine operation at any level using power tools of (DD2E of HILTI/ BOSCH make) with low noise and dust including cutting reinforcements, removing the rubbish within a lead of 1 km, including making good the broken edges/ surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/ supporting at any level, all complete and as directed by engineer (measurements shall be taken as per cutting surface area).	10	SQM		
2.20	219	Providing and applying curing compound of approved make where ever required as per manufacturer's specification.	60	SQM		
3.0	**300**	**FORM WORKS** **(Providing, fixing and removing formwork at any elevations for all structures, as per specifications and including all labour, material, scaffoldings and centereing complete including pockets etc complete as per drawing, specifications and as per direction of engineer for the following)**				
3.1	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.	32250	SQM		
3.2	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.	79010	SQM		
3.3	303	Fairface formwork with good quality water proof ply wood of required thickness and smooth surface for TG superstructure (above base raft level) including preparation of scheme, designing, submission and approval of staging drawing with sufficient props, braces and ties at every tier of height of approx 4m for all heights.	1850	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
3.4	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.				
3.4.1	a	Upto 150 mm depth.	175	NO		
3.4.2	b	Pockets of depths more than 150 mm and upto 300 mm depth.	80	NO		
3.4.3	c	Pockets of depths more than 300 mm and upto 600 mm depth.	40	NO		
3.4.4	d	Pockets of depths more than 600 mm and upto 1000 mm depth.	20	NO		
3.4.5	e	Pockets of depths more than 1000 mm and upto 1500 mm depth.	4	NO		
4.0	**400**	**REINFORCEMENT**				
4.1	401	Receipt at project site, straightening, cutting, bending, placing in position at any level, binding of mild steel reinforcements conforming to grade 1 of IS:432 part 1 in concrete including cost of binding wire, labour, scaffolding, transportation to & from stores etc all complete as per specifications & drawings.	100	MT		
4.2	402	Transportation from store, providing, straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500 confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by engineer. Reinforcement steel will be supplied by BHEL free of cost as per tender.	3168	MT		
4.3	406	Receipt at project site, providing, straightening cutting, bending, placing in position at any level, binding of mild steel reinforcements in brickwork including cost of reinforcement and binding wire, labour, scaffolding etc complete all as per specifications & drawings.	40	MT		
4.4	407	Providing, straightening, cutting, bending, placing in position at any level, binding in position high yield strength steel reinforcements in brickwork including cost of binding wire, labour, scaffolding etc complete all as per specifications & drawings. Reinforcement steel will be supplied by BHEL free of cost as per tender.	40	MT		
4.4	407A	Straightening of projected reinforcements from concrete column/ foundation/ structures, cleaning and removal of concrete waste, cutting if required, bending, for preparation for next stage of concrete at any level, binding in position of tor steel reinforcements confirming of grade Fe-500 confirming to IS:1786 including cost of binding wire, labour, etc complete all as per specifications, drawings and as directed by engineer (Measurement shall be taken at site as per actual work on joint measurement basis). Excavartion, if any, shall be paid separately as per relevant item.	25	MT		
5.0	**500**	**WATER PROOOFING 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)**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
5.1	501A	Providing and laying underbed grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 15 mm including preparation of surface, batching, mixing, leveling etc all complete. Cement will be supplied by BHEL free of cost as per tender.	5480	SQM		
5.2	502A	Providing and laying rigid insulation (extruded polystyrene blocks) as per relevant IS code in suitable panels over roofs followed by a layer of 15 mm thick cement sand plaster 1:4 (1 cement: 4 coarse sand) and providing of expansion joint at intervals and filling with sealant in both directions as per the recommendation of manufacturer. The block shall be strong enough to withstand without deformation the workload and standard loads expected on the roof. Cost shall include making of fillets, cleaning & preparation of surface, expansion joints including filling with sealants (10 mm thick) at suitable intervals etc all complete for following. Cement will be supplied by BHEL free of cost as per tender.				
5.2.1	a	Average 50 mm thickness.	3306	SQM		
5.2.2	b	Average 75 mm thickness.	2014	SQM		
5.3	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 sqm 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.	5480	SQM		
5.4	508A	Providing and laying pressed precast concrete tiles of 20 mm thickness and size 600x600 mm conforming to IS 13801 with 15 mm thick 1:4 cement mortar over the top most layer of roofing treatment with fine joints including sealing of joints (silicon/ elastomeric sealant) etc all complete. Water proofing paid elsewhere. Cement for mortar will be supplied by BHEL free of cost as per tender.	6038	SQM		
5.5	509	Providing and applying two coats of bitumen grade 85/25 as per IS:702 (@ 1.7 kg/ 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.	3250	SQM		
5.6	512	Anti termite chemical treatment of soil with Chloropyrifos emulsifiable concentrates (1%) conforming to IS:8944 all complete.	810	SQM		
6.0	**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. For approved make and vendors reference technical specification section - C)**				
6.1	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.				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
6.1.1	a	12 mm wide joints.	30	SQM		
6.1.2	b	20 mm wide joints.	65	SQM		
6.1.3	c	25 mm wide joints.	4	SQM		
6.1.4	d	50 mm wide joints.	20	SQM		
6.2	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.				
6.2.1	a	12 mm x 25 mm.	180	RM		
6.2.2	b	20 mm x 25 mm.	180	RM		
6.2.3	c	25 mm x 25 mm.	80	RM		
6.2.4	d	50 mm x 25 mm.	80	RM		
6.3	603	Supplying and filling in position hot applied bitumin sealing compund (Grade A) confirming to IS:1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc all complete.				
6.3.1	a	10 mm x 40 mm.	80	RM		
6.3.2	b	12 mm x 25 mm.	90	RM		
6.3.3	c	20 mm x 25 mm.	80	RM		
6.4	604	Supplying and filling in position hot applied bitumin sealing compund (Grade B) confirming to IS:1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc all complete.				
6.4.1	a	10 mm x 40 mm.	30	RM		
6.4.2	b	12 mm x 25 mm.	30	RM		
6.4.3	c	20 mm x 25 mm.	20	RM		
6.5	605	Providing and sealing of joints with premium grade silicon sealant (Silpruf of GE silicons or approved equivalent) including cleaning of joints, raking out groove, joint filler tapes, application of primer, curing, scaffolding etc all complete as per manufacturer's recommendation for following size groove.				
6.5.1	a	25 mm x 25 mm.	125	RM		
6.5.2	b	50 mm x 25 mm.	140	RM		
6.6	606A	Providing and fixing PVC water stops in joints conforming to IS:12200 & IS:15058 all complete for the following (Bulb or Kicker type).				
6.6.1	a	150 mm wide and 8 mm thick.	5	RM		
6.6.2	b	230 mm wide and 8 mm thick.	10	RM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
6.6.3	c	150 mm wide and 6 mm thick.	25	RM		
6.6.4	d	230 mm wide and 6 mm thick.	250	RM		
7.0	**700**	**MS EMBEDMENTS** **(Embedments including all labour, material, equipment, transportation, handling etc at any level as per specification, drawings and as directed by engineer)**				
7.1	701A	Transport, fabricating and fixing of mild steel embedments, inserts, angle, channels, plates of dimensions as required etc including welding, bolting, cutting, drilling, scaffolding, setting etc all complete. Structural steel shall be supplied by BHEL free of cost as per tender.	70	MT		
7.2	701B	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle/ channel/ beam pieces, rungs of various diameters, MS round, flats, plates of dimensions as required etc including welding, bolting, cutting, drilling, scaffolding, setting etc all complete. Contractor to supply all materials	10	MT		
7.3	702	Assembly, welding, fixing of embedments, inserts, pipe sleeves, angle pieces, anchor bolts of various diameters, plates of dimensions as required etc including scaffolding, setting in position, transportation from BHEL site stores to work spot etc all complete. Fabricated material will be supplied by BHEL free of cost as per tender.	85	MT		
7.4	704	Receipt at site, fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and Grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, IS:364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc including welding, cutting, grinding, threading, drilling etc all complete.	20	MT		
7.5	705	Supplying, fabricating, erecting and installing following items in concrete/ brickwall for all kind of works, including setting material in concrete, layout, scaffoling, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc all complete. Contractor shall supply all materials. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.				
7.5.1	a	MS pipes of all diameters.	11000	KG		
7.5.2	b	PVC pipes/ conduits of all diameters.	60	KG		
7.5.3	c	UPVC pipes/ conduits of all diameters.	50	KG		
7.5.4	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.				
7.5.4.1	i	Upto 250 kg.	40	NO		
7.5.4.2	ii	Beyond 250 kg and upto 500 kg.	40	NO		
7.5.4.3	iii	Beyond 500 kg and upto 750 kg.	10	NO		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
7.5.5	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.				
7.5.5.1	i	Upto 250 kg.	60	NO		
7.5.5.2	ii	Beyond 250 kg and upto 500 kg.	60	NO		
7.5.5.3	iii	Beyond 500 kg and upto 750 kg.	30	NO		
7.5.6	Af	Chemical anchors of HILTI make or equivalent of safe tensile capacity as specified below for concrete work.				
7.5.6.1	i	Upto 250 kg.	80	NO		
7.5.6.2	ii	Beyond 250 kg and upto 500 kg.	70	NO		
7.5.6.3	iii	Beyond 500 kg and upto 750 kg.	55	NO		
7.6	706	Transport from store, placing, locking and releasing of Vibration Isolation Spring (VIS) modules over the foundation at all elevations including providing all assistance under the supervision of the supplier, transportation from BHEL store, necessary staging, platforms, leveling, alignment etc all complete. BHEL will supply VIS modules free of cost as per tender.	220	NO		
8.0	**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. For approved make and vendors reference technical specification section - C)**				
8.1	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. Cement will be suuplied by BHEL free of cost as per tender.	45	SQM		
8.2	802	Providing & grouting of pocket holes, pipe sleeves under base plates, machinery, pipe supporting structures etc with mix 1:1 (1 cement :1 sand) using non shrink admixture etc all complete. Cement will be suuplied by BHEL free of cost as per tender.	18	CUM		
8.3	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 stonechip) using non shrink admixture. Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor. Cement will be suuplied by BHEL free of cost as per tender.	20	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
8.4	804	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc all complete with Conbextra GP-1 or equivalent. Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor.	22	CUM		
8.5	805A	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 GPX-2 or equivalent. Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor.	10	CUM		
9.0	**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. For approved make and vendors reference technical specification section - C. Unless otherwise specified, contractor shall supply all materials)**				
9.1	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.	1	CUM		
9.2	902	Providing and fixing teakwood frame panel door shutter as per IS:1003 with 35 mm x 150 mm vertical rail & 35 mm x 125 mm horizontal rail and 12 mm thick interlocked panels of teakwood with proper wood joinery including beading, preperation of working drawings, Godrej or equivalent make mortice lock with handels on both sides, approved ISI mark anodised fittings like door stopper, 300 mm long tower bolts,16 x 300 mm 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.	35	SQM		
9.3	A903	Providing, fitting and fixing solid core factory made woodenflush door shutter as per IS:2202 Part II, 35 mm thick homogenous wood bonded with BWP type phenolformaldihyde synthetic resin, partical board core conforming to IS:3087 Type I, 35 x 12 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, 300 mm long tower bolts,16 x 300 mm long aldrops,125 mm long handles on both sides etc butt hinges, sliding bolt, knobs (all fittings shall be anoidised aluminium color dyed), finish synthetic paint over primer, screws etc all complete as per drawing, specification and instruction of engineer with commercial faces and teak wood edges. Finish painting paid separately.	60	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
9.4	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 150 mm 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%.	80	SQM		
9.5	905	Providing and fixing single or double steel door shutters with 18 gauge MS 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. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	25	SQM		
9.6	907	Providing and fixing fire proof steel doors (single or double shutter) with panic devices shall be 45 mm 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 150 mm 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. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	28	SQM		
9.7	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.				
9.7.1	a	Openable type.	40	SQM		
9.7.2	b	Fixed type.	25	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
9.8	909A	Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door frames/ shutters, window frames/ shutters, ventillators, partitions, railing, grills etc with extruded standard tubular and other sections including all fittings & fixtures and accessories of approved make conforming to IS:733 and IS:1285, 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/ stailess steel screws, providing and fixing hinges/ pivots, and making provision for fixing of fitting wherever required including cost of PVC/ neoprene gasket sealing of joints with sealant for water tightness, all complete as per drawing, specification and instructions of engineer. Glazing and panelling shall be paid seperately, weight of aluminium section only shall be measure.	9850	KG		
9.9	910	Providing and fixing of aluminium composite panel (ACP) of following thickness with PVDF or polyester coating for interior partition of approved shade, color etc all complete as per specification.				
9.9.1	b	4 mm.	150	SQM		
9.10	911	Providing and fixing of door closers as per IS:3564, of approved make & quality all complete of following type.				
9.10.1	a	Over head hydraulic door closures.	20	NO		
9.10.2	b	Floor mounted hydraulic door closers.	20	NO		
9.11	912	Providing and fixing pressed steel frames fabricated from 16 gauge MS 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.	1800	KG		
9.12	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 75 mm 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 3 mm thick galvanised steel plate and securely rivetted with stiffening angles (partly coiled and lath/ full lath). Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.				
9.12.1	a	Hand operated.	35	SQM		
9.12.2	b	Mechanically operated.	45	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
9.12.3	c	Electrically operated.	75	SQM		
9.13	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. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	80	SQM		
9.14	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.				
9.14.1	a	4 mm thick clear sheet glass.	35	SQM		
9.14.2	b	4 mm thick clear float glass.	80	SQM		
9.14.3	c	5.5 mm thick clear float glass.	60	SQM		
9.14.4	d	6 mm thick wired glass.	350	SQM		
9.14.5	e	4mm thick Polycarbonate sheet multi (twin) wall fire retardant and ultra violet resistant with sealed open edges.	120	SQM		
9.14.6	f	4 mm thick ground glass.	80	SQM		
9.14.7	g	6 mm thick tinted heat reflecting type float glass.	10	SQM		
9.14.8	h	6 mm thick clear toughened safety glass.	10	SQM		
9.14.9	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).	35	SQM		
9.14.10	j	Two nos 6 mm thick tinted toughened float glass hermetically sealed and separated by 12 mm thick air gap for thermal insulation. Only single elevation area to be measured.	4	SQM		
9.14.11	k	One outer 6mm thick tinted heat-reflecting type float glass and one inner 6mm thick plain float glass hermetically sealed and seperated by 12 mm thick gap for thermal insulation. Only single elevation area to be measured.	70	SQM		
9.14.12	l	6 mm thick laminated glass.	4	SQM		
9.15	916	Supplying and fixing weather stripping of approved make and quality to doors as per instructions of engineer and specification complete.	70	RM		
9.16	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).	70	SQM		
9.17	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.	10	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
9.18	920A	Roof skylight structure for atrium with 4 mm thick Compact Polycarbonate sheet 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 including aluminium sections colour anodised fixed over steel section, preparation of detail working drawing for approval before section including painting of steel structire complete etc all complete as per detailed drawing and specification. Structural steel work required for this items shall be paid separately as per ST NO 2301A.	15	SQM		
9.19	921A	Providing and fixing MS grills of approved pattern made out of 25 mm x 6 mm MS flats and 12-20 mm MS square bars on window frames including painting as per specification.	50	KG		
10.0	**1000**	**BRICK WORK** **(Brickwork masonry including all labour, material, equipment, transportation, handling, scaffolding etc at all levels as per specification, drawings and as directed by engineer. Unless specified otherwise, cement will be supplied by BHEL free of cost as per tender)**				
10.1	1001	Providing brick work in cement mortar 1:6 (1 part cement 6 parts coarse sand) in walls, chambers etc in thickness varying from 230 mm to 460 mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.				
10.1.1	c	Using burnt clay bricks of class designation 7.5 of nominal dimension.	20	CUM		
10.1.2	d	Using burnt clay bricks of class designation 5.0 of nominal dimension.	20	CUM		
10.1.3	Aa	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	110	CUM		
10.2	1002A	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc in thickness 250 mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.				
10.2.1	c	Using burnt clay bricks of class designation 7.5 of nominal dimension.	20	CUM		
10.2.2	d	Using burnt clay bricks of class designation 5.0 of nominal dimension.	20	CUM		
10.2.3	Aa	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	9398	CUM		
10.3	1003A	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc in thickness 125mm at all heights, places and position above or below plinth/ graded level including providing two nos 6 mm diameter MS bars at every fourth layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification.				
10.3.1	a	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	450	SQM		
10.3.3	c	Using burnt clay bricks of class designation 7.5 of nominal dimension.	20	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
10.3.4	d	Using burnt clay bricks of class designation 5.0 of nominal dimension.	20	SQM		
10.4	1003A	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in intermediate walls, chambers etc in thickness 250 mm at all heights, places and position above or below plinth/ graded level, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification.				
10.4.1	c	Using burnt clay bricks of class designation 7.5 of nominal dimension.	20	SQM		
10.4.2	d	Using burnt clay bricks of class designation 5.0 of nominal dimension.	20	SQM		
10.4.3	Aa	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	5250	CUM		
10.5	1004A	Providing brick soling including spreading of earth, ramming, watering including 12 mm thick cushion of sand complete but excluding excavation and disposal of surplus earth. Excavation and disposal of surplus earth shall be measured under applicable item using brick on edge.				
10.5.1	a	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	40	SQM		
10.6	1005	Providing brick soling including spreading of earth, ramming, watering including 25 mm 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.				
10.6.1	a	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	40	SQM		
10.7	1006	Breaking of existing brick work at all levels including plastering, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc all complete as directed by the engineer.	25	CUM		
10.8	1007	Providing and encasing of structural steel member with masonary work around flanges, webs etc. and filling the gap between steel and masonry by minimum 12mm thick mortar. Encased member shall be wrapped with chicken wire mesh with 50mm lap etc. complete as per specification. (Chicken wire mesh to paid separately)	80	CUM		
10.9	1008	Providing and laying 75 mm thick bed of dry brick aggregate including of excavation, disposal of surplus earth spreading of earth, ramming, watering etc complete in all respects as directed by the engineer.	350	SQM		
10.10	1009	Making openings in existing brick wall or partition wall including making good the broken edges/ surface with cement mortar etc complete.	60	CUM		
10.11	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.	180	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
10.12	1011	Filling existing brick wall/ partition wall (Maximum thickness shall be 250 mm) 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.	80	SQM		
10.13	1012	Providing and filling brick bats in soak pits all complete.	30	CUM		
11.0	**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. Unless specified otherwise, cement will be suuplied by BHEL free of cost as per tender)**				
11.1	1101	Providing Damp Proof Course 40 mm 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 @ 1.7 kg/ sqm shall be applied one before & one after the DPC.	890	SQM		
12.0	**1200**	**CEMENT MORTAR PLASTER** **(Cement mortar plaster including making grooves whereever required including all labour, material, scaffolding, curing etc at any level as per specification, drawings and as directed by engineer. Unless specified otherwise, cement will be suuplied by BHEL free of cost as per tender)**				
12.1	1201	Providing 18 mm thick plaster in two layers outside the building/ boundary wall in cement mortar 1:6 on walls, finished to a smooth finish including providing 3 mm x 3 mm size grooves at junctions of two dissimilar materials all complete.	20520	SQM		
12.2	1201A	Providing 18 mm thick plaster in two layers outside the building/ boundary wall in cement mortar 1:4 on walls, finished to a smooth finish including providing 3 mm x 3 mm size grooves at junctions of two dissimilar materials all complete.	1050	SQM		
12.3	1202	Providing 12 mm thick plaster inside the building/ boundary wall in cement mortar 1:6 on walls finished to a smooth finish as per specification all complete.	12850	SQM		
12.4	1203	Providing 12 mm thick plaster in cement mortar 1:6 on walls with rough finish all complete.	1728	SQM		
12.5	1204	Providing 6 mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.	17856	SQM		
12.6	1205	Providing 12 mm thick plaster in walls, drains/ culverts with a paste of neat cement @ 1 kg/ sqm and rubbed smooth with trowel etc all complete.	180	SQM		
12.7	1206	Providing and making decorative plaster of all types and design on walls, ceilings, arcs, columns with various thickness upto 18 mm including finishing all complete.	476	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
12.8	1207	Forming groove of uniform size from 12 x 12 mm upto 20 x 15 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.	96	RM		
12.9	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.	896	RM		
12.10	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 enginner. Chicken wire mesh to be paid separately.	340	SQM		
12.11	1210	Ruled pointing in masonry in CM 1:3 (1 cement and 3 fine sand) including raking out joints, curing etc complete.	80	SQM		
13.0	**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. For approved make and vendors reference technical specification section - C)**				
13.1	1301	Two or more coats of white wash/ colour wash as per IS:6278 of approved brand and manufacture to give an even shade including a priming coat as per specifications.	100	SQM		
13.2	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 guidlines. The final finished coating shall be fungus resistant, UV resistant, water repellant, alkali resistant and extremely durable with color fastness as per specification.	210	SQM		
13.3	1303	Providing and applying two or more coats of oil bound destemper 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.	180	SQM		
13.4	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.	15870	SQM		
13.5	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.	4880	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
13.6	1306	Providing and applying 2 or more coats of acid/ alkali resistant paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying bitumen primer confirming to IS:158 complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, complete as per specifications.	180	SQM		
13.7	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.	90	SQM		
