NATIONAL PROJECTS CONSTRUCTION CORPORATION LTD.
(A GOVT OF INDIA ENTERPRISE)

EASTERN ZONAL OFFICE
3A, DR. S N ROY ROAD, KOLKATA-700029

NAME OF WORK:-SUPPLYING INSTALLATION TESTING AND COMMISSIONING OF 1.25 MVA CAPACITY(1 NO 750 & 1 NO 500 KVA TRANSFORMERS) 6/0.433 KV SUB STATION ALONG WITH ALL OTHER ANCILLIARY WORKS

IN

CHITTARANJAN NATIONAL CANCER INSTITUTE , KOLKATA

EZ/CNCI/NIT/

TENDER NO:-EZ/CNCI/NIT/11-12/ DATED 13/03/12

ISSUED TO :-

INDEX

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Govt. of India Enterprise)
EASTERN ZONAL OFFICE
3A Dr.S.N.Roy Road, Kolkata – 700 029

DETAILED NOTICE INVITING TENDERS

(3rd Call)

REF NO :-EZ/ CNCI/NIT/12-13/ 491 **Dated :-09/07/12**

Sealed percentage rate open tender in two envelope system is invited by the Zonal Manager, Eastern Zone, NPCC LTD from reputed , resourceful Electrical licenced contractors having competency & experience , for executing similar nature of jobs.

Sl No.	Name of works	Time of completion	Approximate cost (Rs.)	E.M.D. (Rs.)	Cost of tender doc.(Rs)
1	*supply installation testing & commissioning of 1.25 MVA capacity (1 no 750 KVA & 1 NO 500 KVA transformers) 6/0.433 KV substation along with all other ancillary works in CNCI, kolkata, works under EZO*	*Six months*	*390.00 lacs*	*7,80,000/-*	*2000/-*

Date of sale of tender document:- 11/07/12 to 25/07/12 upto 12-00 Noon

Date of submission of tender documents:- on 25/07/12 upto 3-00 PM

Date of opening of Envelope-I of tenders:- on 25/07/12 at 4-30 PM.

Date of opening of Envelope-II of tenders:- Only Qualified bidders are to be intimated.

MINIMUM ELIGIBILITY CRITERIA (DOCUMENTARY EVIDENCE FOR WHICH TO BE SUBMITTED)

1) The applicant must possess completion certificate for 3(three) similar nature of works of value not less than 40% or 2(two) similar nature of works of value not less than 50% or one similar nature of work of value not less than 80% of the

approximate cost as mentioned above with in last 7 years ending last day of month previous to the one in which application is invited. **Similar nature of work means Laying Electrical jobs of minimum 1.00 MVA substation work including supplying, installation, testing & commissioning of transformers & its ancillaries. Value of completion certificates are to updated** to 12-13 price level @ 5% per year compounded.

2) The applicant must possess VAT No , PAN , EPF Registration No, Sevice Tax Registration No.

3) Average annual financial turnover during the **last 3 (three) years ending 31st March of the previous financial year should be at least 30% of the approximate cost of work for which application for pre qualification is being invited. Balance sheet ,Profit & Loss statement to be submitted. Financial Turnovers are to be** updated to 12-13 price level @ 5% per year compounded.

4) Copies of original documents (as applicable)defining the constitution or legal status, place of registration, and principal place of business like Memorandum & Articles of Association/ Registered Partnership deed/ Affidavit in support of proprietorship, written power of attorney in favour of the signatory of the Bid.

5) List of monetary value of construction work completed in each of the last three financial years.

6) List of works completed in each of the last three financial years and works under way or contractually committed with details of clients who may be contacted for further information on these contracts.

7) Major items of constructional tools & plants in holding of the company or acquired through lease.

8) Bidders must have in its permanent role Electrical supervisor having certificate of competency with part no 1,2,3,4,5, 7A,7B & 12.

9) Bidders who meet the minimum qualification criteria as stated above will be qualified only if their available bid capacity is more than the total bid value. The available bid capacity will be calculated as under:

Assessed Available Bid capacity = (A*N*1.5- B)

where

A = Maximum value of civil engineering works executed in any one year during the last five years (updated to 12-13 price level @ 5% per year compounded).
N = Number of years prescribed for completion of the works for which bids are invited, part of the year to be considered as one .
B = Value, at 12-13 price level, of existing commitments and on-going works

All documents submitted by the bidder to be signed & stamped in all pages by one authorized signatory of the company

Financial turnover and cost of completed works of previous years shall be given weightage of 5% per year(compounded) based on rupee value to bring them to 10-11 price level.

Even though the bidders meet the above qualifying criteria, they are subject to be disqualified at any stage of the tender process ,if they have:

a) made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements;(NPCCL, in this regard always reserves the right to verify from any person, banker of the applicant or companies issuing credentials in favoyr of the applicant) and/or

b) record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.; and/or

c) participated in the previous bidding for the same work and had quoted unreasonably high/low bid prices and could not furnish rational justification to the employer. This is only applicable if the tender is being invited for other than first time.

However, tender inviting authority always reserves the right to verify the competency/eligibility of the bidders with regard to any other works being executed or completed by the bidder from previous or existing client of the bidder in writing & reserves the right not to qualify the bidder for opening of price envelope.

Application for purchase of tender document to be made in the letter head of the company at Eastern Zonal Office, 3A, Dr S N Roy Road, Kolkata-700029, mentioning therein telephone no, email address, etc for future correspondence. In case due to any reason the offices remains closed on the last day of sale or submission of tender document, tenders will be sold & received on the next working day following times as mentioned above. Tenderers may also download tender document from the web site & submit the same enclosing cost towards tender document in Envelope-I in the form of Bankers cheque/ Demand draft payable at Kolkata in favour National Projects Construction Corporation Limited.

Applicants are advised to see the site of work well in advance and get themselves thoroughly acquainted with the local conditions at site, transport facilities, availability of water, facilities of access to the site, difficulties of work if any, and other matters that may be required for submission of price. No excuses for ignorance of such situations/factors will not be entertained.

Value of work shown in the notice is only approximate & may be appreciably increased or reduced for which amendment will be issued and eligibility criteria as stated above will accordingly be applicable.

Canvassing in connection with the application submitted is strictly prohibited and tenderer who resorts to this will render his tender liable to rejection.

This corporation reserves the right to verify the documents submitted by the applicants with the originals, if desired or if desired may refer the same to the issuing authority for authenticity

Further, any corrigendum/addendum/errata etc. in respect of above notice shall be made available in our official web site www.npcc.gov.in only . No further press publication shall be made in this regard. Hence applicants are advised to visit our website regularly for any amendment/ corrigendum/ addendums in this regard.

OIC, EZ

CC:

1.The Director,CNCI, 37, S P Mukherjee Road, Kolkata-700026& with a request for nominating at least one official from CNCI as member of the tender committee for finalizing tenders invited in connection with the works of CNCI, if desired.

2.GM(PMC), NPCC LTD, Corporate Office, Faridabad for uploading in necessary web sites please . Soft copy of the same in this regard is being sent to e mail IDs npcc1957@rediffmail.com & pmc.npcc@nic.in

3The AM(F) /EZ, NPCC Ltd.,EZO ,Kolkata.

4. Notice Board.

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Govt. of India Enterprise)

INSTRUCTION TO TENDERERS.

1. Tenderers should deposit the Earnest Money as mentioned above ng with the tender by Demand Draft payable at Kolkata on any scheduled bank in favour of National Projects Construction Corporation Limited for an amount as mentioned above . Tender will be rejected outright, if submitted, without any earnest money. Term deposit will not be accepted in any case.

2. If the tender is accepted, the EMD of the lowest bidder will be coverted to ISD. Tenderer should deposit an amount of 5.00% of the Contract Value towards performance guarantee within 7 days from the date of sue of Letter of acceptance. Failing which tender inviting authority reserves the right to cancel the tender & forfeit the earnest money submitted, all ready to ISD . Subsequently, this ISD, Performance guarantee will form part of security deposit, to be deducted from running account bills of the contractor which is be deducted as per provision of the contract as undertaken by L1 in the Memorandum (v) of Form of Tender under security deposit.

3. SUBMISSION OF TENDERS:-

a) Tender to be submitted in two separate envelopes as detailed below containing the following:-

Envelope-I, :- a) Earnest Money deposit as detailed.

b)Unequivocal acceptance of all the Terms & Conditions & technical specifications of the bidding document in Format "ACCEPTANCE OF TENDER CONDITIONS"

c) The power of attorney of the person signing above documents

Envelope-II:-

The tender document issued to the bidder, with rates duly filled in, signed & stamped in all pages. There should be no condition in his envelope which will otherwise make the bid of the tenderer liable to be ca led .

Delay in submission & receipt of tenders which are sent for by post or Courier will not be any excuse & such tenders will not be accepted.

II. All the envelopes to be marked on top as Envelope-I Envelope-II as applicable with name, address, phone no of the bidder submitting the bid & addressed to the tender inviting authority. All the two envelopes to be put in a third outer envelope marked as "Containing Envelope-I, & Envelope-II should also bear the name, address & phone no of the bidder & addressed to the tender inviting authority.

III. Tenderer should quote in figures as well as in words their rate separately for PART- A, & PART-B (as provided in BOQ) in percentage below/the percentage above or at par at the bottom of summary sheet of priced schedule of works in the following manner :"I/We agree to carry out the work for which the tender been invited at par/the percentage above/the percentage below the rates shown in the schedule attached with the tender and agree to abide by all the specifications, terms and conditions and stipulation of the tender documents". Lowest bidder will be decided on the rate offered in PART-A and PART-B taken together. However, NPCC reserves the right to award Part A & Part B taken together or Part A & not Part B or Part A & Part B separately in phases.

IV. In the event of after opening Envelope-II, lowest bidder' s offer is found to be not sufficiently responsive due to any reason as detailed elsewhere in the tender document, second lowest bidder will be considered to be the lowest bidder.

V. Intending tenderers are advised to see the site of work and consider other aspects that might bear an impact in the execution of work and get themselves thoroughly acquainted with the local & actual conditions at site, transport facilities, availability of water, facilities of access to the site, difficulties of work if any, law & order situation or any other matter that might have any direct or indirect impact on smooth execution of work before submitting the tender. The contractor shall be fully responsible for considering financial effect of any or all such factors in his quoted rates. No claim due to absence of knowledge of site condition etc, will be entertained in future.

VI. The tender form and papers must be duly filled in and d in all respects. All corrections and additions and alternations etc. must be duly signed. Each tender must be signed by the tenderer in all pages and addressed to the Zonal Manager, EZ, NPCC LTD in the letter head of the company.

VII. A tender once submitted shall not be withdrawn within a period of 120 days from the day of receipt of the tenders. If a tenderer draws his tender , his earnest money deposit shall stand forfeited and he shall render himself liable to be debarred from submitting any tender for works under NPCC LTD for a minimum period of one year. His enlistment with the corporation, if any will also be cancelled on the occurrence of above.

VIII. Time is the essence of the contract. Time allowed for completion of the work is as mentioned in the above table to be considered from the date of letter of award.

IX. The successful tenderer will have to purchase five copies of tender documents after payment of cost (as mentioned above) and also Non Judicial stamp paper of appropriate value for signing formal agreement with NPCC within 15 (fifteen)) days from the date of issue of letter of award, failing which the tender shall liable to be terminated and the Initial security/ performance guarantee deposited & earnest money shall stand forfeited to Corporation without any further reference to the contractor.

X. Obtaining Labour License from Statutory Authority is t responsibility of the contractor. The contractor during the course of execution of the shall abide by all labour laws, Acts, Electricity Rules, statutory regulations etc. as will be enforced during the period of contract.The contractor shall also abide by the rules and regulations laid down by the purchaser regarding day-to-day works at the site, providing entry passes to his employees, labours etc.All tools and plants and implements required for the execution of work should have to be arranged for by the contractor at his own cost or expense.

XI. Bailing out water from site, shoring , dewatering of excavated pit for foundation or otherwise for the interest of work, site clearance before & after the work , making approach to site or borough pit will be the contractors responsibility & tenderer should in built such costs while quoting his rates.

XII. Before submission of his offer, tenderer/ bidder may obtain clarification in writing or during pre bid discussions from the tender inviting authority regarding any ambiguity as might appear in his decision & such clarifications will form a part of the contract. However, during execution of work , misunderstanding about any clause of the contract will not be any excuse for any claim or otherwise & in such cases decision of the engineer of NPCC will be final & binding in this regard.

XIII. Tender drawings provided with the tender is purely ten & such drawings cannot be referred in discussion or claim in the future.

XIV. All rates quoted shall be inclusive of all charges including transportation, loading unloading ,safe delivery at site and all other taxes duties applicable and prevailing at the time of submission of tendering including Octroi , Tools , Ferry Charges, Local Charges, Royalties, Sales Tax , Excise, EPF, Construction workers' welfare cess, all other taxes, duties & charges of other statutory authorities. Service tax, if any payable by the contractor is to be paid to statutory authority & to be reimbursed by NPCC separately, on production of documentary evidence in original of submitting the same with appropriate statutory authority. However, the amount is to be reimbursed only on reimbursement of the same by the owner.

XV. Value of work shown in the tender notice is only approximate & may be appreciably increased or decreased at tender stage(for which necessary corrigendum will be issued) or during execution stage at the discretion of the Zonal Manager & who will be approving authority for the same and in that case. The contractor will be

bound to abide by the specifications, terms, conditions and rates of the tender. No claim in this regard will be entertained.

XVI. Canvassing in connection with the tender submitted is prohibited and tenderer who resorts to this will render his tender liable to rejection.

XVII. The earnest money deposited by an unsuccessful tenderer will be refunded on application to the Corporation in due course as per rules as the case may be. Such earnest money will not accrue any interest.

XVIII. The accepting authority of the tender does not bind himself to accept the lowest tender and reserves the right to accept/reject or tenders or to accept any tender without assigning any reason to anybody, whatsoever. The accepting authority also reserves the right to split up any part of work between two or more tenderers.

XIX. Tenderers should be aware of all statutory provisions vailing in the area and should abide by the same and any claim arising out of he same, if any, will not be entertained.

XX. No extra payment of any kind e.g. increase in labour rates, material cost, transport cost, fuels, spare parts, tools tackles, machine , taxes etc or due to enactment of any new law or for any other reason will be entertained during execution of the work and till completion.

XXI. Under no circumstances, the participating bidders are entitled to alter their tender after acceptance of the tender.

XXII. The tenderer shall submit an analysis of rates if called upon to do so.

XXIII. Conditional tender will not be accepted & will summarily be rejected.

XXIV. Barricading the site as directed by site engineer, with MS/PGI/CGI sheets with proper support arrangement to make it intrusion free from persons not related to the construction activities & proper lighting of the area be contractors responsibility for which costs are to be inbuilt in his rate.

XXV. MOBILIZATION OF MEN, MATERIALS AND MACHINERY :

All expenses towards mobilization at site and de-mobilization including bringing in equipment, work force, materials, dismantling the equipments, clearing the site etc. shall be deemed to be included in prices quoted and no separate payment on account of such expenses shall be entertained.

XXVI. It shall be entirely the Contractor’s responsibility to provide, operate and maintain all necessary construction equipments, scaffoldings and safety gadget, lifting tackles, tools and appliances to perform the work in a workman like and efficient

manner and complete all jobs as per the specifications and within the schedule time of completion of work. Further, contractor shall also be responsible for obtaining temporary electric and water connection for all purposes. The contractor shall also make standby arrangement for water & electricity to ensure un-interrupted supply.

XXVII. The procurement and supply in sequence and at the appropriate time of all materials and consumable shall be entirely the contractor's responsibilities and his rates for execution of work shall be inclusive of supply of all these items.

XXVIII. All designs, drawings, bill of quantities, etc for all works shall be supplied to the contractor for all structures, services and development works by NPCC in phased manner as the works progress. However it shall be the duty and responsibility of the contractor to bring to the notice of the NPCC in writing as to any variation, discrepancy or any other changes required and to obtain revised drawings and designs and / or approval of the NPCC in writing for the same & such discrepancies shall never be the cause for extension of time or cost escalation.

XXIX. One copy of contract documents including drawings furnished to the contractor shall be kept at the site and the same shall at all reasonable times be available for inspection.

XXX. All materials construction plants and equipments etc. once brought by the contractor within the project area will not be allowed to be removed from the premises without the written permission of the NPCC. Similarly enabling works built by the contractor for the main construction undertaken by him, shall not be dismantled and removed without the written authority of the NPCC.

XXXI. Contractor shall have to prepare the shop drawings, bar bending schedule, free of cost if required for any of the items of work. Five copies of these shop drawings including revised drawings if any will be submitted to NPCC for approval. Before executing the items shop drawings should be approved by NPCC.

XXXII. TECHNICAL STAFF FOR WORK :- The contractor shall employ the adequate number of technical staff(ONE BE (ELECT) and ONE DIPLOMA (ELECT) for this work depending upon the requirement of work. For this purpose the requirement as decided by NPCC shall be final and binding on contractor.

Signature of Bidder Signature of tender inviting authority

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Govt. of India Enterprise)
FORM OF TENDER

(To be submitted in Non Judicial Stamp paper of appropriate value & duly Notarised)

To,

---

1) I/We tender for execution of the work with the full understanding that tender has been invited in two envelope system & that envelope-II will not be opened unless requirement as laid down in the clauses of "Instruction to bidder" for Envelope-I is met . The decision of NPCC for both the Envelopes will be final & binding upon me/us & no court of law will be approached by me/us in this regard against such decision even if such decision is either not to our choice or in my/ our favour

2) We hereby tender for execution of the work as per tender documents within the time schedule of completion of work and accepted rates in the bill of quantities quoted by me/us for the whole work in the accordance with the Notice Inviting Tenders, conditions of Contract, Specifications of materials and workmanship, bill of quantities, drawing, time schedule of completion of jobs and other documents and papers, all as in tender documents.

3) It has been explained to me/ us that the time stipulated for jobs and completion of works in all respects and in different stages mentioned in the "Time schedule for Completion of jobs and signed and accepted by me/us is the essence of the contract. I/We agree that in case of failure on my/our part to strictly observe the time of completion mentioned for jobs or any of them and the final completion of works in all respects according to the schedule set out in the said "Time Schedule for completion of stipulations contained in the contract the recovery being made as specified therein. In exceptional circumstances extensions of time which shall always being in writing way, however be granted by the NPCC at its entire discretion for some items and I/we agree that such extension of time will not be counted for the final completion of work as stipulated in the said "Time Schedule of Completion of jobs."

4) I/we agree to pay the earnest Money, ISD/Performance Guarantee, Security Deposit and accept the terms and condition as laid down in the memorandum below in this respect.

MEMORANDUM

i) General Description of work- As mentioned in the NIT.

ii) Earnest Money Deposit- As mentioned in the NIT.

iii) Initial Security Deposit(ISD):- EMD to be converted into ISD

iv) Performance guarantee:-5(five)% of contract value to be submitted within 07(seven) days after issue of Letter of award . .

iv) Estimated Cost :As mentioned in the NIT & subsequent corrigendum

v)Security DepositTo be deducted @ 10% of each RA bill and will be restricted up to 10% of the contract value including ISD & Performance guarantee.

vi)Time allowed for starting :- The date of start of contract shall be reckoned from the date of issue of letter of award .

vii)Time for completion of work:- Total work to be completed in accordance with the time schedule of completion of work in the tender documents.

vii) Location of the work:- As mentioned in the NIT.

1. Should this tender be accepted, I/We agree to abide by and fulfill all terms and conditions referred to above and in default thereof, to forfeit, and pay NPCC or its successors or its authorized nominees such sums of money as are stipulated in the notice inviting tender documents.

2. If I/We fail to commence the work within 10 days of the date of issue of Letter of award or I/We fail to submit Initial security deposit/performance guarantee in 7 days from the date of issue of letter of award , I/We agree that NPCC shall, without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money deposited with NPCC as specified above & Initial security deposit/performance guarantee as applicable besides any other action as per terms of registration with NPCC. The NPCC shall also be at liberty to cancel the letter of award of tender if we fail to deposit the initial security deposit/performance guarantee as contained elsewhere in the tender documents.

3. All the terms & conditions of the tender document & their implications are fully understood by me/us & in case of ambiguity terms & conditions & other provisions of the tender document have been explained to our full satisfaction & as such no claim in this regard will be entertained.

Dated the_____ day of _____

SIGNATURE OF TENDERER

NAME IN CAPITAL LETTERS _____

ADDRESS _____

_____

SEAL OF TENDERER

WITNESS

OCCUPATION._____

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

I. EXECUTIING AGENCY/Employer means M/s N P C C Ltd. (A Govt. of India Enterprise) referred as NPCC who has been retained by Owner for any type of construction.