13.8	1308	Two or more coats of black anti-corrosive bitumastic painting of approved brand and manufacture to give an even shade complete.	80	SQM		
13.9	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.	280	SQM		
13.10	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.	2850	SQM		
13.11	1311	Providing and applying resin bonded granular textured finish, for external applications shall consist of crushed stone/ quartz chips of 0.5 mm to 2.5 mm size and of approved natural color/ shade and bonded with synthetic resins, adhesives and additives altogether in a single pack mix, applied on cured and dried plaster surface with a dry film thickness of minimum 2 mm. The final finish shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/ drawing/ approval of engineer.	190	SQM		
13.12	1312A	Providing and applying 2 mm thick white cement punning on walls including preparation of surface, staging, etc to achieve a smooth even surface all complete as per specification and as directed by engineer.	6890	SQM		
13.13	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 150 micron thickness over epoxy primer.	580	SQM		
13.14	1314	Providing and applying Synthetic plaster for external applications composed of synthetic fibre and petroleum based chemical similar to RENOVO or equivalent and of approved natural color/ shade applied on cured and dried plaster surface.The final finish paint shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/ drawing/ approval of engineer.	90	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
13.15	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 repellant and extremely durable with color fastness as per specification.	100	SQM		
14.0	**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. For approved make and vendors reference technical specification section - C. Unless specified otherwise, cement will be suuplied by BHEL free of cost as per tender)**				
14.1	1401A	Providing and laying 40 mm thick heavy duty IPS flooring with metallic hardener pigmented topping 12 mm thick uniform graded treated iron paricles in flooring. Under layer of 28 mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12 mm 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, glass strips etc all complete for following. Quoted item rate shall be inclusive of providing glass joint strips.	1850	SQM		
14.2	1401B	Providing and laying 40 mm thick heavy duty cement concrete in flooring with metallic hardener pigmented topping 12 mm thick uniform graded treated iron paricles in flooring. Under layer of 28mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12 mm 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 aluminium joint strips.	4786	SQM		
14.3	1402	Providing and laying 25 mm thick heavy duty cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates) flooring with metallic hardener pigmented topping of 10 mm thick uniform graded treated iron particles in skirting and dado complete as per specification.	3892	SQM		
14.4	1403	Providing and laying precast polished heavy duty cement concrete tiles (Carborundum topping) of size 300 x 300 x 25 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, grindig and polishing complete with laying as per IS:1443 etc all complete for following. Maximum mortar thickness shall be 25 mm.				
14.4.1	a	Laid in floors.	30	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
14.4.2	b	Laid in skirting.	9	SQM		
14.5	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.				
14.5.1	a	60 mm.	980	SQM		
14.5.2	b	75 mm.	20	SQM		
14.6	1406A	Providing and laying polished Kota stone 20 mm to 25 mm thk in flooring. Under bed shall average 15 mm 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 malle 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.	890	SQM		
14.7	1408A	Providing polished Kota stone 25 mm thk in skirting projecting 6mm from adjacent plaster including cutting brickwall upto the required depth, edging, finishing etc all complete.	35	SQM		
14.8	1410A	Marble stone flooring laid in 40 mm overall thickness with 20-22 mm thick marble slabs (Grade -1) with 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.	200	SQM		
14.9	1412A	Providing and laying 18-20 mm thick polished Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 20 mm thk of 1 cement : 2 sand : 4 stone aggregate by volume and brought to proper level. The granite stone slabs/ tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including pigments, curing grinding, granite polishing etc all complete.	180	SQM		
14.10	1413A	Providing and laying 12 mm thick polished Granite slab (size as per approval) of approved color and texture in dado. The granite stone slabs fixed over prepared base with cement slurry with minimum joints including pigment, curing, grinding, granite polishing etc all complete.	100	SQM		
14.11	1414	Providing and laying polished granite stone 18-20 mm thk in skirting and dado with 6 mm thick projection from adjacent plaster including mortar (1:3), cement slurry, pigments, curing, grinding, moulding, granite polishing etc all complete.	10	SQM		
14.12	1416	Providing and laying vitrified ceramic tiles of polished variety of size 600 x 600 from reputed/ approved manufacturer, complete including underbed of cement mortar 1:3 with neat cement slurry etc all complete for following. Maximum mortar thickness shall be 43 mm.				
14.12.1	a	7 mm thick tiles In flooring.	40	SQM		
14.12.2	b	10 mm thick tiles In flooring.	80	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
14.12.3	c	7 mm thick tiles In skirting and dado upto specific height.	35	SQM		
14.12.4	d	10 mm thick tiles In skirting and dado upto specific height.	20	SQM		
14.13	1417	Providing and laying vitrified ceramic tiles of matt finish of size 600 x 600 mm from reputed/ approved manufacturer including underbed of cement mortar 1:3 with neat cement slurry etc all complete for following. Maximum mortar thickness shall be 43 mm.				
14.13.1	a	7 mm thick tiles In flooring.	35	SQM		
14.13.2	b	10 mm thick tiles In flooring.	20	SQM		
14.13.3	c	7 mm thick tiles In skirting and dado upto specific height.	20	SQM		
14.13.4	d	10 mm thick tiles In skirting and dado upto specific height.	20	SQM		
14.14	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.				
14.4.1	a	400 x 400 mm.	20	SQM		
14.4.2	b	600 x 600 mm.	650	SQM		
14.15	1418A	Providing and laying 10 mm thk non-skid fully vitrified tiles of make 'MARBONITE' or 'FERRASTONE "KAJARIA" 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.				
14.15.1	a	400 x 400 mm.	15	SQM		
14.15.2	b	600 x 600 mm.	875	SQM		
14.16	1419	Providing and laying granite stone slab of 20 mm thickness single piece for wash basin/ sink slab/ facia of black or approved colour with cutting, making corners, moulding and opening etc all complete.	30	SQM		
14.17	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. Maximum mortar thickness shall be 43 mm.				
14.17.1	b	600 x 600 mm.	40	SQM		
14.18	1421A	Providing and laying heavy duty dust pressed (grade-5) ceramic tiles (Matt Finish) of size 600 x 600 mm (approved size) and 7 mm thick of reputed/ approved manufacturer (Kajaria, Jhonson, Spartek or equivalent) of approved finish, shade and colour. The tiles shall be scratch resistance of minimum 5 on Mohr's scale and shall have a bending strength of 350 kg/ sqm, with under bed shall average 43 mm thk of 1 cement : 2 sand : 4 stone aggregates by volume and brought to proper level including cement mortar all complete.	200	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
14.19	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 12 mm thick (to be laid in layers of 6 mm each). The tiles shall be applied with 6 mm 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.				
14.19.1	a	20 mm thick .	40	SQM		
14.19.2	b	38 mm thick.	40	SQM		
14.20	1423A	Providing & fixing acid/ alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/ dado beded and jointed with silica based epoxy mortar all complete for following thicknesses. The tiles should be abrasion resistant & durable. Overall thickness shall be 40 mm in flooring.				
14.20.1	a	20 mm thick .	200	SQM		
14.21	1425	Providing and laying polished marble slabs, 600 mm x 600 mm (Aranga white or equivalent approved shade/ color/ design) 20 mm thk in staircase landing/ skirting and corridors over minimum 20 mm thick underbed of 1 cement : 2 sand : 4 stone aggregates by volume mixed with sufficient water to form a stiff workable mass. The marble slabs shall be laid over under-bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including moulded marbel nosing, pigments, curing, grinding, making corners, granite polishing etc complete.	180	SQM		
14.22	1425A	Providing and laying kota stone, 600 mm x 600 mm (approved shade/ color/ design) 20 mm thk in staircase landing/ skirting and corridors over minimum 20 mm thick underbed of 1 cement : 2 sand : 4 stone aggregates by volume mixed with sufficient water to form a stiff workable mass. The marble slabs shall be laid over under-bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including moulded marbel nosing, pigments, curing, grinding, making corners, granite polishing etc complete.	180	SQM		
14.23	1426	Providing and laying marble skirting/ dado (Aranga white or approved shade/ color/ design) equivalent of minimum 20 mm thickness projecting 6 mm from adjacent plaster all complete including underbed cement mortar 1:3, scaffolding etc all complete.	20	SQM		
14.24	1427	Providing and fixing glazed ceramic tiles of approved color and design of size 200 x 300 mm/ 300 x 300 mm in dado of approved size, projecting 6 mm uniformly from adjacent plaster or wall finish. The mix for underbed plaster shall consist of 1 part cement and 3 parts sand by weight fairly moist but firm, tiles shall be pressed over under bed by applying cement slurry including pigments, curing etc all complete for following thicknesses.				
14.24.1	a	5 mm thick.	180	SQM		
14.24.2	b	7 mm thick.	40	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
14.25	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.	60	SQM		
14.26	1429A	Providing and fixing removable type flooring system consisting of fire resistant phenyl formaldehyde bonded particle board of size 600 x 600 x 35 mm with 0.05 mm thick aluminium foil lining at bottom and with 2 mm thick anti static PVC topping including proprietary floor supporting system complete as per specification. Maximum floor height shal be 1000 mm.	60	SQM		
14.27	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.				
14.27.1	a	Glass strips 40 mm wide and minimum 6 mm thick.	200	RM		
14.27.2	b	Aluminium strips 40 mm wide and minimum 3 mm thick	80	RM		
14.28	1432A	Providing and laying self levelling epoxy flooring cosisting of first coat of solvent free resin based dispersion primer @ 200 gm/ sqm, first layer of epoxy floorin @ 4.4 kg/ sqm of 2 mm thckness, second layer of prime r@ 100 gm/ sqm, final decorative epoxy topping @ 3.6 kg/ sqm of approx 2 mm thickness complete as per specification, including all material, labour, etc all complete.	2150	SQM		
15.0	**1500**	**ROOFING/ SIDE CLADDING** **(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. For approved make and vendors reference technical specification section - C)**				
15.1	1501A	Receipt, fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to class 3 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 0.8 mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the roof slab 100 mm 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 @ 260 mm c/c in the trough and stich				
15.1.1	a	Span upto 1800 mm.	5800	SQM		
15.1.2	b	Span exceeding 1800 mm and upto 2500 mm.	986	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
15.2	1502	Providing and fixing shear connectors of mild steel studs having 16 mm dia and minimum 75 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.	2000	KG		
15.3	1503A	Receipt, erection and fixing profiled External Cladding sheet manufactured out of 0.55 mm TCT (Total coated thickness) of permanently colour coated zincalume steel (150 gsm. zinc-aluminium alloy coating total of both sides as per AS:1397:1993) having 300 MPa yield strength. The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side. The sheet shall have 500 mm cover width, 47 mm height crests at 250mm centres with special male/ female side laps and anti-siphoning features to prevent leakage. The sheet shall be fixed with the help of concealed compatible interlocking clips and wafer head zinc coated self drilling fastners/ screws 4.2 x 25 mm long on to the sub-girts.The clips shall be concealed and no fastners are to penetrate the external sheeting, all complete as per specification.				
15.3.1	a	For final painting with Silicon Modified Polyester (SMP).	5800	SQM		
15.3.2	b	For final painting with Super Polyester XRW (as per AS/NZS-2728:1997 Category3).	3850	SQM		
15.4	1505A	Receipt, fixing profiled internal cladding sheet manufactured out of 0.6 mm TCT (Total coated thickness) of permanently colour coated zincalume steel (150/ 180 gsm zinc-aluminium alloy coating mass total of both sides as per AS:1397:1993). The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side. The sheet shall have 980 mm cover width, 28 mm height crests at 195 mm centres with special male/ female side laps and anti-siphoning features to prevent leakage. The sheet shall be fixed to the structure by means of self drilling fastners no 12-24 x 25 mm conforms to AS:3566 Class-3 long at valley. Sub- girts of size 50 mm x 50 mm x 50 mm manufactured out of 16G GI (1.6mm GI) 'Z' shape would be fixed the inner sheeting on face side at runner locations all complete as per specification.				
15.4.1	a)	For final painting with Silicon Modified Polyester (SMP).				
15.4.1.1	i)	For zincalume sheet 150 gsm and having 550 Mpa yield strength.	1860	SQM		
15.4.1.2	ii)	For zincalume sheet 180 gsm and having 240 Mpa yield strength.	890	SQM		
15.4.2	b)	For final painting with Super Polyester XRW (as per AS/ NZS-2728:1997 Category3).				
15.4.2.1	i)	For zincalume sheet 150 gsm and having 550 Mpa yield strength.	780	SQM		
15.4.2.2	ii)	For zincalume sheet 180 gsm and having 240 Mpa yield strength.	470	SQM		
15.3	1506	Supply, transportation to site, fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS:8183 having a density of 32 kg/ cum glass wool or 48 kg/ cum for rock wool, for cladding/ under deck insulation including application of glue and tying with lacing wire, for glass/ rock wool as per manufacturer's recommendations.	2890	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
15.4	1506A	Supply, transportation to site, fixing insulation of polystyrene block of 50 mm nominal thickness for under deck insulation including application of glue and tying with lacing wire as per manufacturer's recommendations.	340	SQM		
15.5	1507	Supply, transportation to site, fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS:8183 having a density of 32 kg/ cum glass wool or 48 kg/ cum for rock wool, for cladding/ under deck insulation including wrapping in black polythene black supported over weld mesh 75 x 75 x 1.6 mm dia to hold in position and application of glue & tying with lacing wire, for glass/ rock wool as per manufacturer's recommendation.	970	SQM		
15.6	1508	Supply, transportation to site, 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.	320	SQM		
15.7	1509	Supply, transportation to site, providing and fixing non metal opaque PVC sheet similar to ONDEX roofing or equivalent including all fixing accessories.	18	SQM		
16.0	**1600**	**FALSE CEILING** **(False ceiling including all labour, material, equipment, transportation, handling, suspension system etc at any level as per specification, drawings and as directed by engineer)**				
16.1	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 preperation 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.				
16.1.1	a	12 mm thick GRG board with galvanised light gauge steel load bearing supporting GI frame and finished flat (seamless).	40	SQM		
16.1.2	b	12 mm thick GRG board in profile (dome, curved profiled etc) with galvanised light gauge steel load bearing supporting GI frame and finished smooth (seamless).	40	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
16.2	1604	Receipt, fixing and laying permanently colour coated aluminium false ceiling of approved colour with stove enamel finsih of approved make in LINEAR and SQUARE type with corrosion resistance aluminium alloys panels of minimum thickness 0.5 mm including 50 mm thick mineral wool insulation (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. AC ducts etc suitable MS channel (minimum MC 75) grid 1200 c/c maximum shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. The work to be complete as per specifications, drawings and direction of engineer. Materials for structural platform grid for movement made up of MS channels/ beams/ angles shall be supplied by BHEL free of cost as per tender and shall be paid under ST NO 2301A.	880	SQM		
16.3	1606A	Receipt, fixing 12.5 mm thick glass fibre reinforced gypsum plastic borad in plan curve or in elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers etc including two or more coats of acrylic emulsion paint of approved colour to give an even shade with smooth finish all complete, as per architectural design and detail, metal suspension system as per ASTM C-635 shall be hot dipped MS galvanized (grade 180 as per IS:277) nominal size of T-section shall be 24 x 38 mm or 24 x 25 mm cross runners. 24 mm wide exposed flange surface shall be permanently color coated.suspension system shall be as per manufaturer's specification supported over movment platform including 25 mm thick resin bonded mineral wool insulation (as per IS:8183) bound in polythene bags on top of ceiling. The work to be complete as per specifications, drawings and direction of engineer. Materials for structural platform grid for movement made up of MS channel/ beams/ angles shall be supplied by BHEL free of cost as per tender and shall be paid under ST NO 2301A.	180	SQM		
17.0	**1700**	**RAIN WATER DOWN TAKE PIPE** **(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)**				
17.1	1707A	Receipt, fixing GI down take pipes conforming to IS:1239/ IS:3589 of heavy duty all complete for following diameters.				
17.1.1	a	100 mm dia.	100	RM		
17.1.2	b	150 mm dia.	1600	RM		
17.1.3	c	200 mm dia.	600	RM		
18.0	**1800**	**MISCELLANEOUS WORKS-1** **(Miscellaneous works including all labour, material, equipment etc at any level unless otherwise specified as per specification, drawings and as directed by engineer)**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
18.1	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.	4250	CUM		
18.2	1802	Providing and mixing approved Bipolar Concrete penetrating corrosion inhibiting admixture in concrete as per detail specification of manufacturer etc all complete.	40	KG		
18.3	1803	Anti termite chemical treatment of soil with Chlorpyriphos/ Lindane EC 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.	100	SQM		
18.4	1804	Supply and installation of approved 25 mm thick vibration damping resilient pads on/ around foundation of vibrating equipment and at other locations all complete.	15	SQM		
18.5	1805A	Providing 25 mm thick premix carpet surfacing laid with 12 mm downgraded stone chips mixed with 80/100 grade bitumen @ 52 kg/ cum including compaction etc all complete.	100	SQM		
18.6	1806A	Providing 75 mm thick gravel, coarse sand or other suitable material topping with compacted crushed stone, screenings, fine gravel, clear sand or similar material mixed with hot asphalt (80/ 100 bitumen or its equivalent quality 8 to 10% by volume) and rolled or compacted all complete.	100	SQM		
18.7	1808	Providing and fixing aluminium strips minimum 18 SWG thk and 300 mm wide over expansion joints with minimum lap of 50 mm length including brass/ aluminium screws, rawl plugs etc all complete.	8	KG		
18.8	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.	100	KG		
18.9	1810	Receipt, laying and fixing rails, guide rails, fixtures, bolts etc in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	40	MT		
18.10	1811	Providing and fixing weep holes in drains consisting of 100 mm dia HDPE pipe sleeves with single side covering for the pipe mouth with galvanised welded wire fabric of 20 mm sq opening covered with 40 mm downgraded aggregates in 300 x 300 mm sq and 300 mm deep size all complete.	100	NO		
18.11	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 as per tender.	20	MT		
18.12	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.	4	NO		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
18.13	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.	2	NO		
18.14	1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/ sqm etc all complete.	100	KG		
18.15	1816	Providing and fixing PVC pressure release valve of minimum dia 90 mm in water retaining structure including 160 mm dia housing pipe of minimum length 3.75 m with perforation as per IS:4558, nylon jali, perforated end plug, collar, graded filter, excavation, fixing in concrete slab/ wall etc all complete.	40	NO		
18.16	1817	Providing and fixing HDPE pipes in concrete/ brick work of following sizes including cutting, fixing and levelling in position etc all complete.				
18.16.1	a	Upto 75 mm dia.	100	RM		
18.16.2	b	100 mm dia.	100	RM		
18.16.3	c	150 mm dia.	100	RM		
18.16.4	d	200 mm dia.	100	RM		
18.17	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.	50	SQM		
18.18	1819	Receipt, erection 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, brass used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fastners etc, cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc 750 gms/ sqm, following by an application of etching primer and dipping in black bitumen as per BS:3416, erection along with a second stage concreting to true plumb and levels, submission of drawings/ fabrication drawings for engineers approval etc all complete. The leakage through rubber seal shall not be more than 5 lit/ min/ metre length of seal under maximum head. Only weight of structural steel including embedments shall be considered for payment purpose. SS component shall be measured separately for payment.	25	MT		
18.19	1820	SS component mentioned under ST NO 1819.	2	MT		
18.20	1821	Receipt, fabricating, erecting in position and testing/ examining bolted and/ or welded structural steel work for stationary screens made out of rolled sections and/ or plates including cutting, straightening if required, edge preparation, bolting/ welding of joints, cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc as 750 gms/ sqm followed by application of an etching primer and dipping in black bitumen as per BS:3416 etc all complete.	25	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
18.21	1822	Cutting of groove of 10 mm x 40 mm size with groove cutting machine in concrete paving all complete.	600	RM		
18.22	1823	Fire proofing of steel structures with VERMICULITE cementious coating including supply of all materials for vermiculite materials, reinforcement mesh (3 mm thick wire, 50 x 50 size mesh), nuts, tie wires, weldings, suface preparation, curing, staging, compatible paintings etc all complete.	2	CUM		
18.23	1824	Supply & fixing expanded metal steel sheet conforming to IS:412. Size of mesh shall be 10 mm x 40 mm with strands of 2.5 mm width and 1mm thickness to the structural steel for facilitating fireproofing works.	100	SQM		
18.24	1825	Supply and laying approved quality stone aggregate 40 mm size in transformer yards.	25	CUM		
18.25	1826	Supply and laying approved quality rounded pebbles/ gravels of 40 mm size in transformer yards.	4	CUM		
18.26	1830	Dismantling old existing structural steel work at any level including plates, bolts, cutting rivets, welding, dismembering and stacking the dismantled materials within a lead upto 1 km etc all complete.	10	MT		
18.27	1831	Sprinkling of water by water tanker fitted with perforated GI pipe (portable tanker minimum 3000 litre capacity) for roads and miscellaneous area within plant boundary, for dust supression and reduction of suspended material at site for day to day work, as directed by BHEL site engineer. Water for this purpose shall be provided by BHEL free of cost as per tender and utilisation of machine will be in terms of tank-hour put in actual use for water sprinkling.	200	TANK-HR		
18.28	1832	Providing & filling Bentonite Powder (Sodium base) mixed with water in electronic earthing pit as per drawing & direction below ground level including all materials, transportation, labour, incidental etc all complete as per specification.	5	CUM		
18.29	1833	Supply & fixing FRP (fibre reinforced plastic) sheets 2 mm thick including GI hooks/ J or L bolts, nuts, washers, bitumen washers etc complete including overlap 100 mm .	40	SQM		
19.0	**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)**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
19.1	2001A	Supplying and erecting in position 2.4 m high PVC coated gavanised chain linked fencing of minimum 8 gauge (including PVC coating) of mesh size 75 mm x 75 mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 12 gauge. GI barbed wire fencing of height of 600 mm confirming to IS:298 at top of chain link fencing shall be provided with 4 strands of barbed wire hot dip galvanised wire of 12G comprising of 3 ply of wires with barbs of 16G spaced at 100mm. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25 x 6 mm GI flat stretcher bar at end posts, accessories etc all complete. Structural post shall be separately paid under item 2007. Payment terms - a) On receipt of chain link fencing at site - 50%; b) On completion of erection & fixing - 50%.	350	RM		
19.2	2003A	Supplying and erecting in position 2.4 m high PVC coated gavanised chain linked fencing of minimum 8 gauge (including PVC coating) of mesh size 75 mm x 75 mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 8 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 1 m 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, 25 x 6 mm GI flat stretcher bar at end posts etc all complete. Structural post shall be paid separately. Payment terms - a) On receipt of chain link fencing at site - 50%; b) On completion of erection & fixing - 50%.	260	RM		
19.3	2008	Supply, fabrication and fixing of mild steel posts for fencing including painting etc all complete.	2	MT		
19.4	2010	Supply, fabrication and installing in position and testing MS gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS aldrops with locking arrangement, tempered steel pivot, guide track of MS tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc all complete as per specification.	2	MT		
20.0	**2100**	**WATER SUPPLY** **(Water supply work including men, material, equipment etc at any level as per specification, drawings and as directed by engineer)**				
20.1	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 - 15 mm nominal bore.	35	NO		
20.2	2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15 mm nominal bore.	60	NO		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
20.3	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.				
20.3.1	a	25 mm nominal bore.	40	NO		
20.3.2	b	50 mm nominal bore.	25	NO		
20.4	2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrsive paint, complete for internal works with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc all complete for following sizes.				
20.4.1	a	15 mm nominal bore.	500	RM		
20.4.2	b	20 mm nominal bore.	450	RM		
20.4.3	c	25 mm nominal bore.	420	RM		
20.5	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.				
20.5.1	a	15 mm nominal bore.	580	RM		
20.5.2	b	20 mm nominal bore.	490	RM		
20.5.3	c	25 mm nominal bore.	420	RM		
20.5.4	d	50 mm nominal bore.	310	RM		
20.6	2106	Providing and fixing 610 mm x 453 mm x6 mm thk mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	4	NO		
20.7	2106A	Providing and fixing 450 mm x 750 mm high square edge 6 mm thk float glass mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	20	NO		
20.8	2107	Providing and fixing 610 mm x 127 mm x 6 mm thk clear glass with CP Guard rails and mounted on CP brackets etc all complete.	4	NO		
20.9	2108	Providing and fixing 25 mm diameter stainless steel towel rails (600 mm x 25 mm) all complete.	35	NO		
20.10	2109	Providing and fixing 20 mm dia chromium plated MS.pipes wall mounted towel rod with CP brackets etc all complete.	4	NO		
20.11	2110	Providing and fixing CP soap holder mounted with CP screws etc all complete.	4	NO		
20.12	2111A	Providing and fixing stainless steel liquid soap dispenser. Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on SS brackets etc all complete.	4	NO		
20.13	2112A	Providing and fixing glazed vitreous wall mounted SSpaper roll holder with suitable cover cum cutter fitted with CP screws etc all complete.	20	NO		
20.14	2113	Providing and fixing chromium plated brass shower rose with 15 or 20 mm inlet all complete.	4	NO		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
20.15	2114	Providing & fixing in position PVC 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.				
20.15.1	a	1000 litres capacity.	6	NO		
20.15.2	b	2000 litres capacity.	8	NO		
20.15.3	c	5000 litres capacity.	2	NO		
20.16	2115	Providing and fixing approved stainless steel sink with integrated drainboard as per IS:13983 of size 915 x 460 x 178mm with CI brackets, stainless steel chain with rubber plug 40 mm, CP brass waste trap with necessary union complete including painting the fittings, cutting and making good the wall where required etc all complete.	4	NO		
20.17	2116A	Providing and fixing minimum 600 mm PORCELAIN TRAY with suitable with CP screws etc all complete.	3	NO		
20.18	2117A	Providing and fixing recessed porcelain soap tray all complete.	3	NO		
20.19	2118A	Providing and fixing ROBE HOOKS with suitable CP screws all complete.	4	NO		
21.0	**2200**	**SANITARY WORKS** **(Sanitary work including all labour, material, equipment etc at any level as per specification, drawings and as directed by engineer)**				
21.1	2201	Supply and fixing glazed vitreous china Wash Basin conforming to IS:2556 part 4 of oval shape with RS or C. brackets painted white, 15 mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32 mm chromium plated brass bottle trap and waste of standard pattern, 32 mm 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.				
21.1.1	a	White.	25	NO		
21.1.2	b	Colored.	10	NO		
21.2	2202	Providing and fixing approved vitreous china laboratory sink of size 600 x 400 x 200 mm conforming to IS:2556 (part-5) with RS or CI brackets, chromium plated brass chain with rubber plug 40 mm, CP brass waste and 40 mm CP brass trap with necessaary union complete including painting the fittings, cutting and making good the wall where required etc all complete.	6	NO		
21.3	2203	Providing and fixing stainless steel kitchen sink of size 750 x 510 x 200 mm conforming to IS:13983 including all fittings etc all complete.	2	NO		
21.4	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 CP connections etc all complete.				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
21.4.1	a	Floor mounted.	20	NO		
21.4.2	b	Wall mounted.	10	NO		
21.5	2205	Providing and fixing colour glazed vitreous indian type Orissa pattern (580 x 440 mm) 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 CP connections etc all complete.	10	NO		
21.6	2206	Providing and fixing white flat back glazed vitreous china urinals of size 440 x 265 x 355 mm with photo voltaic control flushing system as per IS:2556 (part 6, section 1) with flush pipes, lead pipes, gratings, traps and necessary CP fittings etc all complete.	30	NO		
21.7	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, back filling shall be paid separately as per relevant item. Payment terms - a) On receipt of material at site - 50%; b) On completion of erection & fixing - 50%.				
21.7.1	a	200 mm dia.	1200	RM		
21.7.2	b	300 mm dia.	700	RM		
21.7.3	c	450 mm dia.	610	RM		
21.7.4	b	600 mm dia	410	RM		
21.7.5	e	900mm dia	320	RM		
21.8	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, back filling shall be paid separately as per relevant item. Payment terms - a) On receipt of material at site - 50%; b) On completion of erection & fixing - 50%.				
21.8.1	a	150 mm dia.	60	RM		
21.8.2	b	250 mm dia.	50	RM		
21.8.3	c	300 mm dia.	40	RM		
21.8.4	d	500 mm dia.	45	RM		
21.9	2210	Providing, laying light duty non pressure NP4 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete for following. Excavation, back filling shall be paid separately as per relevant item. Payment terms - a) On receipt of material at site - 50%; b) On completion of erection & fixing - 50%.				
21.9.1	a	450 mm dia.	60	RM		
21.9.2	b	600 mm dia.	60	RM		
21.9.3	c	900 mm dia.	60	RM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
21.10	2211	Providing and fixing CI manhole heavy duty cover of size 600 mm x 450 mm including frame from reputed manufacture etc all complete.	30	NO		
21.11	2212	Providing and fixing circular heavy duty CI manhole cover of 600 mm dia with frame etc all complete.	30	NO		
21.12	2213	Providing and fixing square mouth SW gully trap grade 'A' complete with CI grating, brick masonry chamber and water tight CI cover with 300 x 300 mm (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. Excavation, back filling shall be paid separately as per relevant item.				
21.12.1	a	100 x 100 mm P or S type.	50	NO		
21.12.2	b	150 x 100 mm P or S type.	40	NO		
21.12.3	c	150 x 150 mm P or S type.	30	NO		
21.13	2215	Providing and fixing CI floor traps with CP jalli all complete.	35	NO		
21.14	2217	Providing and installing approved brand single tap water cooler of 80 ltr cooling capacity all complete.	5	NO		
21.15	2218	Providing and installing approved brand single tap water cooler of 150 ltr cooling capacity all complete.	6	NO		
21.16	2219	Providing and fixing white viterous urinal partitions of size 675 x 325 x 85 mm all complete.	10	NO		
21.17	2220	Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS:10592) all complete as per specification.	5	NO		
21.18	2221A	Providing and fixing heavy duty cast iron pipes for above and below ground sanitory works with water tight lead joint, fixing clamps, excavation, filling, disposal etc all complete for the following.				
21.18.1	a	75 mm dia pipes .	100	RM		
21.18.2	b	100 mm dia pipes.	140	RM		
21.18.3	c	150 mm dia pipes.	120	RM		
21.18.4	d	200 mm dia pipes.	50	RM		
21.18.5	e	250 mm dia pipes.	30	RM		
22.0	**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. Unless specified otherwise, steel will be supplied by BHEL free of cost as per tender)**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.1	2301A	Transport from store, 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), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20^{o} C for welding over 20 mm and upto 40 mm & 66^{o} C for welding over 40 mm and upto 63 mm & 110^{o} C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus/ waste steel materials to store etc all complete including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL for all structural steel items, **excluding mill bay and bunker area.** Structural steel will be supplied by BHEL free of cost as per tender. Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.	6650	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.2	2301B	Transport from store, 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), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20^{o} C for welding over 20 mm and upto 40 mm & 66^{o} C for welding over 40 mm and upto 63 mm & 110^{o} C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 Part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus/ waste steel materials to store etc all complete including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL for structural steel work of **mill bay and bunker.** Structural steel will be supplied by BHEL free of cost as per tender. Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.	4300	MT		
22.3	2301C	Transport from store, erection of fabricated items of columns, beams, laced purlins, space frames, hangers, struts, wall beams, bracings, cleats, base plates, splice plates, collection of fabricated items from stores, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, 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 & removal of all temporary structures (weight of temporary structures not payable), return of surplus to store etc all complete, of **boiler structures.** Fabricated material will be supplied by BHEL free of cost.	300	MT		
22.4	2302	Extra over ST NO 2301A & 2301B for blast cleaning of steel structures to near white metal surface (Sa 2 1/2) and applying epoxy based zinc phosphate primer in coats of minimum 25 micron (DFT) at shop and 25 micron (DFT) after erection, instead of primer coat of red oxide zinc-chromate, including touch-up painting etc all complete.	4	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.5	2303	Extra over ST NO 2301A & 2301B for providing and application of two coats of primer consisting of chemical resistant epoxy resin and hardener (Minimum 1 kg of primer mix shall be consumed for priming of 4 to 5 sqmm area of surface) instead of primer coat of red oxide zinc-chromate, including touch up painting etc all complete.	4	MT		
22.6	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, scoffolding etc all complete.	4800	MT		
22.7	A2304	Providing and applying two coats of anti corrosive 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, scoffolding etc all complete.	5600	MT		
22.8	2305	Providing and applying two coats of epoxy based colour finish 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, scoffolding etc all complete.	4	MT		
22.9	2306	Providing, laying and clamping of crane rails over the crane girder at all elevations as per IS:3443 including all fixtures, clamps, testings etc all complete as per drawing and specification.	20	MT		
22.10	2307	Receipt, 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, packing, grinding, drilling, welding, edge preparation, etc all complete.	40	MT		
22.11	2308	Receipt, 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.	10	MT		
22.12	2309	Extra over above ST NO 2301A/ 2301B/ 2307 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.	12	MT		
22.13	2310	Receipt, 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 300 mm long for structural steel work etc all complete.	2	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.14	2311	Receipt, 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.	45	MT		
22.15	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-alighment of all adjacent connected members to their correct positions (weight of such adjacent members and temporarily dismantled members not payable), scafolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	80	MT		
22.16	2313	Addition to, alterations in and/or modifiction 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.				
22.16.1	a	In erected position.	20	MT		
22.16.2	b	In fabrication yard.	30	MT		
22.17	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 posiion, 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 dismnatled members, re-alignment of adjacent connected members (weight of such temporarily dismantled members and adjacent members not payable), scafolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	20	MT		
22.18	A2316	Transportation from store, fabrication and erection of minimum 3.0 mm thick stainless steel liner of grade AISI-304; finish grade 2B (Cold rolled, annealed & pickled and skin passed) on MS plate for inside surfaces of hopper & mouth of hopper of bunkers including fixing with stainless steel studs, bolting (including countersunk), welding with electrode classification E308L for welding of stainless steel to stainless steel and E309 for stainless steel to mild steel etc all complete. Stainless steel plate will be supplied by BHEL free of cost as per tender.	45	MT		
22.19	2317	Providing and fixing in position PTFE type sliding bearings of reputed manufacturer, individual bearing suitable for required vertical loads as per the construction drawings and for maximum displacement of ±50 mm including all taxes, duties, transportation, installation, drilling, bolting, erecting, aligning etc all complete for following vertical loads.				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.19.1	a	20 Tons.	10	NO		
22.19.2	b	25 Tons.	10	NO		
22.19.3	c	40 Tons.	10	NO		
22.19.4	d	50 Tons.	10	NO		
22.19.5	e	60 Tons.	5	NO		
22.20	2318	Providing and fixing flexible open ended bellow strap of neoprene of minimum thickness 2 mm and minimum width 200 mm with aluminium stripped edges as sealing below top of bunker and bottom of tripper floor to avoid the coal dust nuisance all complete. Payments terms - a) On receipt of materials at site - 65%; b) Erection & fixing - 35%.	200	RM		
22.21	2319	Supply, fabrication and fixing of stainless steel 304 grade pipe hand railing of 32 mm/ 40 mm dia including transportation, loading/unloading etc all complete. Payments terms - a) On receipt of materials at site - 65%; b) Erection & fixing - 35%.	4	MT		
22.22	2320	Supply, fabrication and fixing of GI pipe hand railing (900 mm high) of 32 mm/ 40 mm dia (Medium Grade) including transportation, loading/ unloading, painting etc all complete. Payments terms - a) On receipt of materials at site - 65%; b) Erection & fixing - 35%.	30	MT		
22.23	2321	Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc all complete as per instruction of BHEL engineer in writing.	10	RM		
22.24	2322	Conducting ultasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc all complete as per instruction of BHEL engineer in writing.	10	RM		
22.25	2323	Conducting ultasonic test on steel plates as per ASTM-A435 or equivalent wherever specified including equipments, measuring devices, gauges, test report etc all complete as per instruction of BHEL engineer in writing.	10	SQM		
22.26	2324	Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc all complete as per instruction of BHEL engineer in writing.	10	RM		
22.27	2325	Conducting dye penetration test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges etc all complete (over and above the work already specified in the specifications as per instruction of BHEL engineer in writing.	10	RM		
22.28	2326	Supply, fixing lightning arrester and air terminal over roof of power house building, pump house and other dtructures inluding all materials, labour, electrodes etc complete (all materials to be supplied by the contractor).	20	NO		
23.0	**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 for the following)**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
23.1	2401	Preparation of sub grade by excavating earth to required depth for all types of soil/ rock, dressing to camber and consolidating the base including making good the undulation etc and disposal of surplus earth within a lead upto 1 km etc all complete.	6522	CUM		
23.2	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 97% 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.	1373	CUM		
23.3	2403	Providing, stacking & laying granular morrum for shoulder including watering, compaction with road roller to required camber etc all complete.	434	CUM		
23.4	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.	2160	CUM		
23.5	2405	Providing & laying water bound macadam base course in layers of required thickness with stone aggregate 63 mm to 40 mm 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.	1620	CUM		
23.6	2406	Providing & laying water bound macadam base course with stone aggregate 50 mm to 20 mm 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.	435	CUM		
23.7	2407	Providing & applying tack coat of low viscosity liquid bitumen of grade 80/ 100 confirming to IS:73, 217 or 454 as applicable @10 kg/ 10 sqm for untreated WBM surface including scraping, cleaning with compressed air etc all complete.	11670	SQM		
23.8	2408	Providing & applying tack coat of low viscosity liquid bitumen of grade 80/ 100 confirming to IS:73, 217 or 454 as applicable @ 6 kg/ 10 sqm for bituminous surface including cleaning with compressed air etc all complete.	3188	SQM		
23.9	2409	Providing, mixing & laying of bituminous macadam 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.				
23.9.1	a	75 mm compacted thickness.	6420	SQM		
23.10	2410	Providing, mixing & laying 20 mm compacted open graded premix carpet 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.	14400	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
23.11	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 9.8 kg/ 10 sqm followed by a cover of stone chips at the rate of 0.09 cum/ 10 sqm including rolling etc all complete.	7200	SQM		
23.12	2412	Supplying and laying 400 mm x 150 mm x 350 mm deep precast concrete kerb stone of grade M20 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.	2175	RM		
23.13	2414	Supply and laying 150 mm dia RCC 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. Excavation & backfilling shall be paid separately as per relevant item.	521	RM		
23.14	2415	Dismantling of existing road consisting of premix carpet, kerb stone/ brick on edge, bitumen macadem course, WBM, prepairing subgrade to receive new WBM including camber consolidation including disposal of debris within a lead of 1 km etc all complete.	1875	SQM		
23.15	2416	Providing 25 mm compacted thick premix carpet on existing/ damaged road surfaces in a single course composed of suitable small size aggregate premixed with a bituminous binder using medium setting grade bitumen on the existing base including tack coat, cleaning of existing surface, mixing, applying, rolling etc all complete.	1913	SQM		
23.16	2417	Transportation of coal boulder of various sizes (400-900 mm), making the boulders into smaller sizes (200 mm & below), laying the bouders for making the sub-base of road, transportation & laying of coal mill rejects spreading to fill the voids after laying boulders, rolling and making the surface smooth prepared for laying of WBM, etc as per instruction of engineer, all copmlete. Area for picking of coal boulders & mill rejects shall be identified by BHEL within plant premises.	15000	CUM		
23.17	2418	Providing & laying of stone dust to fill the voids after laying boulders/ stone, rolling and making the surface smooth for laying of WBM etc as per instruction of engineer, all copmlete.	10000	CUM		
23.18	2418A	Supplying and filling sand for preparation of read sub-base/ sub-grade in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/ compaction by manual/ mechanical means, dressing, royalty (if any) etc all complete.	6000	CUM		
24.0	**M**	**MISCELLANEOUS WORKS-2** **(Miscellaneous works including all labour, material, equipment etc at any level unless otherwise specified as per specification, drawings and as directed by engineer)**				
24.1	M1	Pumping out water by de-watering pump from CW pit, feed pool, cooling tower basin, water logged areas etc as an when required to facilitate erection & commissioning including provision of delevery pipe upto 150 m etc all complete as per site condition and instruction of engineer.	750	HP-HR		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
24.2	M2	Engagement of manpower for cleaning and house keeping with all equipments, T&P etc from various floor of power house and other buildings, boiler, ESP, mill area and stacking at designated place at 0.0 M with a lead of 100 m.	2500	MAN-DAY		
24.3	M3	Removal and disposal of scrap steel, scrap wood, broken packing crates, cable scrap, debris and other waste materials etc from project site to a designated place within 5 km range, with all manpower T&P etc including loading and unloading as directed by BHEL engineer.				
24.3.1	a	Steel.	75	MT		
24.3.2	b	Wood/ cable scrap.	325	CUM		
24.3.3	c	Debris & other waste materials.	500	CUM		
24.4	M4	Supply, fabrication and Installation of GSS Zinc cCoating 180 gms/m^2 ducting of ducting for AC system in power house building area. Alll materials shall be supplied by contractor after obtaining prior approval.				
24.4.1	i	18G.	250	SQM		
24.4.2	ii	20G.	400	SQM		
24.4.3	iii	22G.	750	SQM		
24.4.4	iv	24G.	1500	SQM		
24.5	M5	Supply and installation of 50 mm thick glass wool with Al faced foil thermal insulation of supply air duct & return air duct with finish.	3000	SQM		
24.6	M6	Supply and installation of 25 mm thick resin bonded fibre glass for accoustic insulation with finish.	150	SQM		
24.7	M7	Supply and installation of MS Angle, Rods etc as specified for duct support	10	MT		
25.0	**LPP**	**LP PIPING** **(Miscellaneous works including all labour, material, equipment etc at any level unless otherwise specified as per specification, drawings and as directed by engineer)**				
25.1	LPP1	Receipt & handling from storage, erection, welding, non-destructive testing, inspection, internal cleaning & painting (as per scope), final painting, testing & commissioning of circulation water piping system (CW (NB 3300)/ ACW (NB 700-800)) Carbon Steel (IS:2062) piping and associated material (including fittings, hardwares, instruments and valves etc) as applicable as per tender and drawings etc complete. BHEL shall supply fabricated item free of cost. Payment terms - (a) Erection - 30%; (b) Alignment - 5%; (c) Welding - 38%; (d) NDT/ hydraulic test/ any other test to confirm the intergrity of welds (as per FQP) - 10% (e) Wrapping/ coating/ painting completion - 10%, (f) Charging of line - 5% and (g) As-built drawing submission - 2%.	5400	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
25.2	LPP2	Receipt & handling from storage, fabrication, erection, welding, inspection, fixing/ embedding, painting etc of hangers, supports & structures, misc supporting material etc all complete. BHEL shall supply fabricated item free of cost. Payment terms - (a) Erection - 60%; (b) Welding - 35%; (c) Painting completion - 3% and (d) As-built drawing submission - 2%.	180	MT		
25.3	LPP3	Receipt & handling from storage, erection, welding, inspection, fixing/ embedding, etc of RE joints, expansion bellows, annubars & flow elements all complete. BHEL shall supply fabricated item free of cost. Payment terms - (a) Erection - 60%; (b) Welding - 38% and (c) As-built drawing submission - 2%.	54	MT		
25.4	LPP4	Fabrication of mitre bends, reducer, tees of various sizesfor various carbon steel piping system etc from straight pipes. Straight pipes will be supplied by BHEL free of cost (Receipt & handling of the pipes are included in contractor's scope). Payment terms - (a) Fabrication - 80%; (b) Erection - 15% and (c) Charging of the line where these items are used - 5%.	90	MT		
25.5	LPP5	Supply, application of wrapping/ coating materials of burried pipe as per the specification below - One coat of coal tar primer of approved quality followed by a final coating of epoxy resin & coal tar blend and then two layers, each 2 mm thick of coal tar tape as outer wrap shall be applied to the external surface of the coating. FRG reinforced plastic or coal tar wrap shall be used conforming to AWWA-C-203/IS:10221 or approved relevant codes/ standards. Contractor shall submit detailed protection procedure for approval. The pipes that will be buried underground shall be spark tested after completion of wrapping of each sections/ field jointing to check the quality of insulation that has been provided on the pipe (Quantity indicated is surface area of buried pipe in sqm). Payment terms - (a) Receipt of material at site - 50% and (ii) Application & completion - 50%.	36000	SQM		
26.0	**TOTAL**					
27.0	**3300**	**NON-SCHEDULE ITEMS** (For items not covered above schedule, quote % below/ at par/ above of DSR-2007)				
27.1	a	Rate of complete item.			___ %	
27.2	b	Rate of supply of materials at site only.			___ %	
27.3	c	Rate for execution complete excluding supply of materials.			___ %	