II.

III. National Projects Construction Corporation Ltd. Herein after called NPCC propose to complete the construction of Type quarters in different parts of West Bengal

IV. The work will be executed as per drawings "GOOD FOR CONSTRUCTION" to be released by NPCC

V. ENGINEER –IN-CHARGE means the Engineer of NPCC who shall supervise and be in-charge of the work from time to time.

VI. WORKS OR WORK The expression works or work shall unless there be something either in the subject or context repugnant to such construction be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original altered substituted or additional.

VII. CONTRACTOR The contractor shall mean the individual firm or company undertaking the works and shall include the legal personal representative or such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual firm or company.

VIII. DRAWINGS mean the drawings referred to in the specifications and any modifications of such drawings or such other drawings as may from time to time be furnished or approved by NPCC

IX. SITE means the lands and other places on under, in or through which the works are to be executed or carried out and any other lands or places provided by NPCC or used for the purpose of the agreement.

X. APPROVAL means approved in writing including subsequent written confirmation of previous verbal approval.

XI. WRITING means any manuscript typed written or printed statement under or over signature and / or seal as the case may be.

XII. MONTH means English Calendar month 'Day' means a Calendar day or 24 Hrs. each

XIII. CONTRACT price means the sum for which the tender is accepted as per the letter of intent.

XIV. LANGUAGE All documents and correspondence in respect of this contract shall be in English Language.

XV. BILL OF QUANTITIES OR SCHEDULE OF QUANTITIES means the priced and completed Bill of Quantities or Schedule of Quantities forming part of the tender.

XVI. TENDER price means the Contractor's priced offer to NPCC for the execution and completion of the work and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Intent or Award letter The word TENDER is synonymous with Bid and the word TENDER DOCUMENTS with "Bidding Documents" or " offer documents".

XVII. The headings in the clauses/ conditions of tender documents is for convenience only and shall not be used for interpretation of the clause / condition.

XVIII. Owner will mean BSF/CNCI/NIH/NIOH/FSEZ

XIX. Words imparting the singular only also include the final and vice versa where the context requires.

Clause 1 – The person/persons whose tender may be accepted (hereinafter called the contractor) within seven days of the issue of letter of acceptance of his tender deposit with the corporation in cash or Demand Draft a sum sufficient with the amount of the earnest-money deposited by him with his tender to make up the full initial security deposit as specified in the tender . Balance amount security deposit will be deducted from each R/A bill at rate as specified in the tender document to make for full amount of security deposit which is ten percent of the contract price. All compensation or other sums of money payable by the contractor to the corporation under the terms of his contract may be deducted from, or paid by the sale of a sufficient part of his security deposit, or from any sums which may be due or may become due to the contractor by the corporation on any account whatsoever, and in the event of security deposit being reduced by reason of any such deduction or sale as aforesaid the contractor shall within ten days thereafter make good in cash or demand draft in favour of NPCC Ltd any sum or sums which may have been deducted from or raised by sale of his security deposit or any part thereof.

Security deposit

Clause 2 – The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor and shall be reckoned from the date of issue of letter of award to commence work is given to the contractor. The work shall throughout the stipulated period of the contract be proceeded with, with all due diligence (time being deemed to be of the essence of the contract on the part of the contractor) and the contractor shall pay as compensation an amount equal to one per cent, or such smaller amount as the Zonal Manager (whose decision in writing shall be final) may decide on the amount of the tendered amount of the whole work as shown by the tender, for every day that the work remains uncommenced or unfinished after the proper dates. **The contractor shall commence execution of such part of the work as may be notified to him from the date of the order for commencement for work and diligently continue such work and further to ensure good progress and during the execution of the work, he shall be bound in all cases in which the time allowed for any work exceeds one month to complete one-fourth of the whole of the work before one-fourth of the whole time allowed under the contract has elapsed, one-half of the work, before one-half of such time has elapsed, and three-fourth of the work, before three-fourths of such time has elapsed. In the event of the contractor failing to comply with any of the conditions herein he shall be liable to pay as compensation an amount equal to one percent or such smaller amount as the Zonal Manager (whose decision in writing shall be final) may decide on the said tendered amount of the whole work for every day that the due quantity of work remains incomplete provided always that the entire amount of compensation to be paid under the provisions of this clause shall not exceed ten per cent on this contract amount of the work .**

Compensation for delay

Clause 3 – In any case in which under any clause or clauses of this contract the contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit (whether paid on one sum or deducted by installments) the Zonal Manager, on behalf of the Corporation shall have power to adopt any of the following courses, as he may deem best suited to the interests of the Corporation.

Action when whole of security deposit is forfeited.

I. To rescind the contract (of which rescissin notice in writing to the contractor under the hand of the Zonal Manager shall be conclusive evidence), and in which case the security deposit of the contractor shall stand forfeited, and be absolutely at the deposit of the Corporation.

II. To employ labour paid by the Corporation and to supply materials to carry out the work, or any part of the work, debiting the contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certificate of the Executive Engineer shall be final and conclusive against the contractor) and crediting him with the value of the work done. In all respects in the same manner and at the same rates as it had been carried our by the contractor under the terms of his contract the certificate of the Executive Engineer as to the value of the work done shall be final and conclusive against the contractor.

III. To measure up the work of the contractor, and to take such part thereof as shall be unexecuted out of his hands, and to give it to another contractor to complete, in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess the certificate in writing of the Executive Engineer shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by the corporation under the contract or otherwise. of from his security deposit or the proceeds of sale thereof, or a sufficient part thereof.

In the event of any of the above courses being adopted by the Zonal Manager the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procure any materials, or entered into any engagements or made any advances on account of, or with a view to the execution of the work or the performance of the contract. And in caser the contract shall be rescinded under the provision aforesaid the contractor shall not be entitled to recover or be paid any sum for any work theretofore actually performed under this contract, unless and until the Executive Engineer /Asstt. Engineer will have certified in writing the performance of such work and value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

Clause 4 – In any case in which any of the powers conferred upon the Zonal Manager by clause by 3 hereof, shall have become exercisable and the same shall not be exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall not withstanding be exercisable in the event of any future case of default by the contractor for which by any clause of clauses hereof he is declared liable to pay compensation amounting to the whole of his security deposit, and the liability of the contractor for past and future compensation shall remain unaffected. In the event of the Zonal Manager putting in force either of the powers (a) or (c) vested in him under the preceding clause he may, if he so desire, take possession of all or any tools, plant, materials and stores, in or upon the works, or the site thereof of belonging to the contractor, or procured by him and intended to be used for the execution of the work or any part thereof paying or allowing for the same in account at the contract rates, or in case of these not being applicable, at current market rates to be certified by the Executive Engineer whose certificate thereof shall be final, otherwise the Zonal Manager may give notice in writing to the contractor or his clerk of the works, foreman or other authorized agent

Contractors remains liable to pay compensation if action not taken under clause 3.

Power to take possession of or require removal of or sell contractor's plant.

require him to remove such tools, plants, materials or stores from the premises (within a time to be specified in such notice), and in the event of the contract failing to comply with any such requisition, the Executive Engineer may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and at his risk in all respects, and the certificate of the Executive Engineer as to the expense of any such removal and the amount of the proceeds and expense of any such sale shall be final and conclusive against the contractor.

Clause 5 – If the contractor shall desire an extension of the time for completion of the work on the grounds of his having been unavoidably hindered in the execution, the contractor shall give an immediate report of such hindrance to the Executive Engineer in writing and if he shall desire an extension of time for completion of the work on the ground thereof he shall apply in writing to the Executive Engineer within 7 days of the date of cessation of such hindrance on account of which he desires such extension as aforesaid and the Executive Engineer shall, if in his opinion (which shall be final) reasonable grounds be shown thereof authorize such extension of time, if any, as may, in his opinion, be necessary or proper provided always that such extension shall not entitle the said contractor to claim any escalation either towards the price of materials or towards the wage of labour or any account whatsoever.

Extension time

Clause 6 - On completion of the work, nor shall the work be considered to be completed until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials and rubbish, and cleaned off the dirt from all wood-work, doors, windows, walls, floors, or other parts of any building, in, upon or about which the work is to be executed, or of which he may have had possession for the purpose of the execution thereof, not until the work shall have been measured by the Executive Engineer whose measurements shall be binding and conclusive against the contractor. If the contractor shall fail to comply with the requirements of this clause as to removal of scaffolding, surplus materials and rubbish and cleaning off dirt on or before the date fixed for the completion of the work, the Executive Engineer may at the expense of the contractor remove such scaffolding, surplus materials and rubbish, and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such scaffolding or surplus materials as aforesaid for any sum actually realized by the sale thereof.

Final certificate

Clause 7 – No payments shall be made for works estimated to cost less than rupees one thousand, till after the whole of the works shall have been competed and a certificate of completion given. But in the case of works estimated to be cost more than rupees one thousand, the contractor shall on submitting the bill therefore be entitled to receive a monthly payment. But all such intermediate payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed, and shall not preclude the requiring of bad, unsound, and imperfect or unskillful work to be removed and taken away and reconstructed, or-recreated, or be considered as an admission of the due performance of the contract, of any part thereof, in any respect or the accruing of any claim, nor shall it conclude, determine or affect in any way the powers of the Zonal Manager under these contract or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be submitted by the contractor within one month of the date fixed for completion of the work, otherwise the Executive Engineer's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on all parties.

Payment on intermediate certificates to be regarded as advances

Clause 8 – A bill shall be submitted by the contractor each month on or before the date fixed by the Executive Engineer for all work executed in the previous month, and

Submitted monthly

the Executive Engineer shall take of cause to be taken the requisite measurement for the purpose of having the same verified, and the claim as far as admissible adjusted if possible, before the expiry of ten days from the presentation of the bill, if the contractor does not submit the bill within the time as aforesaid the Executive Engineer may depute a subordinate to measure up the said work in the presence of the contractor, whose countersignature to the measurement list will be sufficient warrant, and the Executive Engineer may prepare a bill from such list which shall be binding on the contractor in all respect.

Clause 9 – The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner, and both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the designs, drawings, and instructions in writing relating to the work signed by the Executive Engineer and lodged in his office, and to which the contractor shall be entitled to have access at such office, or on the site of the work for the purpose of inspection during office hours, and the contractor shall, if he so requires, be entitled at his own expenses to make or cause to be made copies of the specifications, and of all such designs, drawings and instructions as aforesaid.

Works to be executed in accordance with specifications drawings order etc.

Clause 10 – The Zonal Manager shall have power to make any alterations in, omissions from additions to or substitutions for, the original specifications, drawings, designs and instruction, that may appear to him to be necessary or advisable during the progress of the work and the contractor shall be bound to carry out the work in accordance with any instructions which may be given to him writing signed by the Executive Engineer and such alteration, omissions, additions or substitutions shall not invalidate the contract but shall be deemed to have formed as work included in the original tender and any altered addition or substituted work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work and at the same rates, if any, may be specified in the tender for the main work. The time for the completion of the work shall be extended in the proportion that the altered, additional or substituted work bears to the original contract work and the certificate of the Executive Engineer shall be conclusive as to such proportion. And if the altered additional or substituted work includes any class of work, for which no rate is specified in this contract, then such class of wok shall be carried out at the rates entered in the prevailing Delhi Schedule of Rates which was in force at the time of the acceptance of the contract, minus/plus the percentage which the total tendered amount bears to the estimated cost of the entire work put to tender and if the altered, additional or substituted work is not entered in the said schedule of rates payment thereof shall be made by the Executive Engineer by determining the rates on analysis worked out from (a) the basic rates of materials and labour provided in current schedule of the rates or (b) the current market rates of materials and labour when even basic rates for the work are not available in the schedule. In cases when such rates are determined on analysis by the Executive Engineer under (a) above the stipulated percentage above or below schedule of rates as provided in the contract shall also apply and In case of rates worked out on analysis under (b) above the stipulated percentage above or below shall not apply .In the event of any dispute regarding rates determined on analysis for any altered, additional or substituted work under this clause the decision of Zonal Manager of the Corporation shall be final and binding.

Do not invalidate contracts.

Extension of time in consequence of alteration.

Rates for works not in estimated schedule.

Clause 11 – If at any time after the commencement of the work the corporation shall for any reason whatsoever not require the whole thereof as specified in the tender to be carried out, the Zonal Manager shall give notice in writing of the fact to the contractor who shall have no claim to any payment or compensation whatsoever on

No compensation for alteration in, or restriction of work to be carried out.

account of any profit or in advantage which he might have derived from the execution of the work in full, but which he did not derive in consequence of the full amount of the work not having been carried out, neither shall be have any claim for compensation by reason of any alterations having been made in the original specifications, drawings and instructions which shall involve any curtailment of the work as originally contemplated.

Action and compensation payable in case of bad work

Clause 12 – If it shall appear to the Executive Engineer or his subordinate in charge of the work, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for, or otherwise not in accordance with the contract, the contractor shall on demand in writing from the Executive Engineer specifying the work, materials or articles complained of notwithstanding that the same may have been inadvertently passed certified and paid for, forthwith rectify or remove and reconstruct the work so specified in whole or in part, as the case may require, or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own proper charge and cost, and in the event of his falling to do so within a period to be specified by the Executive Engineer, in his demand aforesaid ,the Executive Engineer may rectify or remove, and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expense in all respects of the contractor.

Works to be open to inspection

Clause 13 – All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Executive Engineer and his subordinates and the contractor shall at all time during the useful working hours, and at all other times at which reasonable notice of the intention of the Executive Engineer or his subordinate to visit the works shall have been given to the contractor, either himself be present to receive orders and instructions, or have responsible agent duly accredited in writing present for that purpose. Orders given to the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

Contractor or responsible agent to be present

Notice to be given before work is covered up.

Clause 14 – The contractor shall give not less than five days notice in writing to the Zonal Manager or his subordinate in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up or place beyond the reach of measurement any work without the consent in writing of the Executive Engineer or his subordinate in charge of the work, and if any work shall be covered up or placed beyond the reach of measurement without such notice having been given or consent obtained, the same shall be uncovered at the contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

Clause 15 – If the contractor or his workman or servants shall break deface, injure or destroy any part of a building, in which they may be working or any building, road, road-curbs, fence enclosure, water pipes, cables, drain, electric or telephone posts or wires, trees, grass or grassland or cultivated ground contiguous to the premises on which the work or any part of it is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or any imperfections become apparent in it within three months (six months in the case of a road work) after a certificate final or other of its completion shall have been given by the Executive Engineer as aforesaid, the contractor shall make the same good by other workmen and deduct the expense (of which the certificate of the Executive Engineer shall be

final) from any sums that may be than or any time thereafter may become due to contractor, or from his security deposit, or the proceeds of the sale thereof, or of a sufficient portion thereof.

The security deposit of the contractor made in the manner provided in clause-I hereof, shall be refundable on the expiry of 3 months (6 months in the caser of a road work) after the issue of the certificates final or otherwise of the completion of the work, subject to the condition that no such refund or security deposit shall be allowed till the final bill has been prepared and passed, provided, however, that in the caser of a road work. If in the opinion of the Executive his contract, half of the security deposit will be refundable after 3 months of the issue of the said certificate of completion. Provided further that in the case of any work (whether road, Building, Bridge, Electrical, Sanitary and plumbing etc.) where the Executive Engineer is satisfied that the contractor after completion of the major portion of the contract is unable to execute remaining part of the work for reasons beyond his control. the Executive Engineer in his discretion may make a proportionate refund of the security deposit to the Contractor.

The contractor shall be responsible for rectifying defects in asphaltic work noticed within a year from the date of completion of the work and the portion of the security deposit relating to asphaltic work shall be refunded after the expiry of this period.

Contractor to supply plant ladders, scaffolding etc.

Clause 16 – The contractor shall supply at his own cost material (except such special materials, if any as may in accordance with the contract be supplied from the Executive Engineer's stores), plant, tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary work requisite or proper for the proper execution of the work, whether original, altered or substituted, and whether included in the specification or other documents forming part of the contract of referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Executive Engineer as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore to and form the work. The contractor shall also supply without charge the requisite number of persons with the means and materials necessary for the purpose of setting out works, and counting, weighing and assisting in the measurements or examination at any time and from time to time of the work or materials. Failing his so doing the same may be provided by the Executive Engineer at the expense of the contractor and the expenses may be deducted form any money due to contractor under the contract, or from his security deposit or the proceeds of sale thereof, or of a sufficient portion thereof. The contractor shall also provide all necessary fencing and lights required to protect the public from accident, and shall be bound to bear the expenses of defense of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay and damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the contractor be paid to compromise any claim by any such person.

And is liable for damages arising from non-provision of light fencing etc.

Clause 16A – The contractor shall be responsible for and shall take proper care and caution in respect of all rollers, machinery, tools and implements as may be made over the Corporation to the contractor for use in the execution of the works under this contract and shall be liable for any loss of and damages caused to the said rollers, machinery tools and implements by any reason whatsoever during the period the same are in the possession of the contractor and shall on demand pay to the Corporation such amount as may be fixed by the Corporation for such loss and damages, the decision of the Corporation in that respect being final. Should the contractor fail or neglect to pay such amount on demand the Corporation shall have

the right and be entitled, in addition to the other rights and remedies available to it, to deduct such amount from the amount of security deposited by the contractor and/or any amount remaining payable to the contractor under this contract for any work done by the contractor.

Clause 16B – In every case in which by virtue of the provisions of Section 12. Sub-section (1) of the Workmen's Compensation Act, 1923. The Corporation is obliged to pay compensation to a workman employed by the contractor, in execution of the work. The corporation will recover from the contractor the amount of the compensation so paid, and, without prejudice to the rights of the Corporation under Section 12, Sub-section (2), of the said Act, the Corporation shall be at liberty to recover such amount or any part thereof by deduction it from the security deposit or from any sum due by the Corporation of the contractor whether under this contract or otherwise.

The corporation shall not be bound to contest any claim made against it under section 12, sub-section (1) of the said Act, except on the written request of the contractor and upon his giving to the corporation full security for all costs which the Corporation might became liable in consequence of contesting such claim.

Clause 17 – No female labour shall be employed within the limits of a cantonment.

Labour

Clause 17A – No labourer below the age of twelve years shall be employed on the work.

Clause 17B – (a) The contractor shall pay to labour employed by him either directly or through sub-contractors, wages not less than fair wages as defined in the C.P.W.D. contractors' Labour Regulations in so as such regulations have application within the State of West Bengal or as per the provisions of the Contract Labour (Regulation and abolition) Act, 1970 and the contract labour (Regulation and abolition) and the contract Labour (Regulation and abolition) Central rules 1971 wherever applicable.

(b) The contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wages to labour indirectly engaged on the work, including any engaged by his subcontractors in connection with the said work, as if labour had been immediately employed by him.

© In respect of all labour directly or indirectly employed in the work for performance of the contractor's part of his agreement, the contractor shall comply with or cause to be complied with the Central Public works Department contractor's Labour Regulations as mentioned in Sub-para (a) above made from time to time in regard to payment to wages period deductions from wages, recovery of wages not paid and deductions unauthorisely made, maintenance of wage books or wage slips, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per provisions of the contract Labour (Regulation and Abolition) Act, 1970 and the Contract Labour (Regulation and Abolition) rules, 1971 whenever applicable.

(a) The Zonal Manager concerned shall have the right to deduct from the moneys due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reasons of non-fulfillment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or their wages which are not justified by their terms of contract or non-observance of the Regulations as mentioned above.

(b) The contractor shall comply with the provisions of payment of wages Act, 1936. Minimum wages Act, 1948. Employees Liability Act, 1938, Industrial

Act, 1947. Maternity Benefits Act, 1961 and Contract Labour (Regulations and abolition) Act, 1970 or the modification thereof or any other laws relating thereto and Rules made there under from time to time.

(c) The Contractor shall indemnity Corporation against payment to be made under and for the observance of the laws aforesaid and the C.P.W.D. Contractors Labour Regulations having application within the State of West Bengal without prejudice to his right ot claim indemnity from his sub-contractors.

(d) The regulations aforesaid shall be deemed to be a part of his contract and any breach thereof shall be deemed to be a breach of this contract.

Clause 18 – No work shall be done on Sundays without the sanction in writing of the Zonal Manager.

Works on Sundays

Clause 19 – The contract shall not assign or sublet without specific orders from the Corporation in respect of a specified sub-contractor. And if the contractor shall assign or sublet his contract, or attempt so to do, or become insolvent or commence any insolvency proceedings or made any composition with his creditors, or attempt so to do, or if any bribe, gratuity, gift, load, perquisite, reward or advantage, pecuniary or otherwise, shall either directly or indirectly be given promised, or offered by the contractor, or any of his servants or agents to any public officer or person in the employment of the Corporation in any way relating to his office of employment, or if any such officer of person shall become in any way directly or indirectly interested in the contract, the Zonal Manager may thereupon by notice in writing rescind the contract, and the Security deposit of the contractor shall thereupon stand forfeited and be absolute at the disposal of the Corporation and the same consequences shall ensure as if the contract had been rescinded under clause 3 thereof, and in addition the contractor shall not be entitled to recover or be paid for any work therefore actually performed under the contract.