VOLUME-III
PRICE SCHEDULE, REV-1
(PACKAGE-C)

Civil, structural, architectural etc of civil superstructure work of 1x500 MW unit # 3 for 2x500 MW units at Sagardighi STPP, WB.

TENDER NO - PSER:SCT:SDG-C1274:11

SCH-3 - SUPPLY PART

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.0	**400**	**REINFORCEMENT**				
1.1	401 & 406	Supplying, transportation to site, etc of mild steel reinforcements conforming to grade 1 of IS:432 Part 1 in concrete & brickwork as per specifications & drawings. Materials shall be supplied by contractor from RINL/ SAIL/ TISCO or BHEL/ customer approved manufacturer.	140	MT		
2.0	**700**	**MS EMBEDMENTS**				
2.1	704	Supply, transportation to site etc mild steel foundation bolt assembly conforming to IS:2062 and Grade 1 of IS:432 in concrete all complete.	20	MT		
3.0	**1500**	**ROOFING/ SIDE CLADDING**				
3.1	1501A	Designing, supply, transportation to site etc permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to Class 3 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 100 mm 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 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 @ 260 mm 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.				
3.1.1.	a	Span upto 1800 mm.	5800	SQM		
3.1.2	b	Span exceeding 1800 mm and upto 2500 mm.	986	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
3.2	1503A	Designing, supply, transportation to site profiled external cladding sheet manufactured out of 0.55 mm TCT (Total coated thickness) of permanently colour coated zinc alume steel (150 gsm zinc-aluminium alloy coating total of both sides as per AS:1397:1993) having 300 MPa yield strength. The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side.The sheet shall have 500 mm cover width, 47 mm height crests at 250 mm centres with special male/ female side laps and anti-siphoning features to prevent leakage.				
3.2.1	a)	For final painting with Silicon Modified Polyester (SMP).	5800	SQM		
3.2.2	b)	For final painting with Super Polyester XRW (as per AS/NZS-2728:1997 Category3).	3850	SQM		
3.3	1505A	Designing, supply, transportation to site profiled Internal Cladding sheet manufactured out of 0.6 mm TCT (Total coated thickness) of permanently colour coated zincalume steel (150/ 180 gsm zinc-aluminium alloy coating mass total of both sides as per AS:1397:1993). The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side. The sheet shall have 980 mm cover width, 28 mm height crests at 195 mm centres with special male/ female side laps and anti-siphoning features to prevent leakage. The sheet shall be fixed to the structure by means of self drilling fastners no 12-24 x 25 mm conforms to AS:3566 Class-3 long at valley. Sub- girts of size 50 mm x 50 mm x 50 mm manufactured out of 16G GI (1.6 mm GI) 'Z' shape would be fixed the inner sheeting on face side at runner locations all complete as per specification.				
3.3.1	a)	For final painting with Silicon Modified Polyester (SMP).				
3.3.1.1	i)	For zincalume sheet 150 gsm and having 550 Mpa yield strength.	1860	SQM		
3.3.1.2	ii)	For zincalume sheet 180 gsm and having 240 Mpa yield strength.	890	SQM		
3.3.2	b)	For final painting with Super Polyester XRW (as per AS/ NZS-2728:1997 Category3).				
3.3.2.1	i)	For zincalume sheet 150 gsm and having 550 Mpa yield strength.	780	SQM		
3.3.2.2	ii)	For zincalume sheet 180 gsm and having 240 Mpa yield strength.	470	SQM		
4.0	**1600**	**FALSE CEILING**				
4.1	1604	Suply, transportation to site permanently colour coated aluminium false ceiling of approved colour with stove enamel finsih of approved make in LINEAR and SQUARE type with corrosion resistance aluminium alloys panels of minimum thickness 0.5 mm including 50 mm thick mineral wool insulation (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. AC ducts etc suitable MS channel (minimum MC75) grid 1200 c/c maximum shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. The work to be complete as per specifications, drawings and direction of engineer.	880	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
4.2	1606A	Supply, transporation to site 12.5mm thick glass fibre reinforced gypsum plastic borad in plan curve or in elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers etc including two or more coats of acrylic emulsion paint of approved colour to give an even shade with smooth finish all complete as per architectural design and detail metal suspension system as per ASTM C-635 shall be hot dipped MS galvanized (grade 180 as per IS:277) nominal size of T-section shall be 24 x 38 mm or 24 x 25 mm cross runners. 24mm wide exposed flange surface shall be permanently color coated. Suspension system shall be as per manufaturer's specification supported over movment platform including 25 mm thick resin bonded mineral wool insulation (as per IS:8183) bound in polythene bags on top of ceiling.	180	SQM		
5.0	**1700**	**RAIN WATER DOWN TAKE PIPES**				
5.1	1707A	Supply, transportation to site GI down take pipes conforming to IS:1239/ IS:3589 of heavy duty all complete for following diameters.				
5.1.1	a	100 mm dia.	80	RM		
5.1.2	b	150 mm dia.	1600	RM		
5.1.3	c	200 mm dia.	600	RM		
6.0	**1800**	**MISCELLANEOUS WORKS**				
6.1	1810	Sypplying, transportation to site rails, guide rails, fixtures, bolts, etc for transformer, rail track all complete.	40	MT		
6.2	1819	Design, manufacturing/ fabrication, supply, transportation to site 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, brass used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fastners etc, cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc 750 gms/ sqm, following by an application of etching primer and dipping in black bitumen as per BS:3416, erection along with a second stage concreting to true plumb and levels, submission of drawings/ fabrication drawings for engineers approval etc all complete. Only structural steel including embedments shall be considered for payment purpose. SS component will be paid separately.	25	MT		
6.3	1820	SS component mentioned under ST NO 1819 above.	2	MT		
6.4	1821	Supply, transportation to site structural steel work for stationary screens made out of rolled sections and/ or plates including cutting, straightening if required, edge preparation, bolting/ welding of joints, cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc as 750 gms/ sqm followed by application of an etching primer and dipping in black bitumen as per BS:3416 etc all complete.	25	MT		
7.0	**2300**	**STRUCTURAL STEEL**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
7.1	2307	Supply, fabrication, transportation to site 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.	40	MT		
7.2	2308	Supply, fabrication, transportation to site 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.	10	MT		
7.3	2310	Supply, fabrication, transportation to site 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 300 mm long for structural steel work etc all complete.	2	MT		
7.4	2311	Supply, fabrication, transportation to site 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.	45	MT		
8.0	**TOTAL**					

VOLUME-III
PRICE SCHEDULE, REV-1
(PACKAGE-D)

Civil, structural, architectural etc of civil superstructure work of 1x500 MW unit # 4 for 2x500 MW units at Sagardighi STPP, WB.

TENDER NO - PSER:SCT:SDG-C1274:11

PREAMBLE

1.0	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with various volumes of tender as per NIT together with subsequent changes/ modifications etc thereto as applicable as on date of submission of price offer.
2.0	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions.
3.0	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4.0	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, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, 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.
5.0	Unless otherwise specified & except for tender on lumpsum basis, for all item rate based tenders, the quantities of the various items mentioned in price schedule 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.
6.0	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
7.0	Rates shall be quoted 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.
8.0	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted.
9.0	The tender shall be deemed to have studied the specifications, details of work to the done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
10.0	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.
11.0	Evaluation & awarding will be done seperately on PKG-C & PKG-D. PKG-C shall be decided first and who-so-ever is successful in PKG-C shall not be considered for PKG-D (They will not be considered for Reverse Auction/ price bid opening of PKG–D).

VOLUME-III
PRICE SCHEDULE, REV-1
(PACKAGE-D)

Civil, structural, architectural etc of civil superstructure work of 1x500 MW unit # 4 for 2x500 MW units at Sagardighi STPP, WB.

TENDER NO - PSER:SCT:SDG-C1274:11

SCH-1 - TOTAL PRICE

SL NO	DESCRIPTION	AMOUNT (Rs)
1.0	TOTAL PRICE AS PER SCH-2 (SERVICE PART).	
2.0	TOTAL PRICE AS PER SCH-3 (SUPPLY PART).	
3.0	**GRAND TOTAL PRICE (SCH-2 & SCH-3 TOGETHER)**	

NOTE

1.0	Bidder's quoted grand total price at SL NO 3.0 above shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.
2.0	Price format shall not be changed by bidder in any case, since it may lead to cancellation of offer.

VOLUME-III
PRICE SCHEDULE, REV-1
(PACKAGE-D)

Civil, structural, architectural etc of civil superstructure work of 1x500 MW unit # 4 for 2x500 MW units at Sagardighi STPP, WB.