Works not to be sublet.

Contract may be rescinded and security deposit for feited for subletting, briding, or if contractor becomes insolvent.

Clause 20 – All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of the corporation without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

Sum payable by way of compensation to be considered as reasonable

Clause 21 – In the case of a tender by partners any change in the constitution of the firm shall be forthwith notified by the contractor to the Zonal Manager for his information.

Charges in constitution of firm.

Clause 22 – All work to be executed under the contract shall be executed under the direction and subject to the approval in all respect of the Zonal Manager of the corporation for the time being who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried on.

Works to be under direction of Superintending Engineer/Executive Engineer.

Clause 25 – Both the parties shall make efforts to settle the disputes or differences amicably. If amicable settlement is not possible, the same shall be referred to the sole arbitrator of Chairman & Managing Director of NPCC or the person appointed by CMD, NPCC and the decision of the arbitrator shall be final and binding on both the parties. Arbitration shall be accorded in accordance with Indian Arbitration and Conciliation Act,1996.

Settlement of disputes.

The jurisdiction of any dispute legal and otherwise will be within High Court of Kolkata.

Clause 26 – In the case of any class of work for which there is no such specification as is mentioned in rule 1. such work shall be carried out in accordance with district specification and in the event of there being no district specification, then in such case the work shall be carried out in all respects in accordance with the instruction and requirement of Executive Engineer.

Action where no specification.

Clause 27 – The expression “works” or “work” where used in these conditions shall unless there be something either in the subject or context repugnant to such construction be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional. Definition of works.

Clause 28 – The contractor(s) shall at his/their own cost provide his/their labour with hutting on his arranged land , and shall made arrangements for conservancy and sanitation in the labour camp to the satisfaction of the local Public Health and Medical Authorities. He/They shall also at his/their own cost make arrangements for the laying of pipe lins for water supply to his/their labour camp from the existing mains wherever available and shall pay all fees, charges and expenses in connection therewith and incidental thereto.

Clause :-29 The contractor shall have to make his own arrangements for water, both for the work and use by his coolly etc. for steam road rollers and for all tools and plant, etc., required on the work.

Clause :-30 Contractors will be responsible for the payments of all water charges payable to the Corporation of Calcutta or any other water works authority including a government department concerned.

Clause :-31 If the contractor shall desire an extension of the time for completion of the work under clause 5 of the contract, no application for such extension will be entertained if it is not received in sufficient time to allow the Executive Engineer to consider it and the contractor will be responsible for the consequences arising out of his negligence in this respect.

Clause :-32 The contractor will have to leave ducts in walls and floors to run conduit or cables, where necessary, and he will not be entitled to any extra payment on this account.

Clause :-33 Contractors in the course of their work should understand that all materials e.g. store and other materials obtained in work of dismantling, excavation etc., will be considered the Corporation’s property and will be disposed of to the best advantage of the Corporation.

Clause :-34 No compensation for any damage done by rain or traffic during the execution of the work will be made.

Clause :-35 Whenever a work is carried out in a municipal area, electric lights or electric danger singles wherever available shall be provided by the contractors on the barriers as well as part in lights. Facilities for the electric connection will be made by the Corporation but the contractor will bear all the expenses.

Clause :-36 The contractor should quote through rate, inclusive of cost of materials and carriage to place for working.

Clause :-37 It must be clearly understood by the contractor that no claim on account of enhanced rates on those already accepted, due to war fluctuations will be entertained during the currency of this contractor for the work as per schedule attached to the agreement and the additional work, if any, under clause 12 of the contract, if such additional work shall consist of items which have already been quoted for, or items not quoted for but appearing in District Schedule.

Clause :-38 In the event of emergency the contractor will be required to pay his labour every day and if this not done, the corporation shall make the requisite payment as would have been paid by the contractor and recover the cost from the contractors.

Clause :-39 The contractor(s) shall not deposit materials on any site which will seriously inconvenience the public. The Executive Engineer may require the contractor(s) to remove any materials, which are considered by him to be a danger or inconvenience to the public or cause them to be removed at the contractor's cost.

Clause :-40 The contractor undertakes to have the site clean, free from rubbish to the satisfaction of the Executive Engineer. All surplus materials, rubbish, etc. will be removed to the placed fixed by the Executive Engineer and nothing extra will be paid.

Clause :-41 The contractor shall not allow any rubbish or debris to remain on the premises during or after repairs, but shall remove the same and keep the place neat and tidy during the progress of the work. The Executive Engineer may get the site or premises cleared of debris, etc. and recover the cost from the bill of the contractor, if the latter shows slackness in observing the clause.

Clause :-42 Materials brought at site shall not be stacked at random. The contractor shall stack all these materials as directed by the Executive Engineer

Clause :-43 The contractor will have to make his own arrangements for the carriage of materials.

Clause :-44 For all items of contract works requiring unskilled labour, the contractor shall be employ unskilled local labour as far as possible. The expression "Local" shall mean and deem to mean the Anchal, the Block, the Thana or District of the State of West Bengal where the work will be executed. In cases of non-availability of such unskilled local labour and of other difficulties experienced by the contractor in recruiting such local labour, the contractor may recruit and employ unskilled labour from neighbouring areas of that district. In case the work is in the border area of two districts and there is dearth of adequate number of local labour from the district where the work will be executed, labour will not be available even from other districts as mentioned and when the exigency of progress of works demands. the contractor may engage labours from the other Districts of State of West Bengal and in case the same be not available, then the contractor may, employ imported labour of other states.

In case where the contractor fails to secure unskilled local labor or to engaged imported labour, the contractor shall employ labour locally recruited by the Corporation or labour imported by the corporation at the rate to be decided by the Zonal Manager of the works concerned whose decision as to the circumstances in the which employment of such labour is of mutual advantage to Corporation and the contractor will be final and binding.

For all items of contract jobs requiring skilled labour, the contractor shall employ 70% (seventy percent) of skilled labour locally as far as possible. In case the contractor fails to recruit skilled local labour, the contractor shall employ skilled labour locally secured by Corporation in the manner indicated above. For bridge works, highly technical works of frame structural buildings, sanitary & plumbing works, electrical works etc. Involving skilled labour, the contractor may import & employ skilled labour upto 30% (thirty per cent) of the total requirement. In case the expression "imported labour" shall mean labour imported, primarily from other states and secondarily from the distant district of the State of West Bengal.

LABOUR SAFETY PROVISIONS

1.0 Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or form solid construction except such short period work as can be done safely from ladders. When a ladder is used an extra earrying materials as well, suitable foot holds and hand holds shall be provided on the ladder and the ladder shall be given an inclination not steeper than ¼ to 1 (1/4 horizontal and 1 vertical)

2.0 Scaffolding or staging more than 3.6m (12 feet) above the ground or floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm. (3 feet) high above the floor or platform or such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

3.0 Working platforms, gangways, and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more that 3.6m (12 feet) above ground level or floor level, they should be closely boarded, should have adequate width & should be suitable fastened as described in described in (2.0) above.

4.0 Every opening in the floor of a building or in a working platform shall be provided with suitable fencing or railing whose minimum height shall be 90 cm (3 feet).

5.0 Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9m. (30 feet) in length while the width between side rails in rung ladder shall in no case be less than 29 cm. (11/1/2) for ladder up to and including 3m (10 feet) in length. For longer ladders this width should be increased at least ¼'' for each additional 30 cm (1 ft.) or length. Uniform step spacing shall not exceed 30 cm (12''). Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of the work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident, and shall be bound to bear the expenses of defense of every suit, action or other proceeding at law that may be brought by an person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit, action or proceedings to any such person or which may, with the consent of the Contractor, be paid to compensate any claim by any such person.

6.0 **EXCAVATION AND TRENCHING**

All trenches, 1.2mts.(four feet) or more in depth, shall at all times be supplied with at least one ladder for each 30m. (100 feet) in length or fraction thereof, Ladder shall be extended from bottom of the trench to at least 90 cm (3feet) above the surface of the ground. The side of the trenches, which are 1.5m (5feet) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger or sides to collapsing. The excavated materials shall not be placed within 1.5m (5feet) of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

7.0 Demolition – Before any demolition work is commenced and also during the progress of the work.

7.1 All roads and open areas adjacent to the work site shall either be closed or suitably protected.

7.2 No electric cable or apparatus, which is likely to be a source of danger or a cable or apparatus used by the operator shall remain electrically, charged.

7.3 All practical steps shall be taken to prevent danger to persons employed from risk or fire or explosion or flooding. No floor, roof or other part of the building shall be overloaded with debris or materials as to render it unsafe.

8.0 All necessary personal safety equipments as considered adequate by the Engineer-in-charge should be kept available for the use of persons employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate step to ensure proper use of equipment by those concerned. The following safety equipment shall be invariably provided.

8.1 Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with footwear and protective goggles.

8.2 Those engaged in white washing and mixing or stacking of cement bags or any materials which is injurious to the eye shall be provided with protective goggles.

8.3 Those engaged in welding works shall be provided with welders protective eye shields.

8.4 Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe interval.

8.5 When workers are employed in sewers and manholes, which are in active use, the Contractors shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning or boards to prevent accident the public. In addition, the contractor shall ensure that the following safety measures are adhered to:

a. Entry for workers into the line shall not be allowed except under supervision of the JE or any other higher officer.

b. At least 5 to 6 manholes upstream and down stream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manholes for working inside.

c. Before entry presence of Toxic gases should be tested by inserting wet lead acetate paper which changes colour in the presence of such gases and gives indication of their presence.

d. Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.

e. Safety belt with rope should be provided to the workers. While working inside the manholes such rope should be handled by two men standing outside to enable him to be pulled out during emergency.

f. The area should be barricaded or cordoned of by suitable means to avoid mishaps of any kind. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.

g. No smoking or open flame shall be allowed near the block manhole being cleaned.

h. The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.

i. Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer In-charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.

j. Gas masks with Oxygen Cylinder should be kept at site for use in emergency.

k. Air-blowers should bed used for flow of fresh air through the manholes. Whenever called for, portable air-blowers are recommended for ventilating the manholes. The Motors for these shall be vapour proof and of totally enclosed type. Non sparking gas engines also could be used but they should be placed at-least 2 meters away from the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.

l. The workers engaged for cleaning the manholes/sewers should be properly trained before allowing to work in the manhole.

m. The workers shall be provided with Gumboots or non sparking shoes, bump helmets and gloves non sparking tools, safety lights and gas masks and portable air blowers (when necessary). They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.

n. Workmen descending a manhole shall try each ladder step or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.

o. If a man has received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.

p. The extent to which these precautions are to be taken depend on individual situation but the decision of the Engineer In-charge regarding the steps to be taken in this regard in an individual case will be final.

8.6 The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form wherever men above the age of 18 are employed on the work of lead painting the following precautions should be taken.

8.6.1 No paint containing lead or lead products shall be used except in the form of paste or readymade paint.

8.6.2 Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scrapped.

8.6.2 Overalls shall be supplied by the Contractor to the workmen and adequate facilities

8.6.4.1 a) White lead sulphate or lead work products containing those pigments shall not be used in painting operation except in the form of paste or of paints ready for use.

b) Measures shall be taken whenever required in order to prevent danger arising from the application of paint in the form of spray.

c) Measures shall be taken, whenever practicable to prevent danger arising out of dust caused by dry rubbing down and scrapping.

8.6.4.2 a) Adequate facilities shall be provided to enable working painter to wash during and on cessation of work.

b) Suitable arrangements shall be made to prevent clothing put off during working hours being spoiled by painting materials.

8.6.4.3 a) Cases of lead poisoning and of suspected lead poisoning shall be notified and shall be subsequently verified by a medical man appointed by the competent authorities of the Consultant.

b) The NPCC may require when necessary a medical examination of workers.

c) Instructions with regard to the special hygienic precautions to be taken in the painting trade shall be distributed to working painters.

9.0 When the work is done near any place where there is risk of drowning, all necessary equipment's should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provisions should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.

10.0 Use of hoisting machines and tackle including their attachment encourage and supports shall conform to the following standard of conditions

10.1 a) These shall be of good mechanical construction, sound material and adequate strength and free from patent, defects and shall be kept required in good working order.

b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

10.2 Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in-charge of any hoisting machine including any scaffolding, which or giving signals to operator.

10.3 In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

10.4 In case of NPCC machines, the safe working load shall be notified by the Engineer-in-Charge. As regards Contractor's machines the Contractor shall notify the safe working load of the machine to the Engineer-in-charge whenever he brings any machinery to site of work and get verified by the Engineer-in-Charge.

11.0 Motors gearing, transmission electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguard, hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel, such as gloves sleeves and boots as may be necessary be provided. The worker should not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.

12.0 All scaffold, ladders, and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.

13.0 These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place of work spot. The person responsible for compliance of the safety codes shall be named therein by the contractor.

14.0 To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the or their representatives.

15.0 Notwithstanding the above clauses from (i) to (xiv) there is nothing in these to exempt the contractor from the operations of any other Act or Rule on force in the Republic of India.

MODEL RULES FOR THE PROTECTION OF HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS

1.0 **APPLICATION**

These rules shall apply to all building and construction works in which 20 (twenty) or more workers are ordinarily employed or are proposed to be employed in any day during which the contractor work is in progress.

2.0 **DEFINITION**

Work place means a place where twenty or more workers are ordinarily employed or are proposed to be employed in connection with construction work on any day during the period which the contract work is in progress.

3.0 **FIRST-AID FACILITIES**

3.1 At every work place first aid facilities shall be provide and maintained, so as to be easily accessible during working hours, First-Aid boxes at the rate of not less than one box per 150 contract labour or part thereof ordinarily employed.

3.2 The First-Aid box shall be distinctly marked with a red cross on white ground and shall contain the following equipments: -

3.2.1a) For work places in which number of contract labour employed does not exceed 50, Each First-Aid box shall contain the following equipments:

i) 6 small sterilized dressings.

ii) 3 medium size sterilized dressings.

iii) 3 large size sterilized dressings.

iv) 3 large sterilized burn dressings.

v) 1 (30 ml) bottle containing a two percent alcoholic solution of iodine.

vi) 1 (30 ml) bottle containing salvolatile having the does and mode of administration indicated on the label.

vii) 1 snake-bite lancet.

viii) 1 (30 gms) bottle of potassium permanganate crystals.

ix) 1 pair of scissors.

x) 1 copy of the First-Aid leaf-let issued by the Director General, Factory Advise Service & Labour Institutes, Government of India.

xi) 1 bottle containing 100 tablets (each of 5 grams) of aspirin.

xii) Ointment for burns

xiii) A bottle of suitable surgical antiseptic solution.

3.2.2 For work places in which the number of contract labour exceed 50. Each First-Aid box shall contain the following equipments.

i) 12 small sterilized dressings.

ii) 6 medium size sterilized dressings.

iii) 6 large size sterilized burn dressings.

iv) 6 large size sterilized burn dressings.

v) 6 (15 gms) packet sterilized cotton wool.

vi) 1 (60 ml.) bottle containing a two percent iodine alcoholic solution.

vii) 1 (60 ml.) bottle containing salvolatile having the dose and mode of administration indicated on the label.

viii) 1 roll of adhesive plaster.

ix) 1 snake-bite lancet.

x) 1 (30 gms.) bottle of potassium permanganate crystals.

xi) 1 pair of scissors.

xii) 1 copy of the First-Aid leaf-let issued by the Director General, Factory Advice Service and Labour Institutes, Government of India.

xiii) A bottle containing 100 tablets (each of 5 grams) of aspirin.

xiv) Ointment for burns.

xv) A bottle of suitable surgical antiseptic solution.

3.3 Adequate arrangements shall be made for immediate recoupment of the equipment when necessary.

3.4 Nothing except the prescribed contents shall be kept in the First Aid box.

3.5 The First Aid box shall be kept in charge of a responsible person who shall always be readily available during the working hours of the work place.

3.6 A person in charge of the First-Aid box shall be a person trained in First-Aid treatment, in work places where the number of labour employed is 150 or more.

3.7 In work places where the number of labour employed is 500 or more and hospital facilities are not available within easy distance of the works, first-Aid Posts shall be established and run by a trained Compounder. The Compounder shall be on duty and shall be available at all hours when the workers are at work.

3.8 Where work places are situated in places which are not towns of cities a suitable motor transport shall be kept readily available to carry injured person or suddenly taken ill to the nearest hospital.

4.0 DRINKING WATER

4.1 In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.

4.2 Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.

4.3 Every water supply of storage shall be at a distance of not less than 50 feet from any latrines drain or other source of pollution, Where water has to be drawn from an existing well which is within such proximity of latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap-door which shall be dust and water-proof.

4.4 A reliable pump shall be fitted to each covered well, trap-door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.

5.0 WASHING FACILITIES

5.1 In every work place adequate and suitable facilities for washing shall be provided and maintained for the use of labour employed herein.

5.2 Separate and adequate screening facilities shall be provided for the use of male and female workers.

5.3 Such facilities shall be conveniently accessible and shall be kept clean and hygienic condition.

6.0 LATRINES AND URINALS

6.1 Latrines shall be provided in every work place on the following scale, namely:

a) Where females are employed there shall be at least one latrine for every 25 females.

b) Where males are employed, there shall be at least one latrine for every 25 males.

Provided that where the number of males or females exceeds 100, it shall be sufficient if there is one latrine for 25 males or females, as the case may be up to the first 100, and one for every 50 thereafter.

6.2 Every latrine shall be under cover and so partitioned off as to secure privacy and shall has a proper door and fastenings.

6.3 Construction of Latrines: The inside walls shall be constructed of masonry or some suitable heat resisting non-absorbent materials and shall be cement washed inside and outside at least once a year. Latrine shall not be a standard lower than bore-hole system.

6.4 (a) Where workers of both sexes are employed, there shall be displayed outside each block of latrine and urinal, a notice in the, language understood by the majority of the workers “For Men only” For Women only” as the case may be

(b) The notice shall also bear the figure of man or of a women, as the case may be

6.5 There shall be at least one urinal for male workers up to 50 and one for female workers up to 50 employed at a time. Provided that where the number of male or female workmen, as the case may be, exceeds 500, it shall be sufficient if there is one urinal for every 50 males or females up to the first 500 and one for every 100 or part thereof, thereafter.

6.6 a) The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times.

b) Latrines and urinals other than those connected with a flush sewerage system shall comply with the requirements of the Public Health authorities.

6.7 Water shall be provided by means of a tap or otherwise so as to be conveniently accessible in or near the latrines and urinals

6.8 DISPOSAL OF EXCRETA

Unless otherwise arrange for by the local sanitary authority arrangements for proper disposal of excreta by incineration at the work place shall be made by means of a suitable incineration. Alternatively excreta may be disposed off by putting a layer of night soil at the bottom of a pucca tank prepared for the purpose and covering it with a 15 cm layer of waste or for refuse and then covering it with a layer of earth for fortnight (when it will turn into manure).

6.9 The Contractor shall, at his own expense, carry out all instruction issued to him by the Engineer-in-Charge to effect proper disposal of night soil and other conservancy work in respect of the contractor’s workmen or employees on the site. The Contractor shall be responsible for payment Authority for execution of such work on his behalf.

7.0 PROVISION OF SHELTER DURING REST

At every place there shall be provided, free of cost four suitable sheds, two for males and the other two for rest separately for the use of man and women labour The height of each shelter shall not be less than 3 meters from the floor level to the lowest part of the roof These shall be kept clean and the space provided shall be on the basis of 0.6 sqm. per head.

Provided that the Engineer-in-Charge may permit, subject to his satisfaction, a portion of the building under construction or other alternative accommodation to be use for the purpose.

8.0 CRECHES

8.1 A every work place, at which 20 or more women workers are ordinarily employed, there shall be provided two rooms or reasonable dimensions for the use of their children under the age of six years. One room shall be used as a play room for the children and the other as their bedrooms.

The rooms shall be constructed on standard not lower than the following:

i) thatched roof

ii) mud floor and walls

iii) planks spread over the mud floor and covered with matting

8.2 The rooms shall be provided with suitable and sufficient openings for light and ventilation thee shall be adequate provision of sweepers to keep the places clean.

8.3 The Contractor shall supply adequate number of toys and games in the playroom and sufficient number of cots and beddings in the bed-room

8.4 The Contractor shall provide one Ayah to look after the children in the crèche when the number of women workers does not exceed 50 and two when the number of women workers exceed 50.

8.5 The use of the rooms/earmarked as crèches shall be restricted to children, their attendant and mother of the children,

9.0 CANTEENS

9.1 In every work place where the work regarding the employment of contract labour is likely to continue for six months and wherein contract labour numbering one hundred or more are ordinarily employed, and adequate canteen shall be provided by the Contractor for the use of such labour.

9.2 The canteen shall be maintained by the Contractor in an efficient manner.

9.3. The canteen shall consist of at least a dining hall, kitchen, storeroom, pantry and washing places separately for workers and utensils.

9.4. The canteen shall be sufficiently lighted at all times when any person has access to it

9.5 The floor shall be made of smooth and impervious material and inside walls shall be lime washed or colour washed at least once in each year.

Provided that the inside walls of the kitchen shall be lime-washed every four months

9.6 The premises of the canteen shall be maintained in a clean and sanitary condition

9.7 Waste Water shall be carried away in suitable covered drains and shall not be allowed to accumulate so as to cause a nuisance.

9.8 Suitable arrangements shall be made for the collection and disposal of garbage

9.9 The dinning hall shall accommodate at a time 30 persons of the labour working at time

9.10 The floor area of the dinning hall, excluding the area occupied by the service counter and any furniture except tables and chair shall not be less than one square meter per dinner to be accommodated.

9.11 A) A portion of the dinning hall, and service counter shall be partitioned off and reserved for women workers in proportion to their number.

B) Washing places for women shall be separate and screened to secure privacy

9.12 Sufficient tables stool, chairs or benches shall be available for the number of dinners to be accommodated

9.13.1 a) There shall be provided and maintained sufficient utensils, crockery, furniture and any other equipment necessary for the efficient running of the canteen.

b) The furniture, utensils and other equipment shall be maintained in a clean and hygienic condition

9.13.2 a) Suitable clean clothes or the employees serving in the canteen shall be provided and maintained.

b) a service counter, if provided, shall have top of smooth and impervious material.

c) Suitable facilities including and adequate supply of hot water shall be provided for the cleaning of utensils and equipment.

9.14 The food stuffs and other items to be served in the canteen shall be in conformity with the normal habits of the labour.

9.15 The charge for food stuffs, beverages and any other items served in the canteen shall be based on 'No profit' No loss' and shall be conspicuously displayed in the canteen

9.16 In arriving at price of Good stuffs, and other articles served in the canteen, the following items shall not be taken into consideration as expenditure, namely :

a) The rent of land building

b) The depreciation and maintenance charges for the building and equipment provided for the canteen.

c) the cost of purchase, repair and replacement of equipment including furniture, crockery, cutlery and utensils:

d) The water charges and other charges incurred for lighting and ventilation

e) The interest and amounts spent on the provision and maintenance and equipment provide for in the canteen.

9.17 The accounts pertaining to the canteen shall be audited once every 12 months by registered accountants and auditors.

10.0 ANTIMALARIAL PRECAUTIONS

The Contractors shall at his own expense conform to all anti-malarial instructions given to him by the engineer-in-charge including the filling up of any borrows pits which may heve been dug by him.

11.0 AMMENDMENTS

NPCC may from time to time, add to or amend these rules and issue such directions as it may consider necessary for the purpose of removing any difficulty which may arise in the administration hereof.

CONTRACTOR'S LABOUR REGULATIONS

1.0 **SHORT TITLE**

These regulations may be called the Contractor "Labour Regulations"

2.0 Definitions

2.1 "Workman" means any person employed by the NPCC or its Contractor directly or indirectly through a sub-contractor, with or without the knowledge, of the NPCC to do any skilled, semi-skilled, un-skilled, manual, supervisory, technical or clerical work for hire or reward, whether, the terms of employment are expressed or implied but does not include any person-

a) Who is employed mainly in a managerial or administrative capacity; or

b) Who being employed in a supervisory capacity draws wages exceeding Rupees Two thousand Five hundred per person or exercises either by the nature of the duties attached to the office or by reason of powers vested to him, functions mainly of managerial nature.

c) Who is an out worker, that is to say, a person to whom any articles or materials are given out by or on behalf of the principal employer to be made up cleaned, washed, altered, ornamental finished, repaired, adopted or otherwise processed for sale for the purpose of the trade or business of the principal employer and the process is to be carried out either in the home of the out worker or in some other premises, not being premises under the control and management of the principals employer.

2.2 "Fair Wages" means wages whether for time or piece work fixed and notified under the provisions of the minimum Wages Act from time to time.

2.3 "Contractor" shall include every person who undertake to produce a given result other than a mere supply of goods or articles of manufacture through labour or who supplies labour for any work and includes a sub-contractor.

2.4 "Wages" shall have the same meaning as defined in the Payment of Wages act.

2.4.1 Normally working hours of an adult employee should not exceed 9 hours a day, The working day shall be so arranged that inclusive of interval for rest, if any, it shall not spread over more than 12 hours on any day.

2.4.2 When an adult worker is made to work for more than 9 hours on any day or for more than 48 hours in any week he shall be paid overtime for the extra hours put in by him at double the ordinary rate of wages.

2.4.3.1 Every worker shall be given a weekly holiday on a Sunday, in accordance with the provisions of the Minimum Wages (Central) Rules on a Sunday, in accordance with the provisions of the Minimum Wages (Central) Rules 1960 as amended from time to time, irrespective of whether such worker is governed by the Minimum Wages Act or not.

2.4.3.2 Whether the Minimum Wages prescribed by the Government under the Minimum Wages Act are not inclusive of the wages for the weekly day of rest, the worker shall be entitled to rest day wages at the rate applicable to the next preceding day, provided he has worked under the same contractor for a continuous period of not less than 6 days.

2.4.3.3 here a contractor is permitted by the engineer-in-Charge to allow a worker to work on a normal weekly holiday, he shall grant a substitute holiday to him for the whole day on one of the five days immediately before or after the normal weekly holidays and pay wages to such worker for the work performed on the normal weekly holiday at overtime rate.

3.0 **DISPLAY OF NOTICE REGARDING-WAGES, ETC**.

The contractor shall before he commences his work on contract, display and correctly maintain and continue to display and correctly maintain in a clean and legible condition in conspicuous places on the work., notices in English and in the local Indian languages spoken by the majority of the workers, giving the minimum rates of wages fixed under the Minimum Wages Act, the actual wage period, being paid, the hours of work for which such wages are earned, wage period, dates of payment of wages and other relevant information as per Appendix 'A'

4.0 **PAYMENT OF WAGES**

4.1 The contractor shall fix wage periods in respect of which wages shall be payable

4.2 No wage period shall exceed one month.

4.3 The wages of every person employed as labour in an establishment or by a contractor where less than one thousand, such persons are employed shall be paid before the expiry of the seventh day and in other cases before the expiry of tenth day after the last day of the wage period in respect of which the wages are payable.

4.4 Where the employment of any worker is terminated by or on behalf of the contractor the wages earned by him shall be paid before the expiry of the second working day from the date on which his employment I terminated.

4.5 All payments of wages shall be made on a working. Day at the work premises and during the working time and on a date notified in advance and in case the work is completed before the expiry of the wage period, final payment shall be made within 48 hours of the last working day.

4.6 Wages due to every worker shall be paid to him direct or to other person authorized by him in this behalf.

4.7 All wages shall be paid in current coin or currency or in both.

4.8 Wages shall be paid without any deduction of any kind except those specified by the Central Government by general or special order in this behalf or permissible under the payment of Wages Act 1956.

4.9 A notice showing the wage period and the place and time of disbursement of wages shall be displayed at the place of work and a copy sent by the contractor to the engineer-in-Charge under acknowledgment.

4.10 It shall be the duty of the contractor to ensure the disbursement of wages in the presence of the Engineer or any other authorized representatives of the Engineer-in-Charge who will be required to be present at the place and time of disbursement of wages by the contractor to workmen.

4.11 The contractor shall obtain from the Engineer or any other authorized representative of the Engineer-in-Charge as the case may be, a certificate under his signature at the end of the entries in the "Register of Wages" or the "Wages-cum-Muster Roll" as the case may be in the following form.

"Certified that the amount show in column No……..has been paid to the workmen concerned in my presence on……..at……"

5.0 **FINES AND DEDUCTIONS, WHICH MAY BE MADE FROM WAGES**

5.1 The wages of a worker shall be paid to him without any deduction of any kind except the following -

FINES

a) Deductions for absence from duty i.e. from the place or the places where by the terms of his employment he is required to work. The amount of deduction shall be in proportion to the period for which he was absent

b) Deduction for damage to or loss of goods expressly entrusted to the employed persons for custody, or from loss of money or any other deduction which he is required to account where such damage or loss is directly attributable to his neglect or default.

c) Deduction for recovery of advances or for adjustment of over payment of wages, advances granted shall be entered in a register.

d) Any other deduction, which the Central Government may from time to time allow.

5.2 No fines should be imposed on any worker save in respect of such acts and omissions on his part as have been approved by the Chief Labour Commissioner.

NOTE : An approved list of Acts and Omissions for which fines can be imposed is enclosed at Appendix-I

5.3 No fine shall be imposed on a worker and no deduction for damage or loss shall be made from his wages until the worker has been given and opportunity of showing cause against such fines or deductions.

5.4 The total amount of fine which may bed imposed in any one wage period on a worker shall not exceed an amount equal to there paisa in a Rupees of the total wages, payable to him in respect of that wage period.

5.5 No fine imposed on any worker shall be recovered from him in installment, or after the expiry of sixty days from the date on which it was imposed,

5.6 Every fine shall be deemed to have been imposed on the day of the act or omission in respect of which it was imposed.

6.0 **LABOUR RECORDS**

6.1 The contractor shall maintain a "Register of person employed" on work on contract in form XIII of the CL (R7A) Central Rules 1971 (Appendix-B).

6.2 The Contractor shall maintain a "Muster Roll" register in respect of all workmen employed by him on the work under contract in from XVI of the CL (R&A) Rules 1971 (Appendix-C).

6.3 The contractor shall maintain a "Wage Register" in respect of all workmen employment by him on the work in form (Appendix-D).

6.4 Register of accidents – the contractor shall maintain a register of accidents in such form as may be convenient at the work place but the same shall include the following particulars :

a) Full particulars of the laborers who met with accident.
b) Rate of wages
c) Sex
d) Age
e) Nature of accident and cause of accident.
f) Time and date of accident.
g) Date and time when he/she admitted in Hospital
h) Date of discharge from the Hospital
i) Period of treatment and result of treatment
j) Percentage of loss of earning capacity and disability as assessed by Medical Officer.
k) Claim required to be paid under Workmen's Compensation Act.
l) Date of payment of compensation
m) Amount paid with details of the person to whom the same was paid
n) Authority by whom the compensation was assessed.
o) Remarks

6.5 Register of Fines-The contractor shall maintain a "Register of Fines" in the from(Appendix-H)

The contractor shall display in a good condition and in a conspicuous place of work the approved list of Acts and Omission for which fines can be imposed (Appendix-I)

6.6 Register of Deductions-The contractor shall maintain a "Register of Deductions" for damage or loss in form (Appendix-J)

6.7 Register of Advances-The contractor shall maintain a "Register of Advances" in form (Appendix-K).

6.8 Register of Overtime-The contractor shall maintain a "Register of Overtime" in form (Appendix-L).

7.0 **ATTENDANCE CARD CUM WGE SLIP:**

7.1 The contractor should use a attendance card-cum-wage slip to each workman employed by him in the specimen form at (Appendix-E).

7.2 The card shall be valid for each wage period.

7.3 The contractor shall mark the attendance of each workman on the card which each day, once at the commencement of the day and again after the rest interval. Before he actually starts work.

7.4 The card shall remain in possession of the worker during the wage period under reference.

7.5 The contractor shall complete the wage slip potion on the reverse of the card at least a day prior to the disbursement of wages in respect of the wage period under reference.

7.6 The contractor shall obtain the signature or thump impression of the worker on the wage slip at the time of disbursement of wages and retain the card with him.

8.0 **EMPLOYMENT CARD**

The contractor shall issue and Employment Card in form to each worker within three days of the employment if the worker (Appendix-F).

9.0 **SERVICE CERTIFICATE**

On termination of employment for any reason whatsoever the contractor shall issue to the workman whose services have been terminated, a service certificate in from Appendix-G

10.0 **PRESERVATION OF LABOUR RECORDS**

All records required to be maintained under Regulation Nos.6 and 7 shall be preserved in original for a period of three years from the date of last entries made in them and shall be made available for inspection by the Engineer-in-Charge, Labour Officer.

11.0 **POWER OF LABOUR OFFICERS TO MAKE INVESTIGATIONS INQUIRY**

The Labour Officer or any other person authorized by NPCC on its behalf shall have power to make inquires with a view to ascertaining and enforcing due and proper observance of the Fair Wage Clauses and the Provisions of Regulations. He shall investigate into any complaint regarding the default made by the contractor or sub-contractor in regard to such provision.

12.0 Inspection of Book and slips

The contractor shall allow inspection of all the prescribed labour records to any of his workers or to his agent at a convenient time and place after due notice is received or to the labour officer or any other person, authorized by the Central Government on his behalf

13.0 **SUBMISSION OF RETURNS**

The contractor shall submit periodical returns as may be specified form time to time.

14.0 **AMENDMENTS**

The NPCC may form to time, add or amend the regulations and on any question as to the application, interpretation or effect of these regulations the decision of the Zonal Chief concerned shall be final.

Appendix-'A'

LABOUR BOARD

Name of work

Name of Contractor

Address of Contractor

Name and Address of Unit

Name of Labour enforcement Officer

Address of Labour Enforcement Officer

Date:

Sl.No.	Category	Minimum Wage Fixed	Actual wage paid	Number present	Remarks

Weekly Holiday

Wage Period

Date of Payment of wages

Working hours

Rest interval

FORM 13

See rule 75

Appendix-'B'

REGISTER OF WORKMEN EMPLOYED BY CONTRACTOR

Name and Address of Contractor

Name and Address of Establishment in
Under which contract is carried on

Nature and location of work

Name & Address of Principal Employer

Sl.No.	Name and Surname of workmen	Age & sex	Father's Husbands Name	Nature of employment / designation	Permanent home address of the workman(village and Tehsil Taluk and District)	Local address
1.	2.	3.	4.	5.	6.	7.

Date of Commencement Of employment	Signature or thumb impression of the Workman	Date of termination employment	Reasons for termination	Remarks
8.	9.	10.	11.	12.

FORM XVI

Appendix-'C'

(See Rule 78 (2) (193)

MUSTER ROLL

Name and address of contractor

Name and address of establishment in /number
Which contract is carried on

Nature and location of work

Name and Address of Principal Employer

For the month / fortnight

Sl. No	Name of the Workman	Sex	Father's/ Husband's Name	Dates	Remarks
1	2	3	4	5	
				1 2 3 4 5	

FROM XVII

Appendix – 'D'

(See Rule 78(2) (o3)

REGISTER OF WAGES

Name and address of contractor

Name and address of establishment in/under

Which contract is carried on

Nature and location of work

Name and Address of Principal Employer

Wage period per month/fortnightly

S. No.	Name of Workman	Serial No. in the Register of workman	Designation nature of work done	Nos. of days worked	Units of work done	Daily rate of wages/ piece rate	Basic
1	2	3	4	5	6	7	8

Dearness Allowance	Overtime or	Other cash Payments (Nature of payments to be indicated)	Total	Deduction if any (indicate nature)	Net Amt paid	Signature thumb impression of the workman	Initial contractor his representative
9	10	11	12	13	14	15	16

Appendix –'E'

WAGE CARD

Wage Card No.

Name and address of Contractor | Date of Issue

Nature of work with location | Designation

Name of workman | Month/Fortnight

Rate of Wages

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

26 27 28 29 30 31

Morning | Rate

Evening | Amount

Initial

Received from the sum of Rs. on account of my wagon

Signature

The wage card is valid for one month from the date of issue.

FORM XIV

Appendix-'F'

(See Rule 76)

EMPLOYMENT CARD

Name and address of contractor

Name and address of establishment under which

The contract is carried out

Nature and location of work

Name and address of Principal employer

1. Name of the workman
2. S. Name in the register of workman employed
3. Nature of Employment/Designation
4. Wage rate (with particulars of unit in case of piece work)
5. Wage Period
6. Tenure of employment
7. Remarks

Signature of Contractor

Appendix – 'G'

From XV

(See Rule 77)

(SERVICE CERTIFICATE)

Name and address of contractor

Nature and location of work

Name and address of workman

Age or date of birth

Identification Marks

Father's/Husband's name

Name and address of establishment in under which Contract is carried on

Name and address of Principal Employer

Total period of which employed

Sl.No.	From	To	Nature of Work	Rate of wages (with remarks particulars s of unit in case Of piece work)
1.	2.	3.	4.	5. 6.

Signature

Appendix – 'H'

FROM XV

(See Rule 77)

REGISTER OF FINES

Name and address of contractor

Name and address of establishment in/under which
Contract is carried on-

Nature and location of work

Name and address of workman

Name and address of Principal Employer

Sl.No.	Name of Workman	Father's/Husband's Name	Designation/nature of employment	Act/Omission for which fine imposed	Date of offence
1.	2.	3.	4.	5.	6.

Whether Workman Showed Cause Against fine	Name of person in whose presence employees explanation was heard	Wage period and wages payable	Amount of fine Imposed	Date on which realized	Remarks

Appendix-'I'

LIST OF ACTS AND OMISSIONS FOR WHICH FINES CAN BE IMPOSED

In accordance with rule of Labour Regulation, to be displayed prominently at the site of work both in English and local language.

1. Willful insubordination or disobedience, whether alone or in combination with other.

2. Theft, fraud or dishonestly in connection with contractors beside a business of property of NPCC

3. Taking or giving bribes or any illegal gratifications

4. Habitual late attendance.

5. Drunk-ness fighting riotous or disorderly or indifferent behavior

6. Habitual negligence

7. Smoking near or around the area where combustible or other materials are locked

8. Habitual indiscipline

9. Causing damage to work in the progress or to property of the NPCC or of the contractor

10. Sleeping on duty.

11. Malingering or slowing down work

12. Giving the false information regarding name, age, fathers name etc.

13. Habitual loss or wage cards supplied by the employer.

14. Unauthorized use of employers properly or manufacturing or making of unauthorized articles at the work place

15. Bad workmanship in construction and maintenance by skilled workers, which is not approved by the NPCC for which the contractors are compelled to undertake rectifications.

16. Making false complaints and/or misleading statements.

17. Engaging on trade within the premises of the establishment.

18. Any unauthorized divulgence of business affairs of the employees.

19. Collection or canvassing for the collection of any money within the premises of an establishment unless authorized by the employer.

20. Holding meeting inside the premises with out previous sanction of the employers.

21. Threatening or intimidating any workman or employee during the working hours within the premises.

APPENDIX – 'J'

FORM XX

[See Rule 78 (2) (d)]

REGISTER OF DEDUCTION FOR DAMAGES OF LOSS

Name and address of contractor

Name and address of establishment in/ under which
Contract is carried on

Nature and location of work

Name and address of Principal Employer

Sl.No.	Name of Workman	Father's/Husband's Name	Designation/ nature of Employment	Particulars of damage of loss	Date of damage/loss
1	2	3	4	5	6

Whether Workman Showed Cause Against Deductions	Name of person in whose presence employees explanation was heard	Amount of deduction Imposed	Date of recovery: No. of installment	First insta-llment	Last insta-llment	Remarks
7.	8.	9.	10.	11.	12.	

APPENDIX- 'K'

FORM XXII

(See Rule 78(2)

REGISTER OF ADVANCES

Name and address of contractor

Name and Address of establishment in/ under which
Contract is carried on

Nature and location of work

Name and address of Principal employer

Sl.No. and	Name of Workman	Father's/ Husbands Name	Designation/ nature of employment	Wages and wage payable	period and amount of advance given	Date
1.	2.	3.	4.	5.		6

Purpose / for Which advance Made	No. of installment by which advance is To be paid	Date and amount or each installment repaid	Date on which last installment was repaid	Remarks
7.	8.	9.	10.	11.

APPENDIX- 'L'

FORM XXIII

[See Rule 78(2) (e)]

REGISTER OF OVERTIME

Name and address of contractor

Name and address of establishment in/ under which Contract is carried on

Nature and location of work

Name and address of Principal Employer

Sl.No.	Name of Workman	Father's/ Husband's Name	Sex	Designation/ nature of employment	Date of which overtime worked
1.	2.	3	4.	5,	6.