TENDER NO - PSER:SCT:SDG-C1274:11

SCH-2 - SERVICE PART

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.0	**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 for the following)**				
1.1	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.				
1.1.1	a	Depth from ground level but not exceeding 2 m.	40256	CUM		
1.1.2	b	Depth exceeding 2 m but not exceeding 4 m.	12156	CUM		
1.1.3	c	Depth exceeding 4 m but not exceeding 6 m.	4126	CUM		
1.1.4	d	Depth exceeding 6 m but not exceeding 8 m.	4220	CUM		
1.1.5	e	Depth exceeding 8 m but not exceeding 10 m.	4225	CUM		
1.1.6	f	Depth exceeding 10 m but not exceeding 15 m.	100	CUM		
1.2	102	Extra over ST NO 101 for dewatering of ground water by well point method as per IS:9759.	2215	CUM		
1.3	103	Earth work in excavation in soft rock (rock without any recovery of exacavated materials in the form of hard stone/ boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc but does not require chiselling or blasting including setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/ compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 500 m, spreading/ levelling of disposed materials etc all complete for following depths below ground level.				
1.3.1	a	Depth from ground level but not exceeding 2 m.	320	CUM		
1.3.2	b	Depth exceeding 2 m but not exceeding 4 m.	310	CUM		
1.3.3	c	Depth exceeding 4 m but not exceeding 6 m.	250	CUM		
1.3.4	d	Depth exceeding 6 m but not exceeding 8 m.	200	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.3.5	e	Depth exceeding 8 m but not exceeding 10 m.	200	CUM		
1.3.6	f	Depth exceeding 10 m but not exceeding 15 m.	50	CUM		
1.4	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 500 m and compacted as specified including re-excavation of stacked earth, watering, ramming/ compaction by manual/ mechanical means, dressing etc all complete.for the following.				
1.4.1	a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII).	656	CUM		
1.4.2	b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII).	8250	CUM		
1.4.3	d	Each layer compacted so as to achieve at least 75% relative density as per IS-2720 part XIV in case of sandy soils.	5050	CUM		
1.5	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.				
1.5.1	a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII).	3560	CUM		
1.5.2	b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII).	10550	CUM		
1.5.3	d	Each layer compacted so as to achieve at least 75% relative density as per IS-2720 part XIV in case of sandy soils.	4050	CUM		
1.6	109A	Extra over ST NO 101 and 103 to 107 for carriage of excavated earth/selected materials for 500 m to 1KM beyond an initial lead of 500 m.	12550	CUM		
1.7	119B	Extra over ST NO 101 and 103 to 107 for carriage of excavated earth/selected materials from 1KM to 2KM	2000	CUM		
1.8	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, ramming/ compaction by manual/ mechanical means, dressing etc all complete for the following.				
1.8.1	a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII).	970	CUM		
1.8.2	b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII).	2520	CUM		
1.8.3	c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII).	2	CUM		
1.8.4	d	Each layer compacted so as to achieve at least 75% relative density as per IS-2720 part XIV in case of sandy soils.	2150	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.9	111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/ compaction by manual/ mechanical means, dressing, royalty (if any) etc all complete.	325	CUM		
2.0	**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 for the following. Unless specified otherwise, cement will be supplied by BHEL free of cost as per tender)**				
2.1	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.	300	CUM		
2.2	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.	1125	CUM		
2.3	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.	200	CUM		
2.4	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.				
2.4.1	a	M15 grade.	40	CUM		
2.4.2	b	M20 grade.	1800	CUM		
2.5	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.				
2.5.1	a	M25 grade.	14500	CUM		
2.5.2	b	M30 grade.	3550	CUM		
2.6	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.				
2.6.1	a	M25 grade.	16608	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.6.2	b	M30 grade.	400	CUM		
2.7	207	Providing and laying design mix cement concrete confirming to IS:456 & IS:10262-2009 for reinforced concrete works of grade M30 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 125 mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing.	2650	CUM		
2.8	208	Providing and laying design mix cement concrete as per IS:456 & IS:10262-2009 of grades mentioned below for reinforced concrete works using graded aggregate in top decks of all machine foundations supported on vibration isolation system (excluding supply and installation of vibration system) and top deck of TG foundation at all levels including addition of suitable plastisizers conforming to IS:9103 to achieve a slump more than 125 mm in concrete as per manufacturers recommendation, preperation of scheme for concreting, getting it approved by engineer, labour, materials, equipment, handling, batching, transporting, mixing, pumping, placing, leveling, vibrating, compacting, curing, testing, cleaning and rendering the exposed surface with cement sand mortar to give a smooth and even surface, maintaining and submitting records of concreting, petrographic examination and potential reactivity of aggregate etc all complete as per specification, drawing and instructions of engineer, including UPV testing as directed by engineer, rectification of the defects in concreting observed by ultra-sonic pulse velocity (UPV) testing by cement/ epoxy grout etc, but excluding formwork, staging, reinforcement, embeddments and temperature control of concrete. Payment terms - a) After casting 75%; b) After receipt of ultrasonic test report - 25%.				
2.8.1	a	M30 grade (with 20 mm nominal size graded stone aggregate).	800	CUM		
2.8.2	b	M35 grade (with 20 mm nominal size graded stone aggregate).	2050	CUM		
2.9	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.	1950	CUM		
2.10	210	Extra over ST NO 205 to 207 for conducting UPV test for concrete at all levels including all equipments, making necessary arrangements, staging, submission of report etc all complete as directed by engineer and as per specification.	250	CUM		
2.11	211	Providing and encasing of structural steel member with concrete using nominial aggregate size of 12.5 mm 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.				
2.11.1	b	M25 grade.	580	CUM		
2.12	212	Screed concrete conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5 mm/ 6 mm nominal size on the roof at any level or thickness, drains etc complete as per following.				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.12.1	a	1:2:4 (1 part cement, 2 part sand, 4 parts of aggregate by volume).	540	CUM		
2.13	213	Providing and laying design mix cement concrete as per IS:456 & IS:10262-2009 for reinforced concrete works using graded aggregate for concrete in precast works like roof slabs /trench covers, fins, lintels, chajas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/ moulds, curing, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transpoting, all leads, erection without damage, setting in position with cement sand mortar (1:3), filling the gaps between adjacent preacast units with M30 grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc complete with graded aggregate (20/ 12.5/ 10 mm) and as per specification and drawing for following grades.				
2.13.1	a	M25 grade.	150	CUM		
2.14	214	Providing and laying design mix cement concrete as per IS:456, IS:3370 & IS:10262-2009 for reinforced concrete works using graded aggregate for concrete in water retaining/ conveying structures including addition of suitable plastisizer cum waterproofing cement additives confirming to IS:9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS:2545 and specification with 20 mm nominal size graded aggregate for following grades.				
2.14.1	a	M25 grade.	3400	CUM		
2.15	215	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer.				
2.15.1	a	Plain cement concrete of all grades.	150	CUM		
2.15.2	b	Reinforced cement concrete of all grades.	200	CUM		
2.16	216	Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer including equipment, safety precautions, making good the broken surface etc all complete as per specification, drawing, instructions of engineer but excluding cutting of reinforcement.	1	CUM		
2.17	217	Extra over and above ST NO 216 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer. Measurement shall be on the cross sectional area of reinforcement cut.	150	SQCM		
2.18	218	Cutting reinforced concrete with mechanised tools like core drilling machine etc for cutting pockets, holes, cores in slab, beam, column or foundation as per direction of engineer. Core dia - maximum 100 mm, Length/ depth - Maximum 200 mm.	150	NO		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.19	218A	Cutting of existing concrete/ RCC work (Maximum thickness of concrete is 300 mm) inside existing control room/ existing pump house/ or any existing structures without disturbing routine operation at any level using power tools of (DD2E of HILTI/ BOSCH make) with low noise and dust including cutting reinforcements, removing the rubbish within a lead of 1 km, including making good the broken edges/ surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/ supporting at any level, all complete and as directed by engineer (measurements shall be taken as per cutting surface area).	10	SQM		
2.20	219	Providing and applying curing compound of approved make where ever required as per manufacturer's specification.	40	SQM		
3.0	**300**	**FORM WORKS** **(Providing, fixing and removing formwork at any elevations for all structures, as per specifications and including all labour, material, scaffoldings and centereing complete including pockets etc complete as per drawing, specifications and as per direction of engineer for the following)**				
3.1	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.	12750	SQM		
3.2	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.	45429	SQM		
3.3	303	Fairface formwork with good quality water proof ply wood of required thickness and smooth surface for TG superstructure (above base raft level) including preparation of scheme, designing, submission and approval of staging drawing with sufficient props, braces and ties at every tier of height of approx 4m for all heights.	1850	SQM		
3.4	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.				
3.4.1	a	Upto 150 mm depth.	125	NO		
3.4.2	b	Pockets of depths more than 150 mm and upto 300 mm depth.	60	NO		
3.4.3	c	Pockets of depths more than 300 mm and upto 600 mm depth.	30	NO		
3.4.4	d	Pockets of depths more than 600 mm and upto 1000 mm depth.	40	NO		
3.4.5	e	Pockets of depths more than 1000 mm and upto 1500 mm depth.	6	NO		
4.0	**400**	**REINFORCEMENT**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
4.1	401	Receipt at project site, straightening, cutting, bending, placing in position at any level, binding of mild steel reinforcements conforming to grade 1 of IS:432 part 1 in concrete including cost of binding wire, labour, scaffolding, transportation to & from stores etc all complete as per specifications & drawings.	100	MT		
4.2	402	Providing, straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500 confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by engineer. Reinforcement steel will be supplied by BHEL free of cost as per tender.	2052	MT		
4.3	406	Receipt at project site, providing, straightening cutting, bending, placing in position at any level, binding of mild steel reinforcements in brickwork including cost of reinforcement and binding wire, labour, scaffolding etc complete all as per specifications & drawings.	60	MT		
4.4	407	Providing, straightening, cutting, bending, placing in position at any level, binding in position high yield strength steel reinforcements in brickwork including cost of binding wire, labour, scaffolding etc complete all as per specifications & drawings. Reinforcement steel will be supplied by BHEL free of cost as per tender.	60	MT		
4.5	407A	Straightening of projected reinforcements from concrete column/ foundation/ structures, cleaning and removal of concrete waste, cutting if required, bending, for preparation for next stage of concrete at any level, binding in position of tor steel reinforcements confirming of grade Fe-500 confirming to IS:1786 including cost of binding wire, labour, etc complete all as per specifications, drawings and as directed by engineer (Measurement shall be taken at site as per actual work on joint measurement basis). Excavartion, if any, shall be paid separately as per relevant item.	25	MT		
5.0	**500**	**WATER PROOOFING 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)**				
5.1	501A	Providing and laying underbed grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 15 mm including preparation of surface, batching, mixing, leveling etc all complete. Cement will be supplied by BHEL free of cost as per tender.	3825	SQM		
5.2	502A	Providing and laying rigid insulation (extruded polystyrene blocks) as per relevant IS code in suitable panels over roofs followed by a layer of 15 mm thick cement sand plaster 1:4 (1 cement: 4 coarse sand) and providing of expansion joint at intervals and filling with sealant in both directions as per the recommendation of manufacturer. The block shall be strong enough to withstand without deformation the workload and standard loads expected on the roof. Cost shall include making of fillets, cleaning & preparation of surface, expansion joints including filling with sealants (10 mm thick) at suitable intervals etc all complete for following. Cement will be supplied by BHEL free of cost as per tender.				
5.2.1	a	Average 50 mm thickness.	4720	SQM		
5.2.2	b	Average 75 mm thickness.	2460	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
5.3	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 sqm 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.	7850	SQM		
5.4	508A	Providing and laying pressed precast concrete tiles of 20 mm thickness and size 600x600 mm conforming to IS 13801 with 15 mm thick 1:4 cement mortar over the top most layer of roofing treatment with fine joints including sealing of joints (silicon/ elastomeric sealant) etc all complete. Water proofing paid elsewhere. Cement for mortar will be supplied by BHEL free of cost as per tender.	6850	SQM		
5.5	509	Providing and applying two coats of bitumen grade 85/25 as per IS:702 (@ 1.7 kg/ 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.	2050	SQM		
5.6	512	Anti termite chemical treatment of soil with Chloropyrifos emulsifiable concentrates (1%) conforming to IS:8944 all complete.	920	SQM		
6.0	**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. For approved make and vendors reference technical specification section - C)**				
6.1	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.				
6.1.1	a	12 mm wide joints.	40	SQM		
6.1.2	b	20 mm wide joints.	110	SQM		
6.1.3	c	25 mm wide joints.	6	SQM		
6.1.4	d	50 mm wide joints.	30	SQM		
6.2	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.				
6.2.1	a	12 mm x 25 mm.	230	RM		
6.2.2	b	20 mm x 25 mm.	230	RM		
6.2.3	c	25 mm x 25 mm.	120	RM		
6.2.4	d	50 mm x 25 mm.	120	RM		
6.3	603	Supplying and filling in position hot applied bitumin sealing compund (Grade A) confirming to IS:1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc all complete.				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
6.3.1	a	10 mm x 40 mm.	140	RM		
6.3.2	b	12 mm x 25 mm.	180	RM		
6.3.3	c	20 mm x 25 mm.	100	RM		
6.4	604	Supplying and filling in position hot applied bitumin sealing compund (Grade B) confirming to IS:1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc all complete.				
6.4.1	a	10 mm x 40 mm.	50	RM		
6.4.2	b	12 mm x 25 mm.	40	RM		
6.4.3	c	20 mm x 25 mm.	30	RM		
6.5	605	Providing and sealing of joints with premium grade silicon sealant (Silpruf of GE silicons or approved equivalent) including cleaning of joints, raking out groove, joint filler tapes, application of primer, curing, scaffolding etc all complete as per manufacturer's recommendation for following size groove.				
6.5.1	a	25 mm x 25 mm.	250	RM		
6.5.2	b	50 mm x 25 mm.	380	RM		
6.6	606A	Providing and fixing PVC water stops in joints conforming to IS:12200 & IS:15058 all complete for the following (Bulb or Kicker type).				
6.6.1	a	150 mm wide and 8 mm thick.	6	RM		
6.6.2	b	230 mm wide and 8 mm thick.	20	RM		
6.6.3	c	150 mm wide and 6 mm thick.	30	RM		
6.6.4	d	230 mm wide and 6 mm thick.	350	RM		
7.0	**700**	**MS EMBEDMENTS** **(Embedments including all labour, material, equipment, transportation, handling etc at any level as per specification, drawings and as directed by engineer)**				
7.1	701A	Transport, fabricating and fixing of mild steel embedments, inserts, angle, channels, plates of dimensions as required etc including welding, bolting, cutting, drilling, scaffolding, setting etc all complete. Structural steel shall be supplied by BHEL free of cost as per tender.	100	MT		
7.2	701B	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle/ channel/ beam pieces, rungs of various diameters, MS round, flats, plates of dimensions as required etc including welding, bolting, cutting, drilling, scaffolding, setting etc all complete. Contractor to supply all materials	20	MT		
7.3	702	Assembly, welding, fixing of embedments, inserts, pipe sleeves, angle pieces, anchor bolts of various diameters, plates of dimensions as required etc including scaffolding, setting in position, transportation from BHEL site stores to work spot etc all complete. Fabricated material will be supplied by BHEL free of cost as per tender.	110	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
7.4	704	Receipt at site, fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and Grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, IS:364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc including welding, cutting, grinding, threading, drilling etc all complete.	30	MT		
7.5	705	Supplying, fabricating, erecting and installing following items in concrete/ brickwall for all kind of works, including setting material in concrete, layout, scaffoling, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc all complete. Contractor shall supply all materials. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.				
7.5.1	a	MS pipes of all diameters.	26000	KG		
7.5.2	b	PVC pipes/ conduits of all diameters.	9000	KG		
7.5.3	c	UPVC pipes/ conduits of all diameters.	6000	KG		
7.5.4	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.				
7.5.4.1	i	Upto 250 kg.	70	NO		
7.5.4.2	ii	Beyond 250 kg and upto 500 kg.	70	NO		
7.5.4.3	iii	Beyond 500 kg and upto 750 kg.	15	NO		
7.5.5	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.				
7.5.5.1	i	Upto 250 kg.	90	NO		
7.5.5.2	ii	Beyond 250 kg and upto 500 kg.	90	NO		
7.5.5.3	iii	Beyond 500 kg and upto 750 kg.	45	NO		
7.5.6	Af	Chemical anchors of HILTI make or equivalent of safe tensile capacity as specified below for concrete work.				
7.5.6.1	i	Upto 250 kg.	140	NO		
7.5.6.2	ii	Beyond 250 kg and upto 500 kg.	90	NO		
7.5.6.3	iii	Beyond 500 kg and upto 750 kg.	70	NO		
7.6	706	Transport from store, placing, locking and releasing of Vibration Isolation Spring (VIS) modules over the foundation at all elevations including providing all assistance under the supervision of the supplier, transportation from BHEL store, necessary staging, platforms, leveling, alignment etc all complete. BHEL will supply VIS modules free of cost as per tender.	220	NO		
8.0	**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. For approved make and vendors reference technical specification section - C)**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
8.1	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. Cement will be suuplied by BHEL free of cost as per tender.	65	SQM		
8.2	802	Providing & grouting of pocket holes, pipe sleeves under base plates, machinery, pipe supporting structures etc with mix 1:1 (1 cement :1 sand) using non shrink admixture etc all complete. Cement will be suuplied by BHEL free of cost as per tender.	32	CUM		
8.3	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 stonechip) using non shrink admixture. Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor. Cement will be suuplied by BHEL free of cost as per tender.	32	CUM		
8.4	804	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc all complete with Conbextra GP-1 or equivalent. Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor.	48	CUM		
8.5	805A	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 GPX-2 or equivalent. Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor.	25	CUM		
9.0	**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. For approved make and vendors reference technical specification section - C. Unless otherwise specified, contractor shall supply all materials)**				
9.1	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.	1	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
9.2	902	Providing and fixing teakwood frame panel door shutter as per IS:1003 with 35 mm x 150 mm vertical rail & 35 mm x 125 mm horizontal rail and 12 mm thick interlocked panels of teakwood with proper wood joinery including beading, preperation of working drawings, Godrej or equivalent make mortice lock with handels on both sides, approved ISI mark anodised fittings like door stopper, 300 mm long tower bolts,16 x 300 mm 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.	55	SQM		
9.3	A903	Providing, fitting and fixing solid core factory made woodenflush door shutter as per IS:2202 Part II, 35 mm thick homogenous wood bonded with BWP type phenolformaldihyde synthetic resin, partical board core conforming to IS:3087 Type I, 35 x 12 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, 300 mm long tower bolts,16 x 300 mm long aldrops,125 mm long handles on both sides etc butt hinges, sliding bolt, knobs (all fittings shall be anoidised aluminium color dyed), finish synthetic paint over primer, screws etc all complete as per drawing, specification and instruction of engineer with commercial faces and teak wood edges. Finish painting paid separately.	90	SQM		
9.4	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 150 mm 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%.	140	SQM		
9.5	905	Providing and fixing single or double steel door shutters with 18 gauge MS 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. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	40	SQM		
9.6	907	Providing and fixing fire proof steel doors (single or double shutter) with panic devices shall be 45 mm 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 150 mm 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. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	45	SQM		
9.7	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.				
9.7.1	a	Openable type.	70	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
9.7.2	b	Fixed type.	40	SQM		