Total overtime Worked or Production in Case of piece Rated	Normal rate of wages	Overtime rate of wages	Over time earning	Rate on which overtime wages paid	Remarks
7.	8.	9.	10.	11.	12

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Govt. of India Enterprise)
3A Dr.S.N.Roy Road, Kolkata – 700 029

SPECIAL CONDITIONS OF CONTRACT

1) No escalation is payable on account of any increase in price index or in the price of materials , labours, fuels, increase in existing tax or imposition of new tax or enactment of any new law or imposition of levies, cess etc. No price escalation shall be applicable even during extended period for completing works.

2) No interest shall be payable by N.P.C.C on any amount due to the contractor pending final or interim assessment.

3) In case of delay in the execution of work due to reasons attributable to the contractor, contractor shall be liable to pay as compensation (liquidated damage) at the rate of 1.00 %(One point zero percent) on the contract value of the work per month for such delay subject to a maximum 10.00%(ten point zero zero percent) of the total contract value of the work.

4) Service tax, if applicable & paid by the contractor against the said job to be reimbursed separately on production of documentary evidence in original/copy of submitting the same with appropriate statutory authority. However, the amount is to be reimbursed only on reimbursement of the same by the owner to NPCC & shall never be an excuse for non submission of the same with statutory authority.

5) If any extra / additional work is executed for which no rate is specified in this contract, then

a) Such work shall be carried out at the rates entered in the Delhi schedule of rates which was in force at the time acceptance of the contract minus/plus the percentage which the total tender amount bears to the estimated cost of the work put to tender.

b) If any altered/additional work is required to be executed as per requirements for which there are no established rates in Delhi schedule of rates, the same shall be payable as per provisions stated here under:

i. As far as possible the rates for such items shall be derived from Delhi. schedule of rates in force at the time acceptance of the contract minus/plus the percentage which the total tender amount bears to the estimated cost of the work put to tender. on pro-rata basis.

ii. If direct working out is not possible, the contractor shall be paid in the following manner:-Reasonable cost of materials plus reasonable cost of labour inclusive of tools,plants and machinery with 15%(fifteen percent)

extra on total cost to cover contractor's profit, supervision, overheads, establishments etc. Engineer's decision regarding reasonable labour cost and reasonable material consumption and cost shall be final and binding on contractor.

6) Quantities of all the items as mentioned in the priced schedule/B.O.Q. may vary up to any extent plus/minus. No claim whatsoever in this regard will be entertained. Zonal Manager will be the approving authority for approving such variations, extra schedule or non schedule items.

7) Defect Liability period of the work is twelve months & to be reckoned from the date of handing over of the project to the owner.

8) Performance Guarantee:-Within 7 (seven) days of issue of the Letter of Award, the successful tenderer shall deliver to the Employer a Performance Guarantee of 5.0%(five percent) of the Contract Price plus additional security for unbalanced Bids in accordance with Clauses as mentioned below. This performance Guarantee shall be in the form of Demand draft/Bankers cheque/Bank guarantee from any Scheduled Bank & DD/Bankers cheque to be drawn in favour of National Projects Construction Corporation Limited & payable at Kolkata. For submitting Bank Guarantee , format is enclosed.

9) Failure of the successful Bidder to comply with the requirements shall constitute sufficient grounds for cancellation of the acceptance and forfeiture of the Earnest Money. He will also be debarred from participating in bids invited by NPCC Ltd for further period of one year. His enlistment, if any will also be cancelled.

10) Security Deposit:-Employer shall retain security deposit @ of 10%(ten percent) of the gross value of each R/A bill of the contractor until amount so retained together with ISD & performance guarantee constitutes 10%(ten percent) of the contract price of the works. 50% of the accumulated security deposit against PART-A only (including ISD & performance guarantee) will be released to the contractor on successful handing over of the project to the owner & balance to be released after expiry of Defect Liability period. However, it is the responsibility of the contractor to bring to the notice of Engineer-in-charge in writing, two months prior to expiry of defect liability period that such period is going to expire. No interest will accrue on the Security Deposit under any circumstances.

11) If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, the Employer may require that the amount of the performance

security be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. The amount of the increased performance security shall be decided at the sole discretion of the Employer, which shall be final, binding and conclusive on the bidder. Denial to deposit increased performance security shall constitute sufficient grounds for cancellation of the acceptance and forfeiture of the Earnest Money. He will also be debarred from participating in bids invited by NPCC Ltd for one year.

12) All risks of loss or damage to physical property and of personal injury or death which arise during & in consequence of the performance of the contract are the responsibility of the contractor.

13) INSURANCE OF WORK ETC.-Contractor is required to take contractor's all risk policy from an approved insurance company in the joint name with NPCC and bear all costs towards the same for the full amount of contract against all loss of damage from whatever cause arising for which he is responsible under the terms of the contract and in such manner that the NPCC and the contractor are covered during the period of construction of works and/ or also covered during the period of defect liability for loss or damage.The work and the temporary works to the full value of such works. The materials constructional plant, all equipments and other things brought to the site for their full value. Whenever required by NPCC the contractor shall produce the policy or the policies of insurance and the receipts for payment of the current premiums.

14) INSURANCE UNDER WORKMEN COMPENSATION ACT:-Contractor is required to take insurance cover under the Workmen Compensation Act, 1923 amended from time to time from an approved insurance company and pay premium charges thereof.

15) THIRD PARTY INSURANCE:- Contractor is required to take third party insurance cover for an amount of 5% (five percent) of contract value from an approved insurance company for insurance against any damage ,Injury or loss which may occur to any person or property including that or NPCC arising out of the execution of the works or temporary works.In case of failure of the contractor to obtain contractors all risk policy, insurance under workman compensation act and third party insurance as described above within fifteen days from the date of issue of letter of award , running account payments of the contractor shall be withheld till such time the aforesaid insurance covers are obtained by the contract & NPCC also reserves the right to obtain such insurance debiting the cost to the contractor.If the contractor could not effect a comprehensive insurance cover against risks he may be required to effect under the terms of the contract, then he shall give his attention to get the best insurance cover available and even in case of effecting a wider insurance cover than the one which the subsidiary of the General Insurance Company could offer, such an insurance is ought to be done after the NPCC's approval , by or through the subsidiary of the General Insurance Company.

16) All the materials to be supplied and erected by the contractor through this contract shall be covered through insurance coverage for transportation, storage and erection. The insurance should cover the entire value of the machineries and equipment and to be in joint name of NPCC & the contractor. The insurance policies shall be kept valid suitably and premium for the insurance charges shall be borne by the contractor.

17) The bill of quantities shall contain items for construction, supply, installation, testing and commissioning work to be done by the contractor. Bill of quantities is used to calculate the contract value with % above/below/at par as quoted by the successful bidder in his offer. Contractor is to be paid as per items of BOQ. Contractor shall each month on or before the date fixed by the Engineer-in-charge, for all works executed in previous months shall submit the bill. Value of each bill in no case should be less than Rs 50.00 lacs. The contractor shall prepare computerized bills using the program as approved by Engineer-in-charge. The Contractor would initially submit draft computerized sheets & these measurement would be got checked/test checked from the Engineer-in-charge and/or his authorized representative. The contractor will thereafter incorporate such changes as may be done during these checks / test checks in his draft measurement & submit to the department three numbers of hard copies and one soft copy in C.D .

18) TERMS OF PAYMENT

i) 55 % of the item rate including % above/below or at par as quoted by the bidder in his offer shall be payable against safe delivery at site / store shed & after joint inspection.

ii) 35% of the item rate including % above/below or at par as quoted by the bidder in his offer shall be payable after installation.

iii) Balance 10% of the item rate including % above/below or at par as quoted by the bidder in his offer shall be payable after successful commissioning of the sub-station and its allied works.

19) All running payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and / or accepted by NPCC and shall not preclude the recovery for bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of the Contract, or any part thereof in this respect, or the accruing of any claim not shall it conclude, determine or affect in any way the powers of the NPCC under these conditions or any of them as to the final settlement and adjustments of the accounts or otherwise, or in any other way vary/ affect the contract. The final bill

shall be submitted by the contractor within three months from the completion of work, otherwise NPCC's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on contractor.

20) The RA Bills should be accompanied by number of photographs of work site with printed date & time, as desired by site engineer taken from various angles depicting status of work as on bill date for the concerned month. The contractor shall submit running account bills with detail measurement against items of bill of quantities. Payment to contractor will only be released after receipt of the payment from Owner.Any delay on the part of Owner to release such payment will not make the contractor eligible for compensation in cost.

21) ACCESS BY ROAD :-Contractor if necessary shall build temporary access roads to the actual site of construction for the works at his own cost. The contractor shall be required to permit the use of any roads so constructed by him for vehicles of NPCC or any other agencies/ contractors who may be engaged on the project site, free of cost. Non-availability to access roads, for the use of the contractor shall in no case condone any delay in the execution of work not be the cause for any claim for compensation. For setting out or taking up the execution of work or for access to site for his man & materials from nearby motorable road, development of access road , including cleaning of jungles , shrubs, felling of trees is the responsibility of the contractor including obtaining permission of statutory authority if any required.

22) VALIDITY OF TENDER:-The tender for the works shall remain open for acceptance for a period of 120 days from the date of opening of tenders. The earnest money will be forfeited in case the contractor withdraws his tender during the validity period or in case he changes his offer to his benefits which are not acceptable to NPCC. The validity period may be extended on mutual consent.

23) TIME SCHEDULE & PROGRESS.:-The contractor shall also furnish within 10 days of letter of award a CPM network / PERT chart / Bar Chart for completion of work within stipulated time showing details of man & machinery to be deployed. This will be duly got approved from NPCC. Achievement of milestones as well as total completion has to be with in the time period allowed. Contractor shall mobilize and employ sufficient resources for completion of all the works as indicated in the agreed BAR CHART/Network. NO additional payment will be made to the contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even through time schedule is approved by the Engineer-in charge.

24) WATER AND ELECTRICITY:-The contractor shall make his own arrangement for Water & Electrical power for construction and other purposes at his own cost. Necessary permission of statutory authority if any required in this regard, is contractors responsibility.The contractor shall also make standby arrangement for water & electricity to ensure un-interrupted supply.

25) TESTS AND INSPECTION:-The contractor shall carry out the various mandatory tests as per specifications. All the tests, either on the field or outside laboratories concerning the execution of the work and supply of equipment/ materials is the responsibility of the contractor & shall be got carried out by the contractor in consultation with NPCC or by NPCC at the cost of the contractor . Inspections of equipments are to be carried out by experts from any Government Organisation or by experts from any reputed Engineering college as decided by NPCC & cost towards deployment of such inspecting personnel are to be borne by the contractor including the cost towards to & fro journey of such inspecting experts & others expenditures as detailed elsewhere. Such experts will submit their inspection reports to NPCC directly. The contractor shall submit inspection/test report of all the equipments/materials as per IS from any Government or Government approved laboratory other than reports submitted directly to NPCC by inspecting personnel as mentioned above. Regarding testing etc Quality control plan as laid down in IS code shall apply.

26) WORK IN MONSOON AND DEWATERING:-The execution of the work may entail working in the monsoon also. The contractor must maintain a minimum labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No special/extra rate will be considered for such work in monsoon. The contractor's rate shall be considered inclusive of cost of dewatering required at any point of time during execution of work and no extra rate shall be payable on this account.

27) SETTING OUT OF THE WORKS:-The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions and alignment of all parts of the works. If any time during the progress of works, shall any error appear or arise in the position, levels, dimensions or alignment of any part of the works, the contractor shall be at his own expenses rectify such error to the satisfaction of Engineer-in charge. The checking of any setting out of any line or level by the engineers of NPCC shall not in any way relieve the contractor of his responsibility for the correctness.Construction & maintenance of reference pillars is the responsibility of the contractor.

28) FORCE MAJURE:-Any delay in or failure of the performance of either party hereto shall not constitute default hereunder to give rise to any claims for

damages, if any to the Extent such delay or failure or performance is caused by occurrences such as acts of God or the public enemy, expropotrtion or confirmation of facilities by Govt. authorities, compliance with any order or request of Govt. authorities, acts of war, rebellions, sabotage, fire, floods, illegal strikes, or riots (otherwise than among the contractors employees). Only extension of time shall be considered for Force Majure conditions as accepted by NPCC. No adjustment in contract price shall be allowed for reasons of force Majure except as provided in tender documents.

29) Maintenance during defect liability period:- Defect rectification of the project during defect liability period of 12 months from the date of satisfactory completion of the work and handing over of the project completed in all respect to the owner. A final certificate of rectification of all defects pointed out by EIC will be required for release of final security deposit..

30) Withholding and lien in respect of sums claimed:-Whenever any claim or claims for payment of a sum of money arises out of or under the contract against the contractor, the NPCC LTD shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any, deposited by the contractor and for the purpose aforesaid, the NPCC LTD shall be entitled to withhold the said cashes security deposit or the security if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the NPCC LTD shall be entitled to withhold and have a lien to the extent of the such claimed amount or amounts referred to supra, from any sum or sums found payable or which at any time thereafter may become payable to the contractor under the same contract or any other contract with this or any Department of the Central Government/State Govt. pending finalization or adjudication of any such claim.

31) Lien in respect of claims of other Contractors:Any sum of money due and payable to the contractor (including the security deposit returnable to him) under the contract may be withheld or retained by way of lien by the NPCC LTD, against any claim of this or any other Department of the Central Government/State Govt. in respect of payment of a sum of money arising out of or under any other contract made by the contractor with this or any other Department of Central Government/State Govt.It is an agree term of the contract that the sum of money so withheld or retained under this clause by the NPCC LTD will be kept withheld or retained as such by the NPCC LTD till the Claim arising out of or under any other contract is either mutually settled or determined by arbitration, if the other; contract is governed by arbitration clause or by the

competent court as the case may be and contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

32) Any matter pertaining to settlement rates for extra item, claim, arbitration or any other matter involving extra financial implication can only be settled by NPCC, if the same is accepted/approved by Owner.

33) Contractor is also to provide free of cost to NPCC personnel, one no new laptop (HP Pavillion dm1 4014 TU) & one no Multi function printer(HP Laser jet Pro M1536 dmf) , both with warranty(3-3-3) for better progress of work. Laptops & Printers are to be used by NPCC & on completion of the contractor's job same along with all relevant papers to be handed over to NPCC. During pendency of the contract, contractor is also to provide toners/inks as required for the printer.

34) ARBITRATION CLAUSE:-DELETED

35) JURISDICTION:-The agreement will be executed at Kolkata and the High Court/appropriate Courts in Calcutta alone will have jurisdiction to deal with matters arising there from.

36) ORDER OF PRECEDENCE OF DOCUMENTS

In case of difference ,contradiction, discrepancy, dispute with regard to conditions of contract, specifications, drawings, bill of quantities and rates quoted by the contractor, the following shall prevail in order of precedence.

i) Technical Specifications

ii) Specific Terms and Conditions of Contract

iii) Bill of Quantity /Schedule of Quantities.

iv) Special conditions of Contract.

v) General Condition of Contract.

vi) Drawings

vii) CPWD specifications updated with correction slips issued up to date of submission.

viii) Relevant I.S. Codes.

Signature of bidder Signature of Tender inviting Authority

.

ACCEPTANCE OF TENDER CONDITIONS

(To be submitted in bidder's letter head in Envelope-I)

To
The Zonal Manager,
EZ, NPCC Ltd.,
3A, Dr S. N Roy Road,
Kolkata-700029

Sir,

1. I/We have inspected the site of work and have made myself/ourselves fully acquainted/satisfied with the local condition in and around the site of work.

2. I/We have carefully gone through the tender document in respect of the work. My/Our tender is offered taking due consideration of all factors if the same be accepted. I/We promise to abide by all the stipulations of the contract documents and also promise to carry out the work to the complete satisfaction of NPCC.**I/We hereby unconditionally accept all the terms & conditions & technical specifications of the NPCC tender document in its entirety for the above work.**

3. I/We are satisfied that the work can be performed and completed as per contract.

4. I/We also understand, it is not permissible to put any remark(s)/condition(s)(except unconditional rebte on price, if any) in the tender enclosed in Envelope-II and the same has been followed in present case also. In case this provision of the tender is found violated at any time after opening of the Envelope II, **I/We agree that the tender shall be summarily rejected and NPCC shall without prejudice to any other right or remedy be at liberty to forfeit the full amount of earnest money.**

Signature of the Agency
with official Seal

Dated : _____

E:\AD-1\A d\BSF\Tender document\BSF works\acceptance of tender conditions_6.doc

SPECIFIC TERMS AND CONDITIONS

1.0 The Transformer and accessories shall be manufactured in conformity with the technical specifications enclosed with the order and drawings of the contract. If the contractor performs any work in the manner contrary to the above specifications and / or drawings without the approval of the purchaser, he shall bear all the cost arising out or ensuring therefrom and shall be responsible for all the losses to the purchaser.

Any discrepancy between the specifications and drawings or any error, omission, ambiguity in the specifications and drawings, the contractor must bring the same to the notice of the Engineer-in-Charge and obtain instruction of the Engineer-in-Charge. Any work done by the contractor after discovery by him of such discrepancy, error, omission etc. without authorization by the Engineer-in-Charge will entirely be responsibility of the contractor.

2.0 The contractor shall submit drawings and documents to the Engineer-in-charge in four copies for approval of the Engineer-in-charge within 21 days from the date of the order.

Drawings approved by the Engineer-in-Charge cannot be departed. In case of any variation and omission on the drawings this shall be rectified after written permission from the Engineer-In-Charge.

The contractor shall also furnish the installation, operation& maintenance manuals, part drawings of the equipment to the Engineer-in-Charge.

After completion of the job, the contractor shall furnish 6 (six) sets of all as built drawings, electrical circuit diagrams, sectionalized part drawings of the equipment and components indicating part nos. thereon , operation & maintenance manuals of equipment copies of test certificates of the equipment, copies of field test results etc. in proper binding form to the Engineer-in-Charge and in absence of which the final bill of the contract shall not be released.

3.0 **TESTING**

The engineer-in-Charge or his authorized representative shall have the right on all reasonable time to inspect the progress of the equipment being manufactured at the respective manufacturer's works. The Engineer-in-charge or his authorized representatives shall also have the right to conduct the stage inspection of the equipment. The contractor shall inform the Engineer-in-charge the status of the progress of the equipment being manufactured with at least 15 (fifteen) days lead time to arrange for said inspection if decided by the Engineer-in-Charge.

Testing of Transformers, H.T Switchboard, L.T Power Distribution Board in the respective manufacturer's works shall have to be done in the presence of the Engineer-in-Charge and his authorized testing experts from any Government Organisation or by experts from any reputed Engineering college. The contractor shall give Engineer-in-Charge the inspection call in writing indicating the date with time and place at which any part of the

equipment will be ready for testing. Such inspection call shall be made at least 15 (fifteen) days prior to the schedule date of testing. After inspection and testing of any part of the equipment if it is found not in accordance with the contract or if any defect is detected, the Engineer-in-Charge may reject such part by giving a notice to the contractor for replacement within a reasonable time. All equipment, after erection, shall be subject to normal field test as per standard practice. The tenderer shall include the cost of the testing and cost of inspection by authorized testing experts from any Government Organisation or by experts from any reputed Engineering college, in their offer. Apart from this, the tenderer shall bear the cost of to-and-fro journey at least by AC-II tier accommodation for an Engineer & experts from any Government Organisation or by experts from any reputed Engineering college and his suitable Food and Lodging and arrangement of vehicles for movement to testing site and back which they will include in the offer. NPCC shall make no payment for carrying out inspection and testing by his representatives including outstation journey and stay over.

4.0 PROCUREMENT

All materials shall be delivered within the specified period from the date of the order. The materials shall strictly conform to the technical specification. The delivery of the materials from the manufacturer's works to the temporary store and from temporary store to work site shall be done by the contractor at his own cost and risk. Make of equipment offered shall be clearly indicated in the technical and commercial offer backed by technical details.

5.0 STORING

The contractor shall provide a well-protected store shade of adequate capacity for the storing the materials. The store shall be guarded by the contractor's own security guards. The Engineer-in-Charge or his authorized representative shall have the rights to inspect the store at any reasonable time with due intimation to the contractor. The Engineer-in-Charge shall also have the power to take away any or all materials from the store shade to the work site upon a written notice to the contractor at any time at the contractor's risk and cost. The loading and unloading both at the time of delivery, storing and at the time of erection, transportation to and from the store shade to the erection site shall be done by the contractor at his own cost. The contractor shall arrange for proper upkeep of the materials so stored in the store shade and to take preventive action against any deterioration from local weather condition during storage.

6.0 GUARANTEE

The contractor shall stand guaranteed for successful operation of all equipment for 12(twelve) months from the date of successful completion of the project & handing over to the owner(CNCI) under their scope of work and shall remove, rectify, make good any deficiencies forthwith at their own cost. During the guarantee period the contractor's representative shall visit the work site once in a month and advice in writing the Engineer-in-Charge about the condition, state of health, operation and maintenance procedure of the equipment. The successful tenderer shall also give the following guarantee in respect of the equipment furnished by them.

a) All equipment shall be free from any defect due to faulty design of the same or workmanship.

b) The equipment shall operate satisfactorily. The performance and efficiencies shall not be less than guaranteed values.

c) Formal acceptance of the work or equipment that are covered under the contract will not be made by the department until all the work done by the contractor has satisfactorily passed all the tests required for satisfaction.

If during testing prior to formal acceptance any equipment , materials or works fail to meet the guaranteed performance, the contractor shall either replace the equipment or make good the same to raise its guaranteed performance. Any such work shall be carried out by the contractors at their own cost. If the contractors fail or neglect to make good to raise the guaranteed performance of the equipment or the workmanship within a specified period, the same will be done by the department and the cost of which will be deducted from any money due to or will become due to the contractors.

7.0 PERFORMANCE GUARANTEE

The contractor must give in writing guarantee regarding the overall efficiency of the equipment. The department reserves the rights to reject any equipment or component which fails short the required performance guarantee figure and the contractors at their own cost shall rectify / replace the said equipment / component.

8.0 COMPLETION PERIOD

The work shall be completed in all respect within 6 months from the date of issue of letter of award..

9.0 ENGAGEMENT OF SUB-CONTRACTOR

Engagement of Sub-Contractor shall normally not be permitted. On special cases, engagement of Sub-Contractors for certain portion of a job may be permitted against prior written permission of the Engineer-in-charge. In such cases the contractor has to apply to Engineer-in-Charge stating full details with copies of credentials of the Sub-Contractors whom they intend to engage, based on which the permission shall be accorded to the contractors. As far as possible the contractor shall employ local contractors and labours. This clause for engagement of Sub-Contractors shall however will not apply to the cases of the sub-venders of the contractors who are manufacturers of the equipment being supplied by the contractor for the job.

The responsibility for proper installation and performance of the contract shall be entirely on the contractor and any instruction given to the authorized sub-contractors of the main contractor shall be deemed to have been given by contractor.

10.0 INSTALLATION AND COMMISSIONING

The installation work shall be carried out in a most engineering like manner and as per the direction of the Engineer-in-Charge. The installation work should govern by all statutory rules and regulation. If during installation some civil works are required to be

done in the interest of lifting, placing in position, installation or commissioning of the equipments, same has to be executed by the contractor. Mending all damages as may occur during the course of installation shall be undertaken by the contractor

The contractor shall undertake the complete responsibility for successful erection and commissioning of the equipment supplied and erected by them in addition to points stated elsewhere. The commissioning of the equipment shall involve the following steps of operation.

a) Testing of each unit on no load to make the complete check of its mechanical portion, alignment, clearance and rigidity and making necessary adjustment and / or alternations if required to make each unit properly operable mechanically.

b) Checking of insulation resistance of electrical equipment, polarity and saturation test of CTs, PTs, Vector Group test of transformers, relay function tests by primary injections on bus-bar and secondary injection on relays, earth resistance test etc. shall be undertaken.

c) After obtaining satisfactory results of the mentioned test and checks the contractor shall make arrangement for statutory high pressure testing of the equipment of the sub-station and subsequent inspection by the Electrical Inspector, Directorate of Electricity, Govt. of West Bengal so as to obtain necessary permission for switch on of the sub-station equipment.

d) After obtaining power supply the equipment shall be energized and run progressively from no load to full load.

11.0 BACK TO BACK GUARANTEE.

The successful bidders of the tender shall after issuance of the **letter of intent** , but prior to execution of the agreement should submit **back to back guarantee** from the respective manufacturers regarding timely supply of equipment as per the technical requirement of the tender, assistance of the manufacturers like supervision of the installation and commissioning works. Future assistance if needed by the purchaser as and when required etc. in the forms as per annexure enclosed. However, the tenderer shall furnish a line of confirmation from the respective manufacturer that they will supply as per the technical specification of the tender and will furnish the **back to back guarantee** at appropriate time. The continuation shall be in the following lines.

This is to confirm that in case of an order placed on us by M/S_____

(Name of the tenderer) for_____ (Name of equipment) for the job against NITNo _____ dated_____ we M/S _____ (Name of manufacturer) shall supply the mentioned equipment as per specification, requirement and intent and furnish the **back to back guarantee** in due time.

(Authorized Signature of Manufacturer) (Seal)

TECHNICAL SPECIFICATION OF P.D.BS, CAPACITOR PANEL, D.G CONTROL PANEL

1.	Type	:	Industrial, cubicle, Form 3B
2.	Mounting	:	Floor, self-supporting
3.	Configuration	:	Double front non-draw out, fully compartmentalized
4.	Voltage / Frequency rating	:	415V±10%, 50Hz±5%
5.	Sheet steel thickness	:	2mm. for enclosure, door, covers & barriers
6.	Type of Sheet steel	:	CRCA
7.	Type & size of base Frame	:	ISMC – 75
8.	Type & Thickness of gland plate	:	Detachable, 3mm. thick
9.	Type of Sheet Treatment	:	Chemical (Degreasing, Pickling, Phosphatizing
10.	Primer Coating	:	2 Coats of Anti Corrosive Primer
11.	Finish Paint Type	:	Powder Coated
12.	Finish Paint Shade	:	RAL 7032
13.	Measure against Ingress	:	All opening shall be covered with neoprene gasket
14.	Degree of Protection	:	I P – 54
15.	Cable Entry	:	From bottom through detachable gland plate
16.	Cable Termination	:	In separate Cable Alley
17.	Type of cable Terminals	:	Stud Type
18.	Bus-Bar Material	:	E91E grade aluminium
19.	Main Bus-Bar rating	:	As per specification
20.	Vertical Dropper Rating for Outgoing	:	Half the Rating of Phase Bus-Bars
21.	Maximum Current Density for Bus-Bar	:	1A / sq.mm.
22.	Type of Bus-Bar Insulation	;	1.1 KV grade colour coded PVC heat shrunk type sleeves
23.	Minimum Bus-Bar clearance between Phases & Phase to Earth	:	As per I.S
24.	Material of Bus-Bar Support	:	FRP
25.	Maximum Fault Level of Bus-Bar	:	50KA (r.m.s) for 1sec.
26.	Type of Bolts for Bus-Bar Joints	:	High Tensile
27.	Anti-corrosive Chemical for Bus-Bar Joints	:	Petroleum Jelly
28.	Type of doors at front of the panel	:	Concealed Hinged Doors
29.	Type of Coves / Doors at rear of the panel	:	Bolted Covers / Doors
30.	Door Interlocking	:	Each Feeder Door shall be Interlocked with respective Switchgear
31.	Size of Control Wires	:	1.1 KV grade PVC insulated 2.5 sqmm. Flexible Copper Wire for Current Circuits and 1.5 sqmm. Flexible Copper Wire for Voltage and control circuits.
32.	Control Wire Termination	:	With tinned Copper Lugs

33.	Type of Control Wire Identification Marking	:	Interlocked Type Ferrule Marker
34.	Size and material of Earth Bus-Bar	:	(50x6opper)mmAluminium Flat
35.	Connection of hinged doors with earth Bus-Bar	:	By flexible Copper Wire
36.	Reference Standard	:	I.S – 8623

INTENT OF SPECIFICATION

1.01 This specification is intended to cover the design, engineering, manufacture, assembly, testing at manufacturer's work, supply, delivery, storage at site of brand new equipment required for 6.0 / 0.433 KV Electrical Sub- station consisting of 2Nos 6.0 / 0.433KV indoor dry type vacuum pressure impregnated transformers, one of capacity 750KVA and the other of capacity 500KVA, 3 – panel 6.0 KV indoor metal clad VCB switchgear complete with other accessories, LT Main Power Distribution Boards, Sub-Main Power Distribution Boards, Emergency Power Distribution Boards, all power and control cabling works including grounding materials for fulfillment of latest I.E. Rules and Acts. Then work under this specification also includes erection & successful commissioning of the entire Sub-station equipment i.e. transformers, HT switchgear, LT Power Distribution boards, all cabling works, grounding arrangement and other necessary items as specified hereinafter.

1.02 The works divided in various specifications as / shown hereunder. The tenderer is advised to quote for all the specifications, part / incomplete tender shall be liable for rejection.

a) Design and engineering including preparation and submission of detail engineering drawings, sectionalizeddrawings of equipment with part Nos. Single Line Diagram, earthing details etc. preparation and submission of other electrical and mechanical drawings required for erection, testing and commissioning of the sub-station and its ancillaries. All technical information required as mentioned in the data sheets attached with this specification shall be filled up correctly and completely.

b) Supply of all electrical and mechanical equipment i.e. transformers, HT & LT Power Distribution Boards, Power & control Cable, Diesel Generator Set, Grounding System, M.S Cable Rack, MS Cable Ladder, Truss system for supporting the exhaust pipe of D.G set, illumination materials and ventilation equipment, firefighting equipment etc.

c) Erection & commissioning of all the above equipment including laying of all power cable & control cable, laying of ground conductors in conformity with latest I.S.S. & I.E. Rules / Act. Including pre-commissioning tests & commissioning all the equipment.

1.03 Any item of work which may not have been mentioned in the specification or in Single Line Diagrams enclosed but is usual or necessary to complete the work in all respect shall be deemed to be included under the scope of this specification.

2.0 PARTICULAR INSTRUCTION TO THE TENDERERS

2.01 The tenderers are requested to offer their most competitive rates in a most reasonable way showing percentage above or below the estimated amount put to tender. It is specifically confirmed that cost of all levies, taxes, duties along with insurance, freights etc. have been included in the estimate.

2.02 The tenderer shall clearly furnished their offer after inspection of the site and shall fill up the required technical particulars in appropriate position in the form of Data Sheet enclosed in the specification.

Tenders submitted without complete technical offer / data as called for under the technical specification of equipment shall be rejected.

3.0 GENERAL INFORMATION

3.01 The equipment under the scope of the supply of this specification will be required and used for power supply system and electrical renovation work within the CHITTARANJAN NATIONAL CANCER INSTITUTE, KOLKATA.

3.02 The site conditions and weather reports are as stated under clause 4.0 below. The tenderer shall consider all these parameters carefully during preparation of their offer. The dimensions of the equipment should be suitable according to the space available in lay out diagram. The tenderers are also advised to visit the work site in consultation with the Engineer- In –Charge and acquire sufficient knowledge on the site, prior to submission of their offers.

3.03 The items of supply offered by the tenderer shall be complete in all respect and the tenderer at no extra cost to the department shall include items of supply or additional work not covered by this specification but essential for proper design co-ordination.

3.04 The successful tenderer shall supply all items of supply & accessories as listed in this specification with such modifications & alterations if there be any as are agreed upon in writing after mutual consultation without any financial commitment on the part of the department.

3.05 The offer for all erection and commissioning items shall include anchor bolts, holding down bolts and leveling arrangements etc. for all the equipment. All cable laying work shall include supply of necessary cable trays, cable brackets, cable tags, cable markers, numbering hangers, bracket supports, brick protection for U.G. laying, G.I. / P.V.C pipes for cable protection etc. including supply of all other items which may be the part of an individual equipment or items required for tying up all equipment to existing departmental system for completeness of the entire work within the scope of the tender.

4.0 GENERAL DESIGN INFORMATION

All equipment shall be designed for operation in tropical and humid climates. For the purpose of design, following data shall be used.

i)	Peak ambient temperature	:	$50^{\circ}C$
ii)	Average ambient temperature	:	$37^{\circ}C$
iii)	Peak relative humidity	:	100% (max.)
iv)	Average wind pressure	:	200KG / M^2
v)	Average rain fall / annum	:	1300mm
vi)	Seismic Zone	:	IV as per IS 1893

5.0 STANDARDS

The equipment / work covered by this specification shall unless otherwise stated be selected , designed, constructed, tested, erected and commissioned in accordance with the applicable selections of the latest revision of relevant Indian Standards Specification and Indian Electricity Rules and Acts as amended up to

date. In absence of I.S. for any components, reference may be made to the relevant British Standard (B.S), International Electro-technical Commission (IEC) publications, A.S.A and N.E.M.A. Standard. Should there be any dispute on thedesign for the design standard, the most stringent one shall be followed. Erection and commissioning shall comply withthe relevant code of practice of Indian Standard and latest edition of Indian Electricity Rules.

6.0 INTER-CHANGEABLITY

All similar materials and removable parts shall be inter-changeable with one another.

7.0 SAMPLES

The samples of all the materials within the scope of the tender like cables, cable jointing kits, switches, cable lugs, clamps, numbering ferrule , cable markers etc. shall be submitted by the successful tenderer for inspection if so desired by the department, at free of cost and without any obligations for approval by the department. Supply shall be made in accordance with the approved samples and the decision of the department in this regard is final.

8.0 COMPLETENESS OF WORKS

8.01 The work covered by this specification shall be completed in all respect. Any material or accessory which may not have been categorically mentioned but which is usual or necessary for satisfactory and trouble free operation and maintenance of the equipment shall be supplied.

8.02 The specification shall be read and followed with all drawings and annexure attached herewith for submitting offer complete in all respect.

9.0 SERVICE TO BE FURNISHED UNDER THIS SPECIFICATIONS

9.01 All equipment shall be completed with all accessories and materials in accordance with this specification and all drawings, schedule and annexure appended to this specification. The approved make of equipment have been listed in vendor list'.

9.02 The base channel frame for all the panels for grouting in the floor shall be complete with anchor bolts, nuts, & leveling attachment shall be supplied along with the equipment free of cost.

9.03 Complete list of special tools and tackles required for erection work shall have to be furnished, and arrangement for the same shall be done by them during the course of their work at no extra cost.

9.04 All relevant drawings, data and instruction manuals of equipment shall have to be furnished.

9.05 Contractor shall take up the complete responsibility for erection, testing, commissioning and putting into successful operation of all equipment furnished under this specification.

9.06 The tenderer shall have to submit a completion drawing showing in details the exact position of equipment, panels, cable route with identification markings etc. within the scope of the tender.

10.0 SCOPE OF WORK

10.1 The scope of work under this specification has been divided in different sections as shown in the schedule of work and generally described below and briefly described in separate clauses and in the drawings furnished herewith. The following clauses of contract work shall be included but not limited to the following.

10.2 Design, Engineering, Supply, delivery, Storage, Erection, testing and Commissioning of contract materials and transportation, loading unloading at the site prior to erection.

10.3 Opening of packing cases, repacking of cases where necessary, inspection & checking of materials for their completeness and condition. No packing cases shall be opened without the presence of the Engineer-in-Charge or his authorized representative.

10.4 Mending good the damages of materials which may have occurred during transit from supplier's works to execution site and cleaning of materials before erection, supply and painting with anticorrosive paints and / or any other rust and corrosion preventing medium after treatment of the parts as required.

10.5 Supply, delivery at site and erection testing and commissioning of transformers, HT switchgears, LT Power distribution Board, Diesel Generating Set, laying of all types of cables, termination of all types of cables and erection of grounding system etc.

10.6 Supply and fabrication of steel brackets, supports, hangers, truss, cable tray, ladder, clamps, exhaust pipe and other items as may be required for erection and commissioning of the sub-station and its ancillary works. All steel work fabricated at site shall be painted with anticorrosive paint prior to their installation.

10.7 Pre-commissioning checks of the completed erection work to ensure correctness an completeness of erection.

10.8 Testing of all equipment including its accessories prior to commissioning as may be required by the department and also provision of necessary testing and measuring equipment for the purpose.

10.9 During the testing procedure if the test result of any equipment is found to be unacceptable necessary action shall have to be taken immediately to improve its performance up to the desired level for getting necessary clearance from Directorate of Electricity Govt. of West Bengal.

10.10 Functional tests of all the protective relays shall have to be done by primary and secondary injection test. After testing necessary settings shall have to be done for all the protective relays according to the system condition.

10.11 After obtaining clearance from Directorate of Electricity, Govt. of west Bengal, all the equipment shall be commissioned. Should any defect of any equipment be detected at the time of commissioning or during operation necessary action shall have to be taken by the contractor to make the equipment good forthwith at no extra cost to the department.

10.12 The work shall be carried out confirming to the code of practice laid in the relevant Indian Standard Code of practice and shall comply with the provision of Indian Electricity Rules. The contractor, at his own cost, shall arrange for "provisional approval" of commencement of the electrical works and as well as of the Final approval of the installation work from the Electrical inspector to the Govt. of West Bengal. Necessary fees and charges for obtaining the final approval of the electrical inspector for switch on permission shall be borne by the contractor.

10.13 Any work which has not been mentioned here or in drawings but otherwise necessary for completion of the contract shall be carried out by the contractor within the scope of work under this specification.

Signature of bidder Signature of Tender inviting Authority

LIST OF APPROVED VENDORS OF EQUIPMENT

The tenderers are requested to submit their offers strictly based on approved vendor list of equipment. Offer with alternative / stated equivalent make shall be rejected.

1.	H.T Switchgear	:	SIEMENS / ABB / CGL / BIECCO LAWRIE
2.	Transformer	:	CGL / UNIVERSAL MAGNETIC / AREVA
3.	Relays	:	AREVA / ABB
4.	Air Circuit Breaker	:	SIEMENS / SCHNEIDER / L & T /ABB
5.	MCCB / SDFU	:	LEGRAND / SIEMENS / L & T
6.	LT Power Distribution Board	:	SIEMENS/L&T /PCE PROJECTS
7.	HT / LT / Control Cable	:	NICCO / GLOSTER/ UNIVERSAL / HAVELLS
8.	MCB	:	MDS / LEGRAND / ABB
9.	Exhaust Fan	:	CALCUTTA / EPC / CGL / AREVA
10.	Fuses	:	AREVA / SIEMENS / L & T
11.	Ceiling Fan	:	CGL / HAVELLS / POLAR
12.	GI Pipes for Earthing	:	TATA
13.	GI Pipes for Cable protection	:	ITC / JINDAL
14.	PVC flexible Copper Wire	:	KDK / PREMIER / ELECTROCAB / HAVELLS
15.	HT Cable Jointing Kit	:	CCI / M. SEAL / FRONTECH
16.	Lighting Fixtures / Fittings & Lamps	:	PHILIPS
17.	Ammeter / Voltmeter (Digital)	:	AE / IMP / SCHNEIDER
18.	Diesel Engine – Alternator	:	ENGINE – CUMMINS ALTERNATOR – STAMFORD
19.	Battery	:	EXIDE
20.	Battery Charger	:	CALDYNE / ELECTRO SERVICE(INDIA) / DEKEM ENGINEERING PVT LTD.
21.	Capacitor	:	L & T / EPCOS / UNIVERSAL
22.	Power Contactor	:	SIEMENS / L & T / LEGRAND

23.	Digital Multifunction Meter	:	SCHNEIDER
24.	Indication Lamp	:	VAISHNO / SIEMENS
25.	L.T Current Transformer	:	KAPPA
26.	3 / 4-Way Power Terminal	:	DESUN
27.	Clip on type control terminal	:	ELMEX
28.	T – N – C Breaker Control Switch	:	KAYCEE / RECOM
29.	Ammeter / Voltmeter Selector Switch	:	KAYCEE / RECOM
30.	P.V.C Pipe for Cable Protection	:	PRECISION
31.	On Delay Timer, 0 – 60 Sec. 240VAC, 2 C/O Contact	:	SIEMENS / EAPL

TECHNICAL SPECIFICATION

HT SWITCHGEAR

1.1 6KV SWITCHGEAR PANEL

The H.TSwitchboard shallbe 3-panel suitable for indoor installations and for use at 6.0KV±10%, 3-phase, 50c/s±5% AC earthed system. The switchboard shall comprise of the following:

i) Incoming Panel ---------- 1No.

ii Outgoing Panel ---------- 2Nos

Incomer panel will be used to receive power at 6.0KV±10% from C.E.S.C and the outgoing feeder panels will be used to energize primaries of the 6.0KV/0.433KV Transformers of capacity 750KVA & 500KVA.

The Switchgear shall suitable for continuous & trouble operation at 6.0KV±10%, 3-phase, 3-wire, 50c/s±5%, grounded system.

The Switchgear shall be indoor, metal clad, floor mounted horizontal isolation and horizontal draw out type.Design and construction shall be such so as to allow extension at either ends. The base channel frame of the switchgear panel, if required, along with all hard wares shall be within the scope of the contract. The switchgear enclosure shall conform to the degree of protection IP-4X. The minimum thickness of sheet used shall be 2mm.

The switchgear assembly shall comprise a continuous, dead front line up of free standing, vertical cubicles. Each cubicle shall have front hinged door with latches and removable back cover. All covers and doors shall be provided with neoprene gaskets.