9.8	909A	Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door frames/ shutters, window frames/ shutters, ventillators, partitions, railing, grills etc with extruded standard tubular and other sections including all fittings & fixtures and accessories of approved make conforming to IS:733 and IS:1285, 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/ stailess steel screws, providing and fixing hinges/ pivots, and making provision for fixing of fitting wherever required including cost of PVC/ neoprene gasket sealing of joints with sealant for water tightness, all complete as per drawing, specification and instructions of engineer. Glazing and panelling shall be paid seperately, weight of aluminium section only shall be	18850	KG		
9.9	910	Providing and fixing of aluminium composite panel (ACP) of following thickness with PVDF or polyester coating for interior partition of approved shade, color etc all complete as per specification.				
9.9.1	b	4 mm.	350	SQM		
9.10	911	Providing and fixing of door closers as per IS:3564, of approved make & quality all complete of following type.				
9.10.1	a	Over head hydraulic door closures.	30	NO		
9.10.2	b	Floor mounted hydraulic door closers.	30	NO		
9.11	912	Providing and fixing pressed steel frames fabricated from 16 gauge MS 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.	3100	KG		
9.12	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 75 mm 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 3 mm thick galvanised steel plate and securely rivetted with stiffening angles (partly coiled and lath/ full lath). Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.				
9.12.1	a	Hand operated.	60	SQM		
9.12.2	b	Mechanically operated.	95	SQM		
9.12.3	c	Electrically operated.	90	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
9.13	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. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	120	SQM		
9.14	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.				
9.14.1	a	4 mm thick clear sheet glass.	55	SQM		
9.14.2	b	4 mm thick clear float glass.	90	SQM		
9.14.3	c	5.5 mm thick clear float glass.	90	SQM		
9.14.4	d	6 mm thick wired glass.	450	SQM		
9.14.5	e	4mm thick Polycarbonate sheet multi (twin) wall fire retardant and ultra violet resistant with sealed open edges.	240	SQM		
9.14.6	f	4 mm thick ground glass.	110	SQM		
9.14.7	g	6 mm thick tinted heat reflecting type float glass.	15	SQM		
9.14.8	h	6 mm thick clear toughened safety glass.	20	SQM		
9.14.9	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).	45	SQM		
9.14.10	j	Two nos 6 mm thick tinted toughened float glass hermetically sealed and separated by 12 mm thick air gap for thermal insulation. Only single elevation area to be measured.	6	SQM		
9.14.11	k	One outer 6mm thick tinted heat-reflecting type float glass and one inner 6mm thick plain float glass hermetically sealed and seperated by 12 mm thick gap for thermal insulation. Only single elevation area to be measured.	90	SQM		
9.14.12	l	6 mm thick laminated glass.	5	SQM		
9.15	916	Supplying and fixing weather stripping of approved make and quality to doors as per instructions of engineer and specification complete.	85	RM		
9.16	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).	85	SQM		
9.17	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.	20	SQM		
9.18	920A	Roof skylight structure for atrium with 4 mm thick Compact Polycarbonate sheet 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 including aluminium sections colour anodised fixed over steel section, preparation of detail working drawing for approval before section including painting of steel structire complete etc all complete as per detailed drawing and specification. Structural steel work required for this items shall be paid separately as per ST NO 2301A.	25	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
9.19	921A	Providing and fixing MS grills of approved pattern made out of 25 mm x 6 mm MS flats and 12-20 mm MS square bars on window frames including painting as per specification.	75	KG		
10.0	**1000**	**BRICK WORK** **(Brickwork masonry including all labour, material, equipment, transportation, handling, scaffolding etc at all levels as per specification, drawings and as directed by engineer. Unless specified otherwise, cement will be supplied by BHEL free of cost as per tender)**				
10.1	1001	Providing brick work in cement mortar 1:6 (1 part cement 6 parts coarse sand) in walls, chambers etc in thickness varying from 230 mm to 460 mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.				
10.1.1	c	Using burnt clay bricks of class designation 7.5 of nominal dimension.	30	CUM		
10.1.2	d	Using burnt clay bricks of class designation 5.0 of nominal dimension.	30	CUM		
10.1.3	Aa	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	260	CUM		
10.2	1002A	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc in thickness 250 mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.				
10.2.1	c	Using burnt clay bricks of class designation 7.5 of nominal dimension.	30	CUM		
10.2.2	d	Using burnt clay bricks of class designation 5.0 of nominal dimension.	30	CUM		
10.2.3	Aa	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	14150	CUM		
10.3	1003A	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc in thickness 125mm at all heights, places and position above or below plinth/ graded level including providing two nos 6 mm diameter MS bars at every fourth layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification.				
10.3.1	a	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2.	680	SQM		
10.3.2	b	Using clay ash bricks as per IS:13757 with crushing strength of 75 kg/ cm2 and minimum percentage of fly ash 25%.	150	SQM		
10.3.3	c	Using burnt clay bricks of class designation 7.5 of nominal dimension.	30	SQM		
10.3.4	d	Using burnt clay bricks of class designation 5.0 of nominal dimension.	30	SQM		
10.4	1003A	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in intermediate walls, chambers etc in thickness 250 mm at all heights, places and position above or below plinth/ graded level, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification.				
10.4.1	c	Using burnt clay bricks of class designation 7.5 of nominal dimension.	30	SQM		
10.4.2	d	Using burnt clay bricks of class designation 5.0 of nominal dimension.	30	SQM		
10.4.3	Aa	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	8750	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
10.5	1004A	Providing brick soling including spreading of earth, ramming, watering including 12 mm thick cushion of sand complete but excluding excavation and disposal of surplus earth. Excavation and disposal of surplus earth shall be measured under applicable item using brick on edge.				
10.5.1	a	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	60	SQM		
10.6	1005	Providing brick soling including spreading of earth, ramming, watering including 25 mm 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.				
10.6.1	a	Using fly ash cement bricks confirming to IS:12894 with crushing strength of 75 kg/ cm2. Cement for manufacturing of bricks within plant premises will be supplied by BHEL free of cost as per tender.	60	SQM		
10.7	1006	Breaking of existing brick work at all levels including plastering, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc all complete as directed by the engineer.	35	CUM		
10.8	1007	Providing and encasing of structural steel member with masonary work around flanges, webs etc. and filling the gap between steel and masonry by minimum 12mm thick mortar. Encased member shall be wrapped with chicken wire mesh with 50mm lap etc. complete as per specification. (Chicken wire mesh to paid separately)	120	CUM		
10.9	1008	Providing and laying 75 mm thick bed of dry brick aggregate including of excavation, disposal of surplus earth spreading of earth, ramming, watering etc complete in all respects as directed by the engineer.	450	SQM		
10.10	1009	Making openings in existing brick wall or partition wall including making good the broken edges/ surface with cement mortar etc complete.	90	CUM		
10.11	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.	320	SQM		
10.12	1101	Providing Damp Proof Course 40 mm 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 @ 1.7 kg/ sqm shall be applied one before & one after the DPC.	120	SQM		
10.13	1012	Providing and filling brick bats in soak pits all complete.	40	CUM		
11.0	**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. Unless specified otherwise, cement will be suuplied by BHEL free of cost as per tender)**				
11.1	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 @ 1.7 kg/ sqm shall be applied one before & one after the DPC.	1050	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
12.0	**1200**	**CEMENT MORTAR PLASTER** **(Cement mortar plaster including making grooves whereever required including all labour, material, scaffolding, curing etc at any level as per specification, drawings and as directed by engineer. Unless specified otherwise, cement will be suuplied by BHEL free of cost as per tender)**				
12.1	1201	Providing 18 mm thick plaster in two layers outside the building/ boundary wall in cement mortar 1:6 on walls, finished to a smooth finish including providing 3 mm x 3 mm size grooves at junctions of two dissimilar materials all complete.	28200	SQM		
12.2	1201A	Providing 18 mm thick plaster in two layers outside the building/ boundary wall in cement mortar 1:4 on walls, finished to a smooth finish including providing 3 mm x 3 mm size grooves at junctions of two dissimilar materials all complete.	1580	SQM		
12.3	1202	Providing 12 mm thick plaster inside the building/ boundary wall in cement mortar 1:6 on walls finished to a smooth finish as per specification all complete.	22580	SQM		
12.4	1203	Providing 12 mm thick plaster in cement mortar 1:6 on walls with rough finish all complete.	2856	SQM		
12.5	1204	Providing 6 mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.	24780	SQM		
12.6	1205	Providing 12 mm thick plaster in walls, drains/ culverts with a paste of neat cement @ 1 kg/ sqm and rubbed smooth with trowel etc all complete.	360	SQM		
12.7	1206	Providing and making decorative plaster of all types and design on walls, ceilings, arcs, columns with various thickness upto 18 mm including finishing all complete.	720	SQM		
12.8	1207	Forming groove of uniform size from 12 x 12 mm upto 20 x 15 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.	126	RM		
12.9	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.	1056	RM		
12.10	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 enginner. Chicken wire mesh to be paid separately.	520	SQM		
12.11	1210	Ruled pointing in masonry in CM 1:3 (1 cement and 3 fine sand) including raking out joints, curing etc complete.	100	SQM		
13.0	**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. For approved make and vendors reference technical specification section - C)**				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
13.1	1301	Two or more coats of white wash/ colour wash as per IS:6278 of approved brand and manufacture to give an even shade including a priming coat as per specifications.	150	SQM		
13.2	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 guidlines. The final finished coating shall be fungus resistant, UV resistant, water repellant, alkali resistant and extremely durable with color fastness as per specification.	310	SQM		
13.3	1303	Providing and applying two or more coats of oil bound destemper 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.	180	SQM		
13.4	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.	23470	SQM		
13.5	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.	9676	SQM		
13.6	1306	Providing and applying 2 or more coats of acid/ alkali resistant paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying bitumen primer confirming to IS:158 complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, complete as per specifications.	360	SQM		
13.7	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.	160	SQM		
13.8	1308	Two or more coats of black anti-corrosive bitumastic painting of approved brand and manufacture to give an even shade complete.	120	SQM		
13.9	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.	340	SQM		
13.10	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.	3420	SQM		
13.11	1311	Providing and applying resin bonded granular textured finish, for external applications shall consist of crushed stone/ quartz chips of 0.5 mm to 2.5 mm size and of approved natural color/ shade and bonded with synthetic resins, adhesives and additives altogether in a single pack mix, applied on cured and dried plaster surface with a dry film thickness of minimum 2 mm. The final finish shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/ drawing/ approval of engineer.	220	SQM		
13.12	1312A	Providing and applying 2 mm thick white cement punning on walls including preparation of surface, staging, etc to achieve a smooth even surface all complete as per specification and as directed by engineer.	9750	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
13.13	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 150 micron thickness over epoxy primer.	710	SQM		
13.14	1314	Providing and applying Synthetic plaster for external applications composed of synthetic fibre and petroleum based chemical similar to RENOVO or equivalent and of approved natural color/ shade applied on cured and dried plaster surface.The final finish paint shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/ drawing/ approval of engineer.	180	SQM		
13.15	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 repellant and extremely durable with color fastness as per specification.	150	SQM		
14.0	**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. For approved make and vendors reference technical specification section - C. Unless specified otherwise, cement will be suuplied by BHEL free of cost as per tender)**				
14.1	1401A	Providing and laying 40 mm thick heavy duty IPS flooring with metallic hardener pigmented topping 12 mm thick uniform graded treated iron paricles in flooring. Under layer of 28 mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12 mm 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, glass strips etc all complete for following. Quoted item rate shall be inclusive of providing glass joint strips.	2285	SQM		
14.2	1401B	Providing and laying 40 mm thick heavy duty cement concrete in flooring with metallic hardener pigmented topping 12 mm thick uniform graded treated iron paricles in flooring. Under layer of 28mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12 mm 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 aluminium joint strips.	6594	SQM		
14.3	1402	Providing and laying 25 mm thick heavy duty cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates) flooring with metallic hardener pigmented topping of 10 mm thick uniform graded treated iron particles in skirting and dado complete as per specification.	6569	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
14.4	1403	Providing and laying precast polished heavy duty cement concrete tiles (Carborundum topping) of size 300 x 300 x 25 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, grindig and polishing complete with laying as per IS:1443 etc all complete for following. Maximum mortar thickness shall be 25 mm.				
14.4.1	a	Laid in floors.	40	SQM		
14.4.2	b	Laid in skirting.	9	SQM		
14.5	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.				
14.5.1	a	60 mm.	1281	SQM		
14.5.2	b	75 mm.	30	SQM		
14.6	1406A	Providing and laying polished Kota stone 20 mm to 25 mm thk in flooring. Under bed shall average 15 mm 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 malle 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.	1182	SQM		
14.7	1408A	Providing polished Kota stone 25 mm thk in skirting projecting 6mm from adjacent plaster including cutting brickwall upto the required depth, edging, finishing etc all complete.	45	SQM		
14.8	1410A	Marble stone flooring laid in 40 mm overall thickness with 20-22 mm thick marble slabs (Grade -1) with 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.	350	SQM		
14.9	1412A	Providing and laying 18-20 mm thick polished Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 20 mm thk of 1 cement : 2 sand : 4 stone aggregate by volume and brought to proper level. The granite stone slabs/ tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including pigments, curing grinding, granite polishing etc all complete.	273	SQM		
14.10	1413A	Providing and laying 12 mm thick polished Granite slab (size as per approval) of approved color and texture in dado. The granite stone slabs fixed over prepared base with cement slurry with minimum joints including pigment, curing, grinding, granite polishing etc all complete.	158	SQM		
14.11	1414	Providing and laying polished granite stone 18-20 mm thk in skirting and dado with 6 mm thick projection from adjacent plaster including mortar (1:3), cement slurry, pigments, curing, grinding, moulding, granite polishing etc all complete.	15	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
14.12	1416	Providing and laying vitrified ceramic tiles of polished variety of size 600 x 600 from reputed/ approved manufacturer, complete including underbed of cement mortar 1:3 with neat cement slurry etc all complete for following. Maximum mortar thickness shall be 43 mm.				
14.12.1	a	7 mm thick tiles In flooring.	60	SQM		
14.12.2	b	10 mm thick tiles In flooring.	120	SQM		
14.12.3	c	7 mm thick tiles In skirting and dado upto specific height.	45	SQM		
14.12.4	d	10 mm thick tiles In skirting and dado upto specific height.	30	SQM		
14.13	1417	Providing and laying vitrified ceramic tiles of matt finish of size 600 x 600 mm from reputed/ approved manufacturer including underbed of cement mortar 1:3 with neat cement slurry etc all complete for following. Maximum mortar thickness shall be 43 mm.				
14.13.1	a	7 mm thick tiles In flooring.	45	SQM		
14.13.2	b	10 mm thick tiles In flooring.	30	SQM		
14.13.3	c	7 mm thick tiles In skirting and dado upto specific height.	30	SQM		
14.13.4	d	10 mm thick tiles In skirting and dado upto specific height.	30	SQM		
14.14	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				
14.4.1	a	400 x 400 mm.	30	SQM		
14.4.2	b	600 x 600 mm.	880	SQM		
14.15	1418A	Providing and laying 10 mm thk non-skid fully vitrified tiles of make 'MARBONITE' or 'FERRASTONE "KAJARIA" 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.				
14.15.1	a	400 x 400 mm.	25	SQM		
14.15.2	b	600 x 600 mm.	1125	SQM		
14.16	1419	Providing and laying granite stone slab of 20 mm thickness single piece for wash basin/ sink slab/ facia of black or approved colour with cutting, making corners, moulding and opening etc all complete.	40	SQM		
14.17	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. Maximum mortar thickness shall be 43 mm.				
14.17.1	b	600 x 600 mm.	60	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
14.18	1421A	Providing and laying heavy duty dust pressed (grade-5) ceramic tiles (Matt Finish) of size 600 x 600 mm (approved size) and 7 mm thick of reputed/ approved manufacturer (Kajaria, Jhonson, Spartek or equivalent) of approved finish, shade and colour. The tiles shall be scratch resistance of minimum 5 on Mohr's scale and shall have a bending strength of 350 kg/ sqm, with under bed shall average 43 mm thk of 1 cement : 2 sand : 4 stone aggregates by volume and brought to proper level including cement mortar all complete.	300	SQM		
14.19	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 12 mm thick (to be laid in layers of 6 mm each). The tiles shall be applied with 6 mm 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.				
14.19.1	a	20 mm thick .	60	SQM		
14.19.2	b	38 mm thick.	60	SQM		
14.20	1423A	Providing & fixing acid/ alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/ dado beded and jointed with silica based epoxy mortar all complete for following thicknesses. The tiles should be abrasion resistant & durable. Overall thickness shall be 40 mm in flooring.				
14.20.1	a	20 mm thick .	450	SQM		
14.21	1425	Providing and laying polished marble slabs, 600 mm x 600 mm (Aranga white or equivalent approved shade/ color/ design) 20 mm thk in staircase landing/ skirting and corridors over minimum 20 mm thick underbed of 1 cement : 2 sand : 4 stone aggregates by volume mixed with sufficient water to form a stiff workable mass. The marble slabs shall be laid over under-bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including moulded marbel nosing, pigments, curing, grinding, making corners, granite polishing etc complete.	360	SQM		
14.22	1425A	Providing and laying kota stone, 600 mm x 600 mm (approved shade/ color/ design) 20 mm thk in staircase landing/ skirting and corridors over minimum 20 mm thick underbed of 1 cement : 2 sand : 4 stone aggregates by volume mixed with sufficient water to form a stiff workable mass. The marble slabs shall be laid over under-bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including moulded marbel nosing, pigments, curing, grinding, making corners, granite polishing etc complete.	360	SQM		
14.23	1426	Providing and laying marble skirting/ dado (Aranga white or approved shade/ color/ design) equivalent of minimum 20 mm thickness projecting 6 mm from adjacent plaster all complete including underbed cement mortar 1:3, scaffolding etc all complete.	30	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
14.24	1427	Providing and fixing glazed ceramic tiles of approved color and design of size 200 x 300 mm/ 300 x 300 mm in dado of approved size, projecting 6 mm uniformly from adjacent plaster or wall finish. The mix for underbed plaster shall consist of 1 part cement and 3 parts sand by weight fairly moist but firm, tiles shall be pressed over under bed by applying cement slurry including pigments, curing etc all complete for following thicknesses.				
14.24.1	a	5 mm thick.	360	SQM		
14.24.2	b	7 mm thick.	60	SQM		
14.25	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.	90	SQM		
14.26	1429A	Providing and fixing removable type flooring system consisting of fire resistant phenyl formaldehyde bonded particle board of size 600 x 600 x 35 mm with 0.05 mm thick aluminium foil lining at bottom and with 2 mm thick anti static PVC topping including proprietary floor supporting system complete as per specification. Maximum floor height shal be 1000 mm.	90	SQM		
14.27	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.				
14.27.1	a	Glass strips 40 mm wide and minimum 6 mm thick.	400	RM		
14.27.2	b	Aluminium strips 40 mm wide and minimum 3 mm thick	120	RM		
14.28	A1432	Providing and laying self levelling epoxy flooring cosisting of first coat of solvent free resin based dispersion primer @ 200 gm/ sqm, first layer of epoxy floorin @ 4.4 kg/ sqm of 2 mm thckness, second layer of prime r@ 100 gm/ sqm, final decorative epoxy topping @ 3.6 kg/ sqm of approx 2 mm thickness complete as per specification, including all material, labour, etc all complete.	3870	SQM		
15.0	**1500**	**ROOFING/ SIDE CLADDING** **(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. For approved make and vendors reference technical specification section - C)**				
15.1	1501A	Receipt, fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to class 3 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 0.8 mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the roof slab 100 mm 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 @ 260 mm c/c in the trough and stich				