Circuit breakers, instrument transformer, bus-bars, cable compartment etc. shall be housed in separate compartments within the cubicles.

All relays, meters, switches and lamps shall be flush mounted on the respective cubicles.

1.2. BUS AND BUS TAPS

The main buses and connections shall be made of high conductivity electrolytic copper sized for specific current ratings with maximum temperature rise of the bus and bus connections limited to 85^{o}C.

Bus-bars and connections shall be fully insulated for working voltage with adequate phase/ground clearances as per IEC. Insulating sleeves for bus-bars and cast resin shrouds for joints shall be provided.

All buses and connections shall adequately be supported and braced to withstand stress due to maximum short circuit current and also take care of any thermal expansion.

Bus-bars shall be colour coded for easy identification and the bus-bar chamber shall be provided with inter panel barrier with epoxy cast seal-off through which the buses will pass so as to prevent fire from one panel to other.

1.3.CIRCUIT BREAKER

Circuit breaker shall be triple pole and vacuum type and rated for 6.0KV, 800A. All circuit breakers shall have a short circuit level of 250MVA at 6.0KV . Short time current shall be 24KA for 3 seconds. The circuit breaker shall be horizontal isolation and horizontal draw out type having SERVICE/ TEST/ ISOLATED positions with positive indications.

Circuit breakers with identical rating shall be physically and electrically interchangeable.

Circuit breakers shall have 230V AC motor operated spring charged trip free mechanism with anti-pumping feature and shunt trip. Facility for manual charging of spring shall be provided after one close operation. The closing and tripping coils, indication shall be suitable for 110V DC.

Mechanical safety interlock shall be provided to prevent

i) The circuit breaker from being racked in or racked out of the SERVICE position when the breaker is closed.

i) Ranking in the circuit breaker unless the control plug is fully engaged.

Automatic safety shutters shall be provided to cover fully the female primary disconnects when the breaker is withdrawn.

Each breaker shall be provided with emergency manual trip. In addition mechanical ON/OFF indicator, an operation counter and mechanism charged/ discharged indicator shall be provided.

Each breaker shall be provided with the following;

i) Auxiliary switch with at least 6NO & 6NC contact blocks mounted on the draw out portion of the switchgear. Auxiliayswitch shall be convertible type viz. facility for changing NO contact to NC contact and vice versa. Switch contact rating shall be 10A A.C and 2A D.C at operating voltage.

ii) Arrangements to permit breaker closing operation in TEST position and in SERVICE position by an auxiliary switchhaving requisite number of electrically separate contacts shall be provide.

iii) Circuit breaker shall be complete with self aligning primary and secondary disconnecting devices.

iv) Each breaker shall be provided with suitably encased rollers. Rollers shall permit full with drawl of breakers and flexibility of movement on the floor outside the switchgear cubicle.

1.4 CONTROL & INDICATION

a) Indication lamps shall be furnished on the front above control switch of each cubicle as followed:

Breaker Open	:	Green Lamp
Breaker Close	:	Red Lamp
Breaker Trip	:	Amber Lamp
Spring Charge	:	Blue Lamp
Trip Circuit Healthy	:	Milky White Lamp
D.CHealthy with P.B	:	White Lamp

b) The lamps shall be L.E.D type and complete with all other accessories.

c) 230V A.C Alarm Bell for non-trip/fault and Buzzer for trip fault with arrangement for Alarm cancellation.

1.5 CURRENT TRANSFORMERS

Current transformer shall be cast resin type and conforming to IS: 2705(Pt-I to IV).All secondary connections shall be brought out to terminal blocks. Short time current of CT shall be 24KA for 3 seconds. CT ratings shall be as under. However , if the tenderers feel, the ratings are not adequate for the scheme, they may furnish revised ratings backed by proper calculations. The accuracy class and ratings of the current transformer shall be as under.

Accuracy class:

a) 5 P 10 for protection

b) 1.0 and ISF<5 for metering

CT ratings:

a) For Incomer - 125/5A, 15VA

b) For outgoing transformer feeders: 50/5A for 500 KVA Transformer & 75/5A for 750KVA Transformer.

1.6 VOLTAGE TRANSFORMER

Voltage transformer for Incomer shall be cast resin ,draw out type and shall have accuracy class 1.0/3P. The VT shall be 3-phase , 100VA per phase $\frac{6.0KV}{\sqrt{3}}$ / $\frac{110V}{\sqrt{3}}$ STAR connection.

High voltage windings of voltage transformer shall be protected by current limiting fuses. The voltage transformer and fuses shall be completely disconnected and visibly grounded in fully draw out position. Low voltage fuses for preventing overload shall be installed in all ungrounded secondary leads. Fuses shall be located suitably to permit easy replacement while the switchgear is energized. The VT shall power all trip, protection, meter circuits, and the tenderers feel the VA rating be inadequate, they may furnish revised rating backed by calculations. The voltage transformer shall be conforming to IS: 3156 (Pt I – III) of 1992.

1.7 RELAYS

Relays shall be of draw out design with built in testing facilities. Relays shall be rated for operation on 5A CT secondary current. Number and rating of relay contacts shall suit the job requirement.

The tenderer shall furnish, install and co-ordinate all relays to suit the requirements of protection and interlock scheme provided elsewhere.

1.8 METERS

Indicating instruments (96mmx96mm) shall be flushed type, antiglare glass and accuracy class of ±2% full scale. Each meter shall have zero adjustment on the front.

The Voltmeter at Incomer (0-15KV) shall be with 3-WAY & OFF selector switch of 16A rating.

The Ampere meter of Incomer shall have the range of 0 – 125A and that of outgoing transformer feeders shall have the range 0- 50A and 0-75A with 3-WAY & OFF selector switches of 16A rating in each feeder.

One Multifunction Energy meter (equivalent to ER300P) and one frequency meter shall be provided at the Incomer.

1.9 SECONDARY WIRING

The switchgear shall be fully wired at the factory to ensure proper functioning of control, protection, transformer scheme.

All control supply shall be drawn through M.C.Bs and H.R.C Fuse Bases with Links of suitable ratings to suit the system requirements to permit individual circuit isolation without disturbing other circuits. All spare contacts of relays, switches and devices shall be wired up to terminal blocks.

Wiring shall be done with 1.1KV grade, PVC insulated, stranded copper conductor wire of cross sectional area 2.5sqmm for current circuits and 1.5sqmm for voltage circuits.

Each wire shall be ferruled at both ends with permanent marker bearing wire number.

Wire termination shall be made with crimping type copper lug of proper size using insulation sleeves and anti-corrosive paste.

Not more than two wires shall be connected to any terminal. At least 20% spare terminal shall be furnished in the terminal block.

1.10 CABLE TERMINATION

Switchgear shall be designed for cable entry from bottom. Sufficient space shall be provided for ease of termination and connection.

All provisions and accessories shall be furnished for termination and connection of cables including removable gland plates(3mm thick), cable supports, crimping type tinned copper / aluminium lugs, brass compression glands with washers, insulating tape anti-corrosive paste etc. as necessary.

1.11 GROUND BUS

Copper ground bus rated to carry maximum fault current shall be extended up to full length of the switchgear.

The ground bus shall be provided with at each end two drilled holes suitable for 5/8" G.I bolts, nuts and washers to receive (75x6)mm G.I earth lead.

VT neutral shall be earthed through removable links so that earth of one circuit may be removed without disturbing others.

Each stationary unit shall be directly connected to the ground bus.

1.12 SPACE HEATERS / PLUG SOCKETS

Each panel shall be provided with thermostatically controlled space heaters 5A, 3-pin plug socket. Apart from the same each panel shall be provided with suitable inpanel with control switch.

1.13 AC/DC POWER SUPPLY

Following power supplies shall be arranged to switchgear.

AC Supply : 110V AC from VT secondary
230V AC from L.T Switchboard

DC Supply : 110V DC Supply shall be arranged from the stationary Lead Acid Battery / Battery Charger / DCDB.

AC & DC supply feeding to all feeder panel shall then be distributed by loop-in and loop-out system.

1.14 TROPICAL PROTECTION& PAINTING

All equipment, accessories and wiring shall have fungus protection.

Screens made of corrosion resistant material shall be provided on all ventilating louvers prevent entrance of insects.

All surfaces shall properly be treated as required to produce a smooth, clean surface, free of scale, grease and rust.

After cleaning, the surface shall be given a phosphate coating followed by two coats of high quality primer and stoved after each coat.

The switchgear shall be finished with two coats of power coated paint in Siemens grey shade RAL 7032. Sufficient quantity of touch up paint shall be provided at site.

1.15 TEST

The tests shall include but not necessarily limited to the following:

i) Operation under simulated service condition to ensure accuracy of wiring, correctness of control scheme and proper functioning of the equipment.

ii) All wiring and current carrying part shall be given appropriate high voltage test.

iii) Primary current and voltage shall be applied to all instrument transformer.

iv) Routine test shall be carried out on all equipment such as circuit breakers, instruments, transformers, relays and meters.

All tests shall be carried out in presence of owner's representatives. The tenderer shall give at least 15 days advance notice of the date of test.

Certified copies of all tests carried out at the manufacturer's premises shall be furnished in four copies for approval.

Recommended site tests required for erection and commissioning of the switchgears shall be furnished by the tenderer along with offer.

1.16 INTERLOCKING

Following interlocking facilities shall be provided between H.T V.C.B and L.T air circuit breaker in outgoing transformer feeders .

i) In the event of any tripping in H.T V.C.B, L.T ACB shall trip simultaneously.

ii) It shall not be possible to close L.T ACB unless H.T VCB is made ON. That is H.T VCB shall always close first.

iii) While any two of the L.T ACBs among the three are in closing position in the L.T panel, the third one cannot be made ON.

1.17 PROTECTION

The minimum protection to be provided to different circuit are listed below:

a) Incomer feeder

i) A combination self poweredrelay of 5A, 3 secs, 2-element IDMT over current relay having setting range 50-200% for phase fault, 1-elementdefinite time earth fault relay having setting range 10-40%, type CDG31 or equivalent.

ii) One self-powered instantaneous over voltage relay type VAGM 22 or equivalent.

iii) One High Speed Master triprelay type VAJH 13 or equivalent rated for 110V DC.

iv) One Trip circuit supervision relay, type VAX 31 or equivalent rated for 110V DC.

v) One 4-window Annunciator with Test, Reset, Accept PB

b) Each Transformer Feeder

i) One combined IDMT self-powered relay of 5A, 3 Secs, with 2-element overcurrent units having setting range 50-200% for phase fault, 1-element earth fault unit having setting range 10-40% with instantaneous high set overcurrent unit for phase fault having setting range 250-2000% and instantaneous high set earth fault unit having setting range 100-800%, type CDG – 61 or equivalent.

ii) One voltage operated auxiliary relay for Transformer WTI, Alarm and Trip, Type VAA 33 or equivalent. Rated for 110V DC.

iii) One High Speed Master trip relay type VAJH 13 or equivalent rated for 110V DC.

iv) One Trip circuit supervision relay, type VAX 31 or equivalent rated for 110V DC.

v) One 4-window Annunciator with Test, Reset, Accept PB

GUARANTEED TECHNICAL PARTICULARS OF 3-PANELH.T SWITCHGEAR

TO BE FURNISHED BY THE TENDERER

The tenderer shall furnish the technical particulars below for switchgear quoted without which the tender shall be considered as incomplete.

SI NO	DESCRIPTION		TO BE FILLED IN BY THE TENDERER
	Name of the Manufacturer:-		
A.	BUSES		
1.	Bus-Bar materials	:	
2.	Bus-Bar size	:	
3.	Minimum clearance of bare bus & connections	:	
	a) Phase to Phase (mm)	:	
	b)Phase to Ground (mm)	:	
4.	Bus-Bar provided with		
	a) Insulated Sleeve	:	YES / NO
	b) Insulating Barriers	:	YES / NO
5.	Current Ratings		
	a) Continuous (Amp)	:	
	b) 1- Seconds (KA R.M.S)	:	
6.	Temperature rise over 50^{0}C ambient (^{0}C)	:	
7.	Standard to which buses conform	:	
B.	VACUUM CIRCUIT BREAKERS		
1.	Make	:	
2.	Type and Service	:	
3.	Execution	:	
4.	Rated Voltage		
	a) Nominal	:	
	b) Highest	:	
5.	No. of Poles	:	
6.	Frequency	:	
7.	Current Ratings		

	a) Rated Current at standard ambient	:
	b) 1-Second Thermal Rating	:
	c) Momentary	:
8.	Temperature rise over 50^{0} C ambient	:
9.	Interrupting Capacity Symmetrical – KA (R.M.S) at rated voltage	:
10.	Making Capacity	
	a) Peak	:
	b) R.M.S Symmetrical	:
11.	Closing Time	:
12.	No. of breaks per phase	:
13.	Insulation Level	
	a) 1-Minute dry withstand	:
	b) Impulse withstand	:
14.	Standard to which conforms	:
15.	Opening Time	:
16.	No Load Mechanical Operation	:
17.	Number of Operation at Rated Current	:
18.	Number of Operation at Short Circuit Current	:
C.	OPERATING MECHANISM	
1.	Type	:
2.	Trip free or fixed	:
3.	Charging Time	:
4.	Closing	
	a) Closing Voltage	:
	b) Tripping Voltage	:
5.	Allowable variation in Control Voltage	
	a) Tipping Voltage	:
6.	Current required for	
	a) Tripping	:
7.	No. of auxiliary switch funished	
	a) Normally Open	:
	b) Normally Close	:
	c) Breaking Capacity	:

d) Type :

e) No. of spare contacts furnished :

f) Are the auxiliary contacts convertible type :

8. Operation counter furnished or not :

9. Mechanical Trip furnished or not :

10. Mechanical safety interlocks provided or not :

11. Breaker provided with SERVICE / TEST / WITHDRAW position :

12. Type of indication provided with above position :

13. Can cubicle door be closed when breaker in SERVICE or not in TEST position:

14. Impact for foundation design to include dead load plus impact values on opening at maximum interrupting rating :

15. Standard to which conform :

D. PANEL ASSEMBLY

1. Dimensions (L X B X H) :

2. Approximate Weight :

3. Material of construction and thickness :

4. Degree of protection of external enclosure :

5. Secondary contacts :

6. Space for power cable termination :

7. Space for multicore termination :

8. Space Heater

a) Thermostat controlled space heater furnished each cubicle :

b) Rating

i) Voltage :

ii) Watts :

9. Ground Bus Furnished

i) Material :

ii) Size :

10. Wiring

i) Size of wire :

ii) Insulation :

iii) Voltage Grade :

11. Minimum space required for installation

a) Minimum Rear Space :

b) Maximum Front Space :

12. Current Transformer details

a) Type :

b) Make :

c) Frequency & Voltage :

d) Pole :

e) Protection Class :

f) Metering Class :

g) Rated Burden :

h) Class of insulation :

i) Short Time Thermal Rating :

j) Dynamic Current Rating :

k) Mounting :

l) I.S Standard to which conform :

m) C.T Ratio

i) Incoming Feeder :

ii) Transformer Feeders :

13. Voltage Transformer

a) Type :

b) Make :

c) Frequency & voltage :

d) Pole :

e) Accuracy Class :

f) Rated Burden :

g) Connections :

h) Class of Insulation :

i) Mounting whether withdraw able type :

j) I.S Standard to which conform :

k) Whether the VT is suitable for all closing / tripping /meters etc of the breakers as per scheme

14. Indicating Lamp

a) Type :

	b) Make	:	
	c) Voltage	:	
	d) Wattage	:	
15.	H.R.C Fuses		
	a) Type	:	
	b) Make	:	
	c) Voltage	:	
	d) Rupturing Capacity	:	
	e) I.S Standard to which conform	:	
E.	TESTS		
1.	Indicate Routine Tests to be performed		
	i)	:	
	ii)	:	
	ii)	:	
	iv)	:	
2.	Type Tests performed on identical Breaker	:	YES / NO
F.	GENERAL		
1.	GA drawing submitted or not	:	
2.	Technical literature furnished or not	:	
G.	DIMENSION		
1.	Minimum size of HT Switchgear room (Length x Breadth x Height)	:	

2. TRANSFORMERS

2.01 2 Nos, one 500KV and the other 750KVA 6.0 / 0.433KV, Dyn-11, Air Natural,VACUUM PRESSUREIMPREGNATED dry type distribution transformers to be manufactured, shoptested, supplied, erected, tested and commissioned areto be generally in conformity with latest revision of I.S : 2026 / 11171–1985 with latest amendment

2.02 Tenderers are requested to note that in order to evaluate bids of various transformer manufacturer, offering values of guaranteed maximum " no load losses" and " load losses", capitalization of all the losses will be considered to find out the " Total Owning Cost " (T.O.C). The value of capitalization of no load loss and the load loss shall be Rs. 1,92,873.00 per KW and Rs. 25,459.00 per KW respectively & calculation shall be made based on minimum value of load loss & no load loss as received in the data sheet of the transformers of the bidders.

Further, if the declared guaranteed maximum no load loss and load loss are found to be at variance with the shop test results, the department will not give any appreciation for negative variance. While on the other hand if the variance is at positive side, a penalty at above mentioned rate will be imposed on the excess variance from the furnished data on no load loss & load loss respectively and which shall be deducted from the tenderer's bill. However, the limit of positive tolerance shall be restricted to the tolerance stipulated in I.S 2026 (Part – I) for acceptance.

2.03 Transformers are to be suitable for operation continuously at their ratings within the service conditions. Transformers manufactured in accordance with the general specification may be operated at its rated KVA at any voltage within ±10% of the rated voltage of that particular tap position. The frequency of the supply voltage shall be 50C/S with tolerance of ±5%.

2.04 Temperature rise of the transformer shall conform to the requirement of temperature rise specified in I.S 11171–1985 and I.S 2026 (pt–II) – 1977 with latest amendment.

2.06 Terminal markings, tapings & connections shall be in accordance with I.S 11171–1985 and I. S 2026 (Pt–IV) –1977 with latest amendment.

2.07 Transformers shall be designed and constructed to with stand without damage the thermal and dynamic effects of external short circuit. Tap changing equipment shall be capable of carrying the same over currents due to short circuits as the windings.

2.08 Neutral terminal of STAR connected winding shall designed for the highest over current that can flow through this terminal. This neutral terminal shall be brought out and intended to be directly connected to earth permanently.

2.09 Insulation class of transformer shall be CLASS- Hor better and the winding temperature rise of the transformers after continuous operation at full load shall not exceed 115^{0} C above 50^{0} C ambient.

2.10 Termination arrangement of the H.V terminals will be through bottom entry cable end boxes suitable for terminating 3-core,300 sqmm , XLPE insulated, armoured, screened, Al. conductor cable of 11KV grade conforming to I.S : 7098 (Pt–2).

2.11 L.V side cable end box shall be suitable for termination of 3½ core,XLPE insulated, armoured, aluminium conductor cable of 1.1KV grade from top. The cable end box shall be adequate in size. L.T bus-bar arrangement inside thebox shall be such that the L.T cable can easily be terminated to the bus-bar from top. 3x3½core ,400sqmm, XLPE insulated, armoured, aluminium conductor cable of 1.1 KV grade shall have to be terminated to the L.T bus-bar for 500 KVA transformer and 4x3½ core,400sqmm, XLPE insulated, armoured, aluminium conductor cable of 1.1KV grade shall have to be terminated to the L.T bus-bar for750 KVA transformer.

2.12 Each transformer shall be provided with a rating plate made of weather proof material fitted in a visible position showing the following:

a) Type of transformer

b) Ref. to I.S Standard

c) Manufacturer's Standard

d) Manufacturer's Serial No

e) Year of manufacture

f) Number of phase

g) Rated KVA

h) Rated frequency

i) Rated voltage

j) Rated current

k) Vector group

l) Percent impedance voltage at rated current

m) Type of cooling

n) Insulation level

o) Connection symbol

p) Total weight in KG

2.13 The following fittings & accessories shall be provided with the transformers

a) Rating plate

b) Terminal marking plate

c) Two numbers earthing terminals

d) Lifting lugs

e) Microprocessor based thermal protection system for all three windings (WTI scanner)

f) Skids

g) Inspectioncover

h) C.I Roller

i) OFF- circuit tap links

2.14 Terminal block shall be provided for WTI within the box with proper identification label to facilitate field connections. Wiring work between the terminal block and the equipment shall be within the scope of the manufacturer. The transformer shall be provided with two thermistors in each phase winding for temperature scanner and protection. The temperature scanner shall be provided with Alarm and Trip contacts.

2.15 The marshaling box shall be totally enclosed dustproof with lockable hinged door and the dials shall not be mounted above 1600mm level. In the marshaling box winding temperature scanner for winding temperature indication shall be provided.