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
15.1.1	a	Span upto 1800 mm.	9100	SQM		
15.1.2	b	Span exceeding 1800 mm and upto 2500 mm.	1676	SQM		
15.2	1502	Providing and fixing shear connectors of mild steel studs having 16 mm dia and minimum 75 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.	30	KG		
15.3	1503A	Receipt, erection and fixing profiled External Cladding sheet manufactured out of 0.55 mm TCT (Total coated thickness) of permanently colour coated zincalume steel (150 gsm. zinc-aluminium alloy coating total of both sides as per AS:1397:1993) having 300 MPa yield strength. The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side. The sheet shall have 500 mm cover width, 47 mm height crests at 250mm centres with special male/ female side laps and anti-siphoning features to prevent leakage. The sheet shall be fixed with the help of concealed compatible interlocking clips and wafer head zinc coated self drilling fastners/ screws 4.2 x 25 mm long on to the sub-girts.The clips shall be concealed and no fastners are to penetrate the external sheeting, all complete as per specification.				
15.3.1	a	For final painting with Silicon Modified Polyester (SMP).	8460	SQM		
15.3.2	b	For final painting with Super Polyester XRW (as per AS/NZS-2728:1997 Category3).	4750	SQM		
15.4	1505A	Receipt, fixing profiled internal cladding sheet manufactured out of 0.6 mm TCT (Total coated thickness) of permanently colour coated zincalume steel (150/ 180 gsm zinc-aluminium alloy coating mass total of both sides as per AS:1397:1993). The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side. The sheet shall have 980 mm cover width, 28 mm height crests at 195 mm centres with special male/ female side laps and anti-siphoning features to prevent leakage. The sheet shall be fixed to the structure by means of self drilling fastners no 12-24 x 25 mm conforms to AS:3566 Class-3 long at valley. Sub- girts of size 50 mm x 50 mm x 50 mm manufactured out of 16G GI (1.6mm GI) 'Z' shape would be fixed the inner sheeting on face side at runner locations all complete as per specification.				
15.4.1	a)	For final painting with Silicon Modified Polyester (SMP).				
15.4.1.1	i)	For zincalume sheet 150 gsm and having 550 Mpa yield strength.	2580	SQM		
15.4.1.2	ii)	For zincalume sheet 180 gsm and having 240 Mpa yield strength.	1270	SQM		
15.4.2	b)	For final painting with Super Polyester XRW (as per AS/ NZS-2728:1997 Category3).				
15.4.2.1	i)	For zincalume sheet 150 gsm and having 550 Mpa yield strength.	1060	SQM		
15.4.2.2	ii)	For zincalume sheet 180 gsm and having 240 Mpa yield strength.	620	SQM		
15.3	1506	Supply, transportation to site, fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS:8183 having a density of 32 kg/ cum glass wool or 48 kg/ cum for rock wool, for cladding/ under deck insulation including application of glue and tying with lacing wire, for glass/ rock wool as per manufacturer's recommendations.	4280	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
15.4	1506A	Supply, transportation to site, fixing insulation of polystyrene block of 50 mm nominal thickness for under deck insulation including application of glue and tying with lacing wire as per manufacturer's recommendations.	490	SQM		
15.5	1507	Supply, transportation to site, fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS:8183 having a density of 32 kg/ cum glass wool or 48 kg/ cum for rock wool, for cladding/ under deck insulation including wrapping in black polythene black supported over weld mesh 75 x 75 x 1.6 mm dia to hold in position and application of glue & tying with lacing wire, for glass/ rock wool as per manufacturer's recommendation.	1285	SQM		
15.6	1508	Supply, transportation to site, 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.	480	SQM		
15.7	1509	Supply, transportation to site, providing and fixing non metal opaque PVC sheet similar to ONDEX roofing or equivalent including all fixing accessories.	24	SQM		
16.0	**1600**	**FALSE CEILING** **(False ceiling including all labour, material, equipment, transportation, handling, suspension system etc at any level as per specification, drawings and as directed by engineer)**				
16.1	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 preperation 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.				
16.1.1	a	12 mm thick GRG board with galvanised light gauge steel load bearing supporting GI frame and finished flat (seamless).	60	SQM		
16.1.2	b	12 mm thick GRG board in profile (dome ,curved profiled etc) with galvanised light gauge steel load bearing supporting GI frame and finished smooth (seamless).	60	SQM		
16.2	1604	Transportation from store, fixing and laying permanently colour coated aluminium false ceiling of approved colour with stove enamel finsih of approved make in LINEAR and SQUARE type with corrosion resistance aluminium alloys panels of minimum thickness 0.5 mm including 50 mm thick mineral wool insulation (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. AC ducts etc suitable MS channel (minimum MC 75) grid 1200 c/c maximum shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. The work to be complete as per specifications, drawings and direction of engineer. Materials for structural platform grid for movement made up of MS channels/ beams/ angles shall be supplied by BHEL free of cost as per tender and shall be paid under ST NO 2301A.	2250	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
16.3	1606A	Receipt, fixing 12.5 mm thick glass fibre reinforced gypsum plastic borad in plan curve or in elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers etc including two or more coats of acrylic emulsion paint of approved colour to give an even shade with smooth finish all complete, as per architectural design and detail, metal suspension system as per ASTM C-635 shall be hot dipped MS galvanized (grade 180 as per IS:277) nominal size of T-section shall be 24 x 38 mm or 24 x 25 mm cross runners. 24 mm wide exposed flange surface shall be permanently color coated.suspension system shall be as per manufaturer's specification supported over movment platform including 25 mm thick resin bonded mineral wool insulation (as per IS:8183) bound in polythene bags on top of ceiling. The work to be complete as per specifications, drawings and direction of engineer. Materials for structural platform grid for movement made up of MS channel/ beams/ angles shall be supplied by BHEL free of cost as per tender and shall be paid under ST NO 2301A.	280	SQM		
17.0	**1700**	**RAIN WATER DOWN TAKE PIPE** **(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)**				
17.1	1707A	Receipt, fixing GI down take pipes conforming to IS:1239/ IS:3589 of heavy duty all complete for following diameters.				
17.1.1	a	100 mm dia.	120	RM		
17.1.2	b	150 mm dia.	2600	RM		
17.1.3	c	200 mm dia.	900	RM		
18.0	**1800**	**MISCELLANEOUS WORKS-1** **(Miscellaneous works including all labour, material, equipment etc at any level unless otherwise specified as per specification, drawings and as directed by engineer)**				
18.1	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.	5225	CUM		
18.2	1802	Providing and mixing approved Bipolar Concrete penetrating corrosion inhibiting admixture in concrete as per detail specification of manufacturer etc all complete.	60	KG		
18.3	1803	Anti termite chemical treatment of soil with Chlorpyriphos/ Lindane EC 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.	150	SQM		
18.4	1804	Supply and installation of approved 25 mm thick vibration damping resilient pads on/ around foundation of vibrating equipment and at other locations all complete.	25	SQM		
18.5	1805A	Providing 25 mm thick premix carpet surfacing laid with 12 mm downgraded stone chips mixed with 80/100 grade bitumen @ 52 kg/ cum including compaction etc all complete.	150	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
18.6	1806A	Providing 75 mm thick gravel, coarse sand or other suitable material topping with compacted crushed stone, screenings, fine gravel, clear sand or similar material mixed with hot asphalt (80/ 100 bitumen or its equivalent quality 8 to 10% by volume) and rolled or compacted all complete.	150	SQM		
18.7	1808	Providing and fixing aluminium strips minimum 18 SWG thk and 300 mm wide over expansion joints with minimum lap of 50 mm length including brass/ aluminium screws, rawl plugs etc all complete.	12	KG		
18.8	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.	80	KG		
18.9	1810	Receipt, laying and fixing rails, guide rails, fixtures, bolts etc in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	50	MT		
18.10	1811	Providing and fixing weep holes in drains consisting of 100 mm dia HDPE pipe sleeves with single side covering for the pipe mouth with galvanised welded wire fabric of 20 mm sq opening covered with 40 mm downgraded aggregates in 300 x 300 mm sq and 300 mm deep size all complete.	200	NO		
18.11	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 as per tender.	30	MT		
18.12	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.	6	NO		
18.13	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.	2	NO		
18.14	1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/ sqm etc all complete.	150	KG		
18.15	1816	Providing and fixing PVC pressure release valve of minimum dia 90 mm in water retaining structure including 160 mm dia housing pipe of minimum length 3.75 m with perforation as per IS:4558, nylon jali, perforated end plug, collar, graded filter, excavation, fixing in concrete slab/ wall etc all complete.	20	NO		
18.16	1817	Providing and fixing HDPE pipes in concrete/ brick work of following sizes including cutting, fixing and levelling in position etc all complete.				
18.16.1	a	Upto 75 mm dia.	50	RM		
18.16.2	b	100 mm dia.	50	RM		
18.16.3	c	150 mm dia.	50	RM		
18.16.4	d	200 mm dia.	50	RM		
18.17	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.	60	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
18.18	1822	Cutting of groove of 10 mm x 40 mm size with groove cutting machine in concrete paving all complete.	700	RM		
18.19	1823	Fire proofing of steel structures with VERMICULITE cementious coating including supply of all materials for vermiculite materials, reinforcement mesh (3 mm thick wire, 50 x 50 size mesh), nuts, tie wires, weldings, suface preparation, curing, staging, compatible paintings etc all complete.	3	CUM		
18.20	1824	Supply & fixing expanded metal steel sheet conforming to IS:412. Size of mesh shall be 10 mm x 40 mm with strands of 2.5 mm width and 1mm thickness to the structural steel for facilitating fireproofing works.	140	SQM		
18.21	1825	Supply and laying approved quality stone aggregate 40 mm size in transformer yards.	30	CUM		
18.22	1826	Supply and laying approved quality rounded pebbles/ gravels of 40 mm size in transformer yards.	6	CUM		
18.23	1830	Dismantling old existing structural steel work at any level including plates, bolts, cutting rivets, welding, dismembering and stacking the dismantled materials within a lead upto 1 km etc all complete.	15	MT		
18.24	1831	Sprinkling of water by water tanker fitted with perforated GI pipe (portable tanker minimum 3000 litre capacity) for roads and miscellaneous area within plant boundary, for dust supression and reduction of suspended material at site for day to day work, as directed by BHEL site engineer. Water for this purpose shall be provided by BHEL free of cost as per tender and utilisation of machine will be in terms of tank-hour put in actual use for water sprinkling.	300	TANK-HR		
18.25	1832	Providing & filling Bentonite Powder (Sodium base) mixed with water in electronic earthing pit as per drawing & direction below ground level including all materials, transportation, labour, incidental etc all complete as per specification.	6	CUM		
18.26	1833	Supply & fixing FRP (fibre reinforced plastic) sheets 2 mm thick including GI hooks/ J or L bolts, nuts, washers, bitumen washers etc complete including overlap 100 mm .	60	SQM		
19.0	**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)**				
19.1	2001A	Supplying and erecting in position 2.4 m high PVC coated gavanised chain linked fencing of minimum 8 gauge (including PVC coating) of mesh size 75 mm x 75 mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 12 gauge. GI barbed wire fencing of height of 600 mm confirming to IS:298 at top of chain link fencing shall be provided with 4 strands of barbed wire hot dip galvanised wire of 12G comprising of 3 ply of wires with barbs of 16G spaced at 100mm. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25 x 6 mm GI flat stretcher bar at end posts, accessories etc all complete. Structural post shall be separately paid under item 2007. Payment terms - a) On receipt of chain link fencing at site - 50%; b) On completion of erection & fixing - 50%.	180	RM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
19.2	2003A	Supplying and erecting in position 2.4 m high PVC coated gavanised chain linked fencing of minimum 8 gauge (including PVC coating) of mesh size 75 mm x 75 mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 8 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 1 m 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, 25 x 6 mm GI flat stretcher bar at end posts etc all complete. Structural post shall be paid separately. Payment terms - a) On receipt of chain link fencing at site - 50%; b) On completion of erection & fixing - 50%.	360	RM		
19.3	2008	Supply, fabrication and fixing of mild steel posts for fencing including painting etc all complete.	2	MT		
19.4	2010	Supply, fabrication and installing in position and testing MS gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS aldrops with locking arrangement, tempered steel pivot, guide track of MS tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc all complete as per specification.	3	MT		
20.0	**2100**	**WATER SUPPLY** **(Water supply work including men, material, equipment etc at any level as per specification, drawings and as directed by engineer)**				
20.1	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 - 15 mm nominal bore.	45	NO		
20.2	2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15 mm nominal bore.	60	NO		
20.3	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.				
20.3.1	a	25 mm nominal bore.	50	NO		
20.3.2	b	50 mm nominal bore.	40	NO		
20.4	2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrsive paint, complete for internal works with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc all complete for following sizes.				
20.4.1	a	15 mm nominal bore.	700	RM		
20.4.2	b	20 mm nominal bore.	610	RM		
20.4.3	c	25 mm nominal bore.	620	RM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
20.5	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.				
20.5.1	a	15 mm nominal bore.	920	RM		
20.5.2	b	20 mm nominal bore.	740	RM		
20.5.3	c	25 mm nominal bore.	680	RM		
20.5.4	d	50 mm nominal bore.	420	RM		
20.6	2106	Providing and fixing 610 mm x 453 mm x6 mm thk mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	6	NO		
20.7	2106A	Providing and fixing 450 mm x 750 mm high square edge 6 mm thk float glass mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	30	NO		
20.8	2107	Providing and fixing 610 mm x 127 mm x 6 mm thk clear glass with CP Guard rails and mounted on CP brackets etc all complete.	6	NO		
20.9	2108	Providing and fixing 25 mm diameter stainless steel towel rails (600 mm x 25 mm) all complete.	45	NO		
20.10	2109	Providing and fixing 20 mm dia chromium plated MS.pipes wall mounted towel rod with CP brackets etc all complete.	6	NO		
20.11	2110	Providing and fixing CP soap holder mounted with CP screws etc all complete.	6	NO		
20.12	2111A	Providing and fixing stainless steel liquid soap dispenser. Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on SS brackets etc all complete.	6	NO		
20.13	2112A	Providing and fixing glazed vitreous wall mounted SSpaper roll holder with suitable cover cum cutter fitted with CP screws etc all complete.	30	NO		
20.14	2113	Providing and fixing chromium plated brass shower rose with 15 or 20 mm inlet all complete.	6	NO		
20.15	2114	Providing & fixing in position PVC 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.				
20.15.1	a	1000 litres capacity.	8	NO		
20.15.2	b	2000 litres capacity.	12	NO		
20.15.3	c	5000 litres capacity.	3	NO		
20.16	2115	Providing and fixing approved stainless steel sink with integrated drainboard as per IS:13983 of size 915 x 460 x 178mm with CI brackets, stainless steel chain with rubber plug 40 mm, CP brass waste trap with necessary union complete including painting the fittings, cutting and making good the wall where required etc all complete.	6	NO		
20.17	2116A	Providing and fixing minimum 600 mm PORCELAIN TRAY with suitable with CP screws etc all complete.	6	NO		
20.18	2117A	Providing and fixing recessed porcelain soap tray all complete.	6	NO		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
20.19	2118A	Providing and fixing ROBE HOOKS with suitable CP screws all complete.	6	NO		
21.0	**2200**	**SANITARY WORKS** **(Sanitary work including all labour, material, equipment etc at any level as per specification, drawings and as directed by engineer)**				
21.1	2201	Supply and fixing glazed vitreous china Wash Basin conforming to IS:2556 part 4 of oval shape with RS or C. brackets painted white, 15 mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32 mm chromium plated brass bottle trap and waste of standard pattern, 32 mm 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.				
21.1.1	a	White.	35	NO		
21.1.2	b	Colored.	15	NO		
21.2	2202	Providing and fixing approved vitreous china laboratory sink of size 600 x 400 x 200 mm conforming to IS:2556 (part-5) with RS or CI brackets, chromium plated brass chain with rubber plug 40 mm, CP brass waste and 40 mm CP brass trap with necessaary union complete including painting the fittings, cutting and making good the wall where required etc all complete.	10	NO		
21.3	2203	Providing and fixing stainless steel kitchen sink of size 750 x 510 x 200 mm conforming to IS:13983 including all fittings etc all complete.	3	NO		
21.4	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 CP connections etc all complete.				
21.4.1	a	Floor mounted.	35	NO		
21.4.2	b	Wall mounted.	15	NO		
21.5	2205	Providing and fixing colour glazed vitreous indian type Orissa pattern (580 x 440 mm) 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 CP connections etc all complete.	15	NO		
21.6	2206	Providing and fixing white flat back glazed vitreous china urinals of size 440 x 265 x 355 mm with photo voltaic control flushing system as per IS:2556 (part 6, section 1) with flush pipes, lead pipes, gratings, traps and necessary CP fittings etc all complete.	35	NO		
21.7	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, back filling shall be paid separately as per relevant item. Payment terms - a) On receipt of material at site - 50%; b) On completion of erection & fixing - 50%.				
21.7.1	a	200 mm dia.	800	RM		
21.7.2	b	300 mm dia.	300	RM		
21.7.3	c	450 mm dia.	480	RM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
21.7.4	b	600 mm dia	380	RM		
21.7.5	e	900mm dia	410	RM		
21.8	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, back filling shall be paid separately as per relevant item. Payment terms - a) On receipt of material at site - 50%; b) On completion of erection & fixing - 50%.				
21.8.1	a	150 mm dia.	50	RM		
21.8.2	b	250 mm dia.	40	RM		
21.8.3	c	300 mm dia.	30	RM		
21.8.4	d	500 mm dia.	30	RM		
21.9	2210	Providing, laying light duty non pressure NP4 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete for following. Excavation, back filling shall be paid separately as per relevant item. Payment terms - a) On receipt of material at site - 50%; b) On completion of erection & fixing - 50%.				
21.9.1	a	450 mm dia.	40	RM		
21.9.2	b	600 mm dia.	40	RM		
21.9.3	c	900 mm dia.	4	RM		
21.10	2211	Providing and fixing CI manhole heavy duty cover of size 600 mm x 450 mm including frame from reputed manufacture etc all complete.	30	NO		
21.11	2212	Providing and fixing circular heavy duty CI manhole cover of 600 mm dia with frame etc all complete.	30	NO		
21.12	2213	Providing and fixing square mouth SW gully trap grade 'A' complete with CI grating, brick masonry chamber and water tight CI cover with 300 x 300 mm (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. Excavation, back filling shall be paid separately as per relevant item.				
21.12.1	a	100 x 100 mm P or S type.	60	NO		
21.12.2	b	150 x 100 mm P or S type.	20	NO		
21.12.3	c	150 x 150 mm P or S type.	40	NO		
21.13	2215	Providing and fixing CI floor traps with CP jalli all complete.	45	NO		
21.14	2217	Providing and installing approved brand single tap water cooler of 80 ltr cooling capacity all complete.	6	NO		
21.15	2218	Providing and installing approved brand single tap water cooler of 150 ltr cooling capacity all complete.	6	NO		
21.16	2219	Providing and fixing white viterous urinal partitions of size 675 x 325 x 85 mm all complete.	12	NO		
21.17	2220	Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS:10592) all complete as per specification.	6	NO		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
21.18	2221A	Providing and fixing heavy duty cast iron pipes for above and below ground sanitory works with water tight lead joint, fixing clamps, excavation, filling, disposal etc all complete for the following.				
21.18.1	a	75 mm dia pipes .	100	RM		
21.18.2	b	100 mm dia pipes.	140	RM		
21.18.3	c	150 mm dia pipes.	120	RM		
21.18.4	d	200 mm dia pipes.	50	RM		
21.18.5	e	250 mm dia pipes.	30	RM		
22.0	**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. Unless specified otherwise, steel will be supplied by BHEL free of cost as per tender)**				
22.1	2301A	Transport from store, 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), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20^{o} C for welding over 20 mm and upto 40 mm & 66^{o} C for welding over 40 mm and upto 63 mm & 110^{o} C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus/ waste steel materials to store etc all complete including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL for all structural steel items, **excluding mill bay and bunker area.** Structural steel will be supplied by BHEL free of cost as per tender. Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.	10750	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.2	2301B	Transport from store, 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), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20^{o} C for welding over 20 mm and upto 40 mm & 66^{o} C for welding over 40 mm and upto 63 mm & 110^{o} C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 Part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus/ waste steel materials to store etc all complete including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL for structural steel work of **mill bay and bunker.** Structural steel will be supplied by BHEL free of cost as per tender. Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.	4300	MT		
22.3	2301C	Transport from store, erection of fabricated items of columns, beams, laced purlins, space frames, hangers, struts, wall beams, bracings, cleats, base plates, splice plates, collection of fabricated items from stores, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, 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 & removal of all temporary structures (weight of temporary structures not payable), return of surplus to store etc all complete, of **boiler structures.** Fabricated material will be supplied by BHEL free of cost.	300	MT		
22.4	2302	Extra over ST NO 2301A & 2301B for blast cleaning of steel structures to near white metal surface (Sa 2 1/2) and applying epoxy based zinc phosphate primer in coats of minimum 25 micron (DFT) at shop and 25 micron (DFT) after erection, instead of primer coat of red oxide zinc-chromate, including touch-up painting etc all complete.	6	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.5	2303	Extra over ST NO 2301A & 2301B for providing and application of two coats of primer consisting of chemical resistant epoxy resin and hardener (Minimum 1 kg of primer mix shall be consumed for priming of 4 to 5 sqmm area of surface) instead of primer coat of red oxide zinc-chromate, including touch up painting etc all complete.	6	MT		
22.6	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, scoffolding etc all complete.	7200	MT		
22.7	A2304	Providing and applying two coats of anti corrosive 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, scoffolding etc all complete.	8400	MT		
22.8	2305	Providing and applying two coats of epoxy based colour finish 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, scoffolding etc all complete.	6	MT		
22.9	2306	Providing, laying and clamping of crane rails over the crane girder at all elevations as per IS:3443 including all fixtures, clamps, testings etc all complete as per drawing and specification.	30	MT		
22.10	2307	Receipt, 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, packing, grinding, drilling, welding, edge preparation, etc all complete.	60	MT		
22.11	2308	Receipt, 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.	22	MT		
22.12	2309	Extra over above ST NO 2301A/ 2301B/ 2307 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.	14	MT		
22.13	2310	Receipt, 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 300 mm long for structural steel work etc all complete.	2	MT		
22.14	2311	Receipt, 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.	68	MT		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.15	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-alighment of all adjacent connected members to their correct positions (weight of such adjacent members and temporarily dismantled members not payable), scafolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	120	MT		
22.16	2313	Addition to, alterations in and/or modifiction 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.				
22.16.1	a	In erected position.	20	MT		
22.16.2	b	In fabrication yard.	50	MT		
22.17	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 posiion, 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 dismnatled members, re-alignment of adjacent connected members (weight of such temporarily dismantled members and adjacent members not payable), scafolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	40	MT		
22.18	A2316	Transportation from store, fabrication and erection of minimum 3.0 mm thick stainless steel liner of grade AISI-304; finish grade 2B (Cold rolled, annealed & pickled and skin passed) on MS plate for inside surfaces of hopper & mouth of hopper of bunkers including fixing with stainless steel studs, bolting (including countersunk), welding with electrode classification E308L for welding of stainless steel to stainless steel and E309 for stainless steel to mild steel etc all complete. Stainless steel plate will be supplied by BHEL free of cost as per tender.	45	MT		
22.19	2317	Providing and fixing in position PTFE type sliding bearings of reputed manufacturer, individual bearing suitable for required vertical loads as per the construction drawings and for maximum displacement of ±50 mm including all taxes, duties, transportation, installation, drilling, bolting, erecting, aligning etc all complete for following vertical loads.				
22.19.1	a	20 Tons.	10	NO		
22.19.2	b	25 Tons.	10	NO		
22.19.3	c	40 Tons.	10	NO		
22.19.4	d	50 Tons.	10	NO		
22.19.5	e	60 Tons.	5	NO		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
22.20	2318	Providing and fixing flexible open ended bellow strap of neoprene of minimum thickness 2 mm and minimum width 200 mm with aluminium stripped edges as sealing below top of bunker and bottom of tripper floor to avoid the coal dust nuisance all complete. Payments terms - a) On receipt of materials at site - 65%; b) Erection & fixing - 35%.	200	RM		
22.21	2319	Supply, fabrication and fixing of stainless steel 304 grade pipe hand railing of 32 mm/ 40 mm dia including transportation, loading/unloading etc all complete. Payments terms - a) On receipt of materials at site - 65%; b) Erection & fixing - 35%.	6	MT		
22.22	2320	Supply, fabrication and fixing of GI pipe hand railing (900 mm high) of 32 mm/ 40 mm dia (Medium Grade) including transportation, loading/ unloading, painting etc all complete. Payments terms - a) On receipt of materials at site - 65%; b) Erection & fixing - 35%.	50	MT		
22.23	2321	Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc all complete as per instruction of BHEL engineer in writing.	10	RM		
22.24	2322	Conducting ultasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc all complete as per instruction of BHEL engineer in writing.	10	RM		
22.25	2323	Conducting ultasonic test on steel plates as per ASTM-A435 or equivalent wherever specified including equipments, measuring devices, gauges, test report etc all complete as per instruction of BHEL engineer in writing.	10	SQM		
22.26	2324	Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc all complete as per instruction of BHEL engineer in writing.	10	RM		
22.27	2325	Conducting dye penetration test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges etc all complete (over and above the work already specified in the specifications as per instruction of BHEL engineer in writing.	10	RM		
22.28	2326	Supply, fixing lightning arrester and air terminal over roof of power house building, pump house and other dtructures inluding all materials, labour, electrodes etc complete (all materials to be supplied by the contractor).	20	NO		
23.0	**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 for the following)**				
23.1	2401	Preparation of sub grade by excavating earth to required depth for all types of soil/ rock, dressing to camber and consolidating the base including making good the undulation etc and disposal of surplus earth within a lead upto 1 km etc all complete.	3044	CUM		
23.2	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 97% 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.	641	CUM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
23.3	2403	Providing, stacking & laying granular morrum for shoulder including watering, compaction with road roller to required camber etc all complete.	202	CUM		
23.4	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.	1008	CUM		
23.5	2405	Providing & laying water bound macadam base course in layers of required thickness with stone aggregate 63 mm to 40 mm 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.	756	CUM		
23.6	2406	Providing & laying water bound macadam base course with stone aggregate 50 mm to 20 mm 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.	203	CUM		
23.7	2407	Providing & applying tack coat of low viscosity liquid bitumen of grade 80/ 100 confirming to IS:73, 217 or 454 as applicable @10 kg/ 10 sqm for untreated WBM surface including scraping, cleaning with compressed air etc all complete.	5446	SQM		
23.8	2408	Providing & applying tack coat of low viscosity liquid bitumen of grade 80/ 100 confirming to IS:73, 217 or 454 as applicable @ 6 kg/ 10 sqm for bituminous surface including cleaning with compressed air etc all complete.	1488	SQM		
23.9	2409	Providing, mixing & laying of bituminous macadam 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.				
23.9.1	a	75 mm compacted thickness.	2996	SQM		
23.10	2410	Providing, mixing & laying 20 mm compacted open graded premix carpet 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.	6720	SQM		
23.11	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 9.8 kg/ 10 sqm followed by a cover of stone chips at the rate of 0.09 cum/ 10 sqm including rolling etc all complete.	3360	SQM		
23.12	2412	Supplying and laying 400 mm x 150 mm x 350 mm deep precast concrete kerb stone of grade M20 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.	1015	RM		
23.13	2414	Supply and laying 150 mm dia RCC 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. Excavation & backfilling shall be paid separately as per relevant item.	243	RM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
23.14	2415	Dismantling of existing road consisting of premix carpet, kerb stone/ brick on edge, bitumen macadem course, WBM, prepairing subgrade to receive new WBM including camber consolidation including disposal of debris within a lead of 1 km etc all complete.	875	SQM		
23.15	2416	Providing 25 mm compacted thick premix carpet on existing/ damaged road surfaces in a single course composed of suitable small size aggregate premixed with a bituminous binder using medium setting grade bitumen on the existing base including tack coat, cleaning of existing surface, mixing, applying, rolling etc all complete.	893	SQM		
23.16	2417	Transportation of coal boulder of various sizes (400-900 mm), making the boulders into smaller sizes (200 mm & below), laying the bouders for making the sub-base of road, transportation & laying of coal mill rejects spreading to fill the voids after laying boulders, rolling and making the surface smooth prepared for laying of WBM, etc as per instruction of engineer, all copmlete. Area for picking of coal boulders & mill rejects shall be identified by BHEL within plant premises.	15000	CUM		
23.17	2418	Providing & laying of stone dust to fill the voids after laying boulders/ stone, rolling and making the surface smooth for laying of WBM etc as per instruction of engineer, all copmlete.	10000	CUM		
23.18	2418A	Supplying and filling sand for preparation of read sub-base/ sub-grade in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/ compaction by manual/ mechanical means, dressing, royalty (if any) etc all complete.	6000	CUM		
24.0	**M**	**MISCELLANEOUS WORKS-2** **(Miscellaneous works including all labour, material, equipment etc at any level unless otherwise specified as per specification, drawings and as directed by engineer)**				
24.1	M1	Pumping out water by de-watering pump from CW pit, feed pool, cooling tower basin, water logged areas etc as an when required to facilitate erection & commissioning including provision of delevery pipe upto 150 m etc all complete as per site condition and instruction of engineer.	750	HP-HR		
24.2	M2	Engagement of manpower for cleaning and house keeping with all equipments, T&P etc from various floor of power house and other buildings, boiler, ESP, mill area and stacking at designated place at 0.0 M with a lead of 100 m.	2500	MAN-DAY		
24.3	M3	Removal and disposal of scrap steel, scrap wood, broken packing crates, cable scrap, debris and other waste materials etc from project site to a designated place within 5 km range, with all manpower T&P etc including loading and unloading as directed by BHEL engineer.				
24.3.1	a	Steel.	75	MT		
24.3.2	b	Wood/ cable scrap.	325	CUM		
24.3.3	c	Debris & other waste materials.	500	CUM		
24.4	M4	Supply, fabrication and Installation of GSS Zinc cCoating 180 gms/m^2 ducting of ducting for AC system in power house building area. Alll materials shall be supplied by contractor after obtaining prior approval.				
24.4.1	i	18G.	250	SQM		
24.4.2	ii	20G.	400	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
24.4.3	iii	22G.	750	SQM		
24.4.4	iv	24G.	1500	SQM		
24.5	M5	Supply and installation of 50 mm thick glass wool with Al faced foil thermal insulation of supply air duct & return air duct with finish.	3000	SQM		
24.6	M6	Supply and installation of 25 mm thick resin bonded fibre glass for accoustic insulation with finish.	150	SQM		
24.7	M7	Supply and installation of MS Angle, Rods etc as specified for duct support	10	MT		
25.0	**LPP**	**LP PIPING** **(Miscellaneous works including all labour, material, equipment etc at any level unless otherwise specified as per specification, drawings and as directed by engineer)**				
25.1	LPP1	Receipt & handling from storage, erection, welding, non-destructive testing, inspection, internal cleaning & painting (as per scope), final painting, testing & commissioning of circulation water piping system (CW (NB 3300)/ ACW (NB 700-800)) Carbon Steel (IS:2062) piping and associated material (including fittings, hardwares, instruments and valves etc) as applicable as per tender and drawings etc complete. Payment terms - (a) Erection - 30%; (b) Alignment - 5%; (c) Welding - 38%; (d) NDT/ hydraulic test/ any other test to confirm the intergrity of welds (as per FQP) - 10% (e) Wrapping/ coating/ painting completion - 10%, (f) Charging of line - 5% and (g) As-built drawing submission - 2%.	600	MT		
25.2	LPP2	Receipt & handling from storage, fabrication, erection, welding, inspection, fixing/ embedding, painting etc of hangers, supports & structures, misc supporting material etc all complete. Payment terms - (a) Erection - 60%; (b) Welding - 35%; (c) Painting completion - 3% and (d) As-built drawing submission - 2%.	20	MT		
25.3	LPP3	Receipt & handling from storage, erection, welding, inspection, fixing/ embedding, etc of RE joints, expansion bellows, annubars & flow elements all complete. Payment terms - (a) Erection - 60%; (b) Welding - 38% and (c) As-built drawing submission - 2%.	6	MT		
25.4	LPP4	Fabrication of mitre bends, reducer, tees of various sizesfor various carbon steel piping system etc from straight pipes. Straight pipes will be supplied by BHEL free of cost (Receipt & handling of the pipes are included). Payment terms - (a) Fabrication - 80%; (b) Erection - 15% and (c) Charging of the line where these items are used - 5%.	10	MT		
25.5	LPP5	Supply, application of wrapping/ coating materials of burried pipe as per the specification below - One coat of coal tar primer of approved quality followed by a final coating of epoxy resin & coal tar blend and then two layers, each 2 mm thick of coal tar tape as outer wrap shall be applied to the external surface of the coating. FRG reinforced plastic or coal tar wrap shall be used conforming to AWWA-C-203/IS:10221 or approved relevant codes/ standards. Contractor shall submit detailed protection procedure for approval. The pipes that will be buried underground shall be spark tested after completion of wrapping of each sections/ field jointing to check the quality of insulation that has been provided on the pipe (Quantity indicated is surface area of buried pipe in sqm). Payment terms - (a) Receipt of material at site - 50% and (ii) Application & completion - 50%.	4000	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
26.0	**TOTAL**					
27.0	**3300**	**NON-SCHEDULE ITEMS** (For items not covered above schedule, quote % below/ at par/ above of DSR-2007)				
27.1	a	Rate of complete item.	___ %			
27.2	b	Rate of supply of materials at site only.	___ %			
27.3	c	Rate for execution complete excluding supply of materials.	___ %			

VOLUME-III
PRICE SCHEDULE, REV-1
(PACKAGE-D)

Civil, structural, architectural etc of civil superstructure work of 1x500 MW unit # 4 for 2x500 MW units at Sagardighi STPP, WB.

TENDER NO - PSER:SCT:SDG-C1274:11

SCH-3 - SUPPLY PART

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.0	**400**	**REINFORCEMENT**				
1.1	401 & 406	Supplying, transportation to site, etc of mild steel reinforcements conforming to grade 1 of IS:432 Part 1 in concrete & brickwork as per specifications & drawings. Materials shall be supplied by contractor from RINL/ SAIL/ TISCO or BHEL/ customer approved manufacturer.	160	MT		
2.0	**700**	**MS EMBEDMENTS**				
2.1	704	Supply, transportation to site etc mild steel foundation bolt assembly conforming to IS:2062 and Grade 1 of IS:432 in concrete all complete.	30	MT		
3.0	**1500**	**ROOFING/ SIDE CLADDING**				
3.1	1501A	Designing, supply, transportation to site etc permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to Class 3 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 100 mm 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 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 @ 260 mm c/c in the trough and stich screws between two adjacent sheets and				
3.1.1.	a	Span upto 1800 mm.	9100	SQM		
3.1.2	b	Span exceeding 1800 mm and upto 2500 mm.	1676	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
3.2	1503A	Designing, supply, transportation to site profiled external cladding sheet manufactured out of 0.55 mm TCT (Total coated thickness) of permanently colour coated zinc alume steel (150 gsm zinc-aluminium alloy coating total of both sides as per AS:1397:1993) having 300 MPa yield strength. The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side.The sheet shall have 500 mm cover width, 47 mm height crests at 250 mm centres with special male/ female side laps and anti-siphoning features to prevent leakage.				
3.2.1	a)	For final painting with Silicon Modified Polyester (SMP).	8460	SQM		
3.2.2	b)	For final painting with Super Polyester XRW (as per AS/NZS-2728:1997 Category3).	4750	SQM		
3.3	1505A	Designing, supply, transportation to site profiled Internal Cladding sheet manufactured out of 0.6 mm TCT (Total coated thickness) of permanently colour coated zincalume steel (150/ 180 gsm zinc-aluminium alloy coating mass total of both sides as per AS:1397:1993). The colour coating shall comprise of 20 microns finish coat over a 5 micron primer coat on the exposed side and a back coat of 5 micron over a primer coat of 5 micron on reverse side. The sheet shall have 980 mm cover width, 28 mm height crests at 195 mm centres with special male/ female side laps and anti-siphoning features to prevent leakage. The sheet shall be fixed to the structure by means of self drilling fastners no 12-24 x 25 mm conforms to AS:3566 Class-3 long at valley. Sub- girts of size 50 mm x 50 mm x 50 mm manufactured out of 16G GI (1.6 mm GI) 'Z' shape would be fixed the inner sheeting on face side at runner locations all complete as per specification.				
3.3.1	a)	For final painting with Silicon Modified Polyester (SMP).				
3.3.1.1	i)	For zincalume sheet 150 gsm and having 550 Mpa yield strength.	2580	SQM		
3.3.1.2	ii)	For zincalume sheet 180 gsm and having 240 Mpa yield strength.	1270	SQM		
3.3.2	b)	For final painting with Super Polyester XRW (as per AS/ NZS-2728:1997 Category3).				
3.3.2.1	i)	For zincalume sheet 150 gsm and having 550 Mpa yield strength.	1060	SQM		
3.3.2.2	ii)	For zincalume sheet 180 gsm and having 240 Mpa yield strength.	620	SQM		
4.0	**1600**	**FALSE CEILING**				
4.1	1604	Suply, transportation to site permanently colour coated aluminium false ceiling of approved colour with stove enamel finsih of approved make in LINEAR and SQUARE type with corrosion resistance aluminium alloys panels of minimum thickness 0.5 mm including 50 mm thick mineral wool insulation (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. AC ducts etc suitable MS channel (minimum MC75) grid 1200 c/c maximum shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. The work to be complete as per specifications, drawings and direction of engineer.	2250	SQM		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
4.2	1606A	Supply, transporation to site 12.5 mm thick glass fibre reinforced gypsum plastic borad in plan curve or in elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers etc including two or more coats of acrylic emulsion paint of approved colour to give an even shade with smooth finish all complete as per architectural design and detail metal suspension system as per ASTM C-635 shall be hot dipped MS galvanized (grade 180 as per IS:277) nominal size of T-section shall be 24 x 38 mm or 24 x 25 mm cross runners. 24mm wide exposed flange surface shall be permanently color coated. Suspension system shall be as per manufaturer's specification supported over movment platform including 25 mm thick resin bonded mineral wool insulation (as per IS:8183) bound in polythene bags on top of ceiling.	280	SQM		
5.0	**1700**	**RAIN WATER DOWN TAKE PIPES**				
5.1	1707A	Supply, transportation to site GI down take pipes conforming to IS:1239/ IS:3589 of heavy duty all complete for following diameters.				
5.1.1	a	100 mm dia.	120	RM		
5.1.2	b	150 mm dia.	2600	RM		
5.1.3	c	200 mm dia.	900	RM		
6.0	**1800**	**MISCELLANEOUS WORKS**				
6.1	1810	Sypplying, transportation to site rails, guide rails, fixtures, bolts, etc for transformer, rail track all complete.	50	MT		
7.0	**2300**	**STRUCTURAL STEEL**				
7.1	2307	Supply, fabrication, transportation to site 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.	60	MT		
7.2	2308	Supply, fabrication, transportation to site 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.	22	MT		
7.3	2310	Supply, fabrication, transportation to site 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 300 mm long for structural steel work etc all complete.	20	KG		

SL NO	ST NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
7.4	2311	Supply, fabrication, transportation to site 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.	6750	KG		
8.0	**TOTAL**					

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:SDG:C1274:11
2) BHEL's NIT, vide reference no PSER:SCT:SDG:C1274 Date: 05-11-2011.
3) BHEL's TCN-01,vide reference no PSER:SCT:SDG:C1274:11:TCN-01 Date: 19-11-2011.
4) 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)