2.16 The transformer enclosure shall be made of Cold Rolled Steel Sheets with removable Panels to access connections & tapings. The fabrication of the enclosure shall be done with bending technology to minimize welding joints. The designs shall be optimized with combination of louvers & perforated sheets in order to secure the effective directional cooling of the transformer for all the levels of the protection degree. Finishing of the enclosure shall be done with powder coating.

2.17 TECHNICAL DATAS

a) Particulars : 500KVA-1No / 750KVA-1No, 6.0 / 0.433KV, Dyn−II

	b)	Type	:	Separate Winding
c)	Number of phases		:	Three
	d)	Frequency	:	50C/S±5%
	e)	Indoor / Outdoor		Indoor
	f)	Dry / Oil immersed type	:	Dry type, Vacuum Pressure Impregnated
	g)	Class of Insulation	:	Class “H” or better
	h)	Type of cooling	:	Air natural.
	i)	Rated Power	:	500KVA / 750KVA on all taping range
	j)	Rated Voltage		
		H V Side	:	6.0KV ± 10%
		L V Side	:	0.433KV
	k)	Tap Changer	:	OFF Circuit by tap links
		i) Tapping Range	:	± 5% in steps of ± 2.5%
		ii) Category of voltage Variation:		CFVV
	iii) Tapped Winding		:	6.0 KV
	iv) No. of tappingposition		:	5
	l)	Impedance voltage at rated current	:	Tenderers to indicate
	m)	Method of system earthing	:	Effectively earthed
	n)	Insulation level	:	Uniformly insulated
	o)	Marshaling box IP-55 (Embedded in Enclosure	:	The Marshaling box shall be equipped with space heaters withthermostat, connecting terminals , Digital Microprocessor based temperature scanner.

2.18 TESTS TO BE CARRIED OUT ON TRANSFORMERS

ROUTINE TESTS:

a) Measurement of Winding Resistance

b) Transformation Ratio Measurement and connection checking

c) Separate Source Voltage Withstand Test

d) No load loss and current measurements

e) Load loss and short circuit impedance measurements

f) Induced over voltage withstand test

g) Measurement of Insulation Resistance

GUARANTEED TECHNICAL PARTICULARS OF TRANSFORMERS

TO BE FURNISHED BY THE TENDERER

The tenderer shall furnish the technical particulars below for transformers quoted without which the tender shall be considered as incomplete.

SI. No	DESCRIPTION		TO BE FILLED IN BY THE TENDERER
1.	Name of the Manufacturer	:	
2.	Service	:	
3.	KVA Rating		
	a) H.V Winding	:	
	b) L.V Winding	:	
4.	Rated Voltage		
	a) H.V Winding	:	
	b) L.V Winding	:	
5.	Rated Frequency	:	
6.	Number of phases	:	
7.	Connections		
	a) H.V Winding		
	b) L.V Winding		
8.	Connection symbol (H.V– L.V)	:	
9.	Tapings		
	a) Range	:	
	b) Number of Steps	:	
	c) For High Voltage variation / For Low Voltage variation	:	
10.	Ambient temperature	:	
11.	Type of cooling	:	
12.	Winding Temperature Rise	:	
13.	Total loss at rated voltage at principal tapping and rated frequency	:	
14.	Component Losses		
	a) Guaranteed Maximum No load loss at principal tapping	:	
	b) Guaranteed Maximum load loss at principal tapping at $75^{0}C$	:	
(Capitalization of losses will be computed on the above data at principal tapings)			
15.	Impedance Voltage at rated current for the principal taping	:	

16. Reactance at rated current & at rated frequency for H.V & L.V Windings :

17. No load current at rated voltage & rated frequency :

18. Symmetrical Short Circuit Current :

19. Insulation level

a) Separate source power frequency voltage withstand

i) H.V Winding :

ii) L.V winding :

b) Induced over voltage withstand

i) H.V Winding

ii) L.V Winding

c) Full wave lighting impulse withstand

i) H.V Winding :

ii) L.V Winding :

20. Efficiency at 75^{0}C and at Unity Power factor

a) At full load :

b) At ¾ load :

c) At ½ load :

d) At ¼ load :

21. Regulation full load and at 75^{0}C

a) At Unity Power Factor :

b) At 0.9 Power Factor lagging :

22. Off circuit voltage variation with tap switch :

23. Terminal Arrangement

a) High Voltage :

b) Low Voltage :

c) Neutral :

24. Weight

a) Total Weight (500KVA Transformer) :

b) Total Weight (750KVA Transformer) :

25. Approximate Maximum Overall Dimension (Length x Breadth x Height)mm:

26. Reference Standard :

3 L.T POWER DISTRIBUTION BOARD

3.1 SPECIFIC DESIGN REQUIREMENT

3.1.01 All the L.T switchgear panels & capacitor bank panel shall consist of stationery type, self-supporting, sheet steel cubicles, sheet steel thickness should be of minimum 2mm thick.

3.1.02 Each L.T cubicle shall be provided with a lockable front access concealed hinged door and key aand a removable back cover.

3.1.03 Circuit Breaker, bus-bars, instrument transformers shall be installed in separate compartments within the cubicle.

3.1.04 The compartments shall be so constructed that failure of one equipment does not affect the adjacent units. Suitable vent shall be provided to release gas pressure developed due to the operation of breaker or due to live arc at the bus. Each cubicle shall be separated from adjacent one by grounded sheet steel barrier.

3.1.05 Each Switchgear cubicle shall be dust and vermin proof. The degree of protection shall be IP−54.

3.1.06 Each Switchgear cubicle shall be provided with a thermostat controlled space heater operated at 230V AC.

3.1.07 The fixing bolts, screws etc appearing on the panel shall be so arranged as to present a neat look.

3.1.08 Each switchgear assembly consisting of all the units shall be mounted and bolted to a common channel. The channel in turn shall be bolted to the foundation at site. All foundation equipment, anchor bolts etc. shall be provided.

3.2 BUS AND BUS TAPS

3.2.01 The Switchgear buses shall be rated for continuous and fault level as per enclosed S.L.D. Maximum temperature of the bus and bus connection shall be limited to 85^{0}C.

3.2.02 The bas-bar of the Switchgear cubicle shall be made of high conductivity electrolytic grade aluminium, liberally sized with high safety factor for specified current rating.

3.2.03 The bus-bar and connections shall be so supported so as to be capable of withstanding stress due to maximum short circuit current and also take care of any thermal expansion. The bus-bar supports shall have adequate creepage distance. The material of bus supports shall be 10mm thick FRP sheet and shall be free from absorbing moisture and accumulation of dust.

3.2.04 The bus-bar shall be rated at 50^{0}C and shall be air insulated type with phase colour coded (R-Y-B) insulating sleeves conform to IS: 375−1963

3.2.05 The bus- bar chambers between adjacent cubicles shall be separated by interpanel partition sheet.

3.2.06 All bus connections, joints and taps shall be either silver plated or provided with special jointing compound to remove the oxide fills, Connections shall be as short and as straight as possible.

3.2.07 Neutral bus link of suitable capacity and material shall be provided whenever required so as to achieve a good contact.

3.3 CIRCUIT BREAKERS

3.3.01 The circuit breaker shall be air break, 4-pole, indoor, metal-clad, electrical draw out type, mounted on welded sheet carriage.

3.3.02 All breaker units of like rating shall be physically and electrically interchangeable.

3.3.03 Circuit breakers shall be complete with self aligning primary and secondary disconnecting devices.

3.3.04 Each breaker shall be provided with:

i) An emergency manual trip device.

ii) Mechanical ON−OFF indicators.

ii) Spring charge – discharge indicators.

Iv) Microprocessor based adjustable release for over current, short circuit and earth fault protection,230V AC spring charge motor, closing coil, under voltage release, shunt trip coil etc.

3.3.05 Each breaker shall have three positions

i) Service

ii) Test

iii) Withdrawal positions.

The design of the breaker shall be such that it will be possible to close the front access door even when the breaker is in test position or in withdrawal position.

3.3.06 Operating mechanism shall be rugged and reliable. The operation of the breaker shall be trip free and anti-pumping. For maintenance purpose it shall be possible to close and open the breaker by means of a separate detachable handle.

3.3.07 In addition to the auxiliary contacts required for normal breaker close-open operation and indication, four(4) normally open and four(4) normally close auxiliary switches shall be furnished, unless the number of auxiliary contacts are not specifically stated. The switches shall be convertible type i.e with facility for changing NO contacts to NC contact and vice versa.

3.3.08 For safety operation, maintenance and testing of the breaker, interlocks shall be provided to prevent :

i) A closed circuit breaker from being isolated from or inserted into the operation(service) position.

ii) Closing and opening of the breaker in an intermediate position between service and test position and test and withdrawn position.

iii) Closing and opening the contact unless the main contacts and the auxiliary contacts are latched properly

iv) Automatic safety shutter shall be provided to completely cover the female primary disconnects when the breaker is withdrawn.

3.309 The breakers shall be provided with C.T operatedadjustable microprocessor based Over Current Release, Instantaneous Short Circuit Release, Earth Fault Release and Under Voltage Release.

3.4 INDICATING LAMPS

3.4.01 LED type indicating lamps shall be provided on the front of each cubicle as followed:

Breaker Open	:	Green Lamp
Breaker Close	:	Red Lamp
Breaker Trip	:	Amber lamp
Spring Charged	:	Blue Lamp
D.C fail	:	White Lamp

3.5 CURRENT TRANSFORMERS

3.5.01 The current transformers shall be cast-resin type, mounted on stationary portion of the switchgear and shall be easily be accessible for the maintenance and testing purpose. The method of securing current transformers in position shall be such that no undue strain comes on the winding and terminal.

3.5.02 The current transformers shall be capable of safely withstanding the short circuit stresses corresponding to the fault level of the switchgears

3.5.03 The ratio and ratings of the current transformers shall be as per the enclosed Single Line Diagram.

3.5.04 The current transformers shall conform to the latest edition of IS – 2075, Part-I, Part-II and Part-III. Unless specified otherwise insulation, temperature rise and all other parameters of manufacture and testing shall conform to that given in the standards.

3.6 RELAYS & RELEASES

3.6.01 The tenderer shall be fully responsible for the selection and co-ordination of over current / short circuit release settings of ACBs so as to provide optimum protection discrimination of the various circuits and equipment.

3.7 METERS

3.7.01 Unless specified otherwise, manufacture, assembly and testing of all indicating, integrating and recording meters shall conform to relevant Indian Standards.

3.7.02 All indicating meters shall be (96x96)mm square type, flush mounting with accuracy ±2% of full scale. Each meter shall be provided with zero adjuster, accessible from the front.

3.8 SECONDARY & SMALL WIRING

3.8.01 The successful tenderer shall furnish and install all wiring for the equipment and devices located on or within the switchgear.

3.8.02 The wiring shall be complete in all respect so as to ensure proper functioning of control, protection, measurement and interlocking schemes.

3.8.03 All spare contacts of the relays and switches shall be wired up to the terminal block for remote connection.

3.8.04 Fuses and links shall be provided to enable individual circuits to be isolated from bus wires without disturbing other circuits. Each of the circuit shall be provided with two fuses – one in positive and the other in the negative.

3.8.05 Wiring shall be done with flexible heat-resistant switchboard wires, PVC insulated with stranded copper conductor. The conductor size shall be as follows:

i)Current and control circuits : 2.5sqmm, 650V grade

ii)Potential circuit ; 1.5sqmm, 650V grade

3.8.06 Each wire shall be identified at both ends with wire designation in accordance with tenderer's wiring diagram. Interlocking type plastic ferrules shall be used for identification.

3.8.07 All wire terminations shall be made with ring tongue compression type connectors. Wires shall not be spliced between terminal points.

3.8.08 The wires shall suitablybe grouped in bunches by nonmetallic wiring cleats or bands with each bunch adequately supported along its run to prevent sagging due to flexibility or vibration.

3.8.09 Through wiring trough shall be furnished for wiring between Switchgear cubicles. All wiring required for interlocking shall be between the cubicles of Switchgear shall be furnished and installed by the successful tenderer . Inter panel wiring shall be done through terminal block.

3.9 CABLE TERMINATION AND CABLE END BOXES

3.9.01 All power and control cable shall enter the Switchgear from bottom and exit from top. Sufficient space shall be provided for ease of connection and termination of cables.

3.9.02 Power cable will be stranded aluminium conductor, armoured, overall PVC sheathed, 1.1 KV grade and sizes as per enclosed S.L.D

3.9.03 Cable terminals for power cable shall be complete with lugs, brass compression gland with tapered washers.

3.9.04 The cable terminals shall be so located that it shall be at least 400mm above the gland plate. The pig tail connection from cable end box to breaker terminals shall be such as to facilitate disconnection without straining the cable.

3.9.05 Cable gland plates and supporting structure for single core cable shall be such as to prevent flow of eddy current.

3.9.06 The control cables (multi-core) shall be 2.5 sqmm stranded copper conductor, PVC insulated, armoured and overall PVC sheathed 1.1KV grade. Provisions for termination arrangement shall include suitable terminal blocks, removable

3.9.07 Individual terminals in each block shall be serially numbered. Such numbering shall be legble, permanent and indelible .Terminal blocks for outgoing cable shall have at least 10% spare terminals.

3.9.08 The gland plate shall be removable type and at least 3mm thick.

3.10 TERMINAL BLOCK

3.10.01 Multi-way terminal blocks complete with necessary binding screw and washers for wire connections and marking strips for terminal identification shall be furnished for terminating cubicle wiring and out goingcable.

3.10.02 The terminal block shall be grouped according to circuit functions and shall have at least 10% spare terminals. Individual terminals in each block shall be serially numbered. Such number shall be legible, permanent and indelible.

3.10.03 Not more than two wires shall be connected to any terminal. If necessary a number of terminals shall be jumpered together to provide wiring.

3.11 MOULDED CASE CIRCUIT BREAKER / MINIATURE CIRCUIT BREAKER

3.11.01 The MCCB shall be air break, fixed type, shunt trip and manually operated.

3.11.02 All the MCCB starting from current rating of 250A and above shall be of 4-pole, 50KA breaking capacity having microprocessor releases for Over Load, short Circuit and Earth Fault with Current and time Settings.

3.11.03 The MCCBs of rating 160A and below shall be of 4-pole, 36 KA breaking capacityhaving adjustable thermal magnetic release.

3.11.04 The MCCBs shall be provided with mechanical ON-OFF indication at the front properly marked.

3.11.05 The MCCBs shall be capable of isolating the electrical circuit automatically after sustained Over Load, Short Circuit and earth fault conditions and shall be front adjustable.

3.11.06 It shall ensure opening of all the phases simultaneously to prevent single phasing.

3.11.07 All the live parts shall be enclosed in a moulded insulated housing.

3.11.08 Operating mechanism shall be quick break and trip free.

3.11.9 Housing shall be made of heat and fire resistant and electrically insulating materials.

3.11.10 Terminals shall be available clearly for external connections.

3.11.11 Line terminals of the MCCBs shall be suitable for connections of the cables used.

3.11.12 The MCBs shall of Single Pole, Double Pole and Four Pole versions as per system requirements and the current rating shall be as per specification having characteristic Curve “C” and breaking capacity 10KA for AC system and for DC system it shall be of single pole and double pole versions of grade 250V DC having current rating as per specification.

3.12 FUSES

All power and control fuses shall be link type HRC fuse on suitable base. The current rating of the fuses shall be according to the load connected.

3.13 ACCESSORIES

The switchgear shall be provided with 2(Two) numbers of handles for withdrawal of the breaker from the cubicle, if any.

3.14 NAME PLATE

3.14.01 Name plates of approved design shall be furnished at the front and at the back of each cubicle. Inspection plates for each circuit breaker and at each instrument, as mounted on the face or inside the cubicle, shall also be furnished.

3.14.02 Material for the name plate shall be made of plastic of three millimeter (3mm) thick or approved equivalent. The letters shall be white on black back ground.

3.15.03 The name plates shall be held by self-tapping screws. The size of the name plates shall be proportionate to the respective equipment.

3.15 SPACE HEATERS& LAMPS

3.15.01 Each cubicle shall be provided with thermostat controlled space heaters with Switch Fuse, Plug Socket with Switch for connection of hand lamp, rated at 230V, 1Φ, 50C/S supply, derived from phase and neutral and shall be operable even when the incoming breaker is OFF. Manual changeover of power source shall be provided.

3.15.02 Wiring of space heaters and lamps shall be grouped and brought out to easily accessible terminals through incoming switchgear unit.

3.15.03 The switches of space heaters and lamps shall be mounted inside the cubicle at approachable point.

3.16 GROUND BUS

3.16.01 Aluminium ground bus of size 50mmx10mm shall be provided along the full length of the switchgear. Each stationary unit shall be connected directly to this ground bus by two separate and distinct connections in accordance with Indian Electricity Rules.

3.16.02 Grounding terminals shall be provided at two points of the switchgear. Connector shall be provide at either end for connection to ground conductor.

3.17 TROPICAL FINISH

All electrical equipment, accessories and wiring shall have fungus protection, involving special treatment on insulation and metal against fungus, insects and corrosion. Screens shall be furnished on all ventilating louvers to prevent entrance of insects.

3.18 PAINTING

3.18.01 All surfaces shall properly be treated, pickled and grounded as required to produce a smooth, clean surface, free of scale, grease and rust.

3.18.02 After cleaning, the surfaces shall be given a phosphate coating followed by a coat of high quality red oxide or zinc chromate primer.

3.18.03 The Switchgear shall be finished in Siemens Grey shade RAL 7032 with two coats of powder coated paint. The paint shall not scale off or be removed by abrasion due to normal handling.

3.18.04 Sufficient quantity of touch up paint shall be furnished for application after installation.

3.19 TESTS

3.19.01 The Switchgear unit shall be completely assembled, wired, adjusted and tested for operation under simulated conditions to ensure accuracy of wiring, correctness of control scheme and proper functioning of all equipment.

3.19.02 Routine Test

Each of the following equipment shall be subject to standard routine tests as per applicable clause of relevant specifications.

a) Circuit Breakers

b) Instrument Transformers

c) Relays, Meters and Instuments

3.19.03 Witnessing of Tests

Tests shall be performed in presence of purchaser's representatives if so desired by the purchaser.

3.20 TEST CERTIFICATES

3.20.01 Test certificates shall be submitted in 4(four) copies.

3.20.02 Routine and Type tests certificates of the Switchgear and distribution boards shall be furnished to the Purchaser for prior approval before dispatch of any equipment from the works and the approval in writing from the Purchaser will be essential to effect the dispatch of the equipment.

GUARANTEED TECHNICAL PARTICULARS OF L.T SWITCHGEAR TO BE FURNISHED BY THE TENDERER

The tenderer shall furnish the technical particulars below for L.T switchgear quoted without which the tender shall be considered incomplete.

SL.NO.	DESCRIPTION		TO BE FILLED IN BY THE TENDERER
Name of the Manufacturer:-			
A.	BUSES		
1.	Bus-Bar materials	:	
2.	Bus-Bar size	:	
3.	Minimum clearance of bare bus and connections.		
	a) Phase to phase (mm)	:	
	b) phase to Ground (mm)	:	
4.	Bus-Bars provided with		
	a) Insulating Sleeve	:	YES / NO
	b) Insulating Barriers	:	YES / NO
5.	Current Ratings		
	a) Continuous (AMP)	:	
	b) 1−second (KA RMS)	:	
6.	Bus Support Insulator		
	a) Make	:	
	b) Voltage Class	:	
	c) Reference Standard	:	
7.	Temperature Rise over 50^{0}C ambient in ^{0}C	:	
8.	Standard to which the buses conform		
B.	CIRCUIT BREAKERS		
1.	Make	:	
2.	Type & Service	:	
3.	Execution	:	
4.	Rated Voltage (Nominal / Highest)	:	
5.	Frequency	:	

6.	No. of Poles	:
7.	Current Ratings	
	a) Rated Current –Amps r.m.s	:
	b) 1 Second Thermal Rating – KA r.m.s	:
	c) Momentary –KA peak	:
8.	Temperature Rise over 50^{0}C ambient in ^{0}C	:
9.	Interrupting capacity symmetrical – KA r.m.s at rated voltage	:
10.	Making current Peak (KA)	:
11.	Interrupting time at 100% capacity	
	a) Arcing Time (Milli Sec.)	:
	b) Total length of Arc (mm)	:
	c) Total interrupting time (measuring from trip coil energisation)MilliSecs	:
12.	Closing Time (MilliSecs)	:
13.	Restriking voltage	:
14.	a) Number of breaks per phase	:
	b) Length of contact travel (mm)	:
	c) Total length of breaks per phase (mm)	:
15.	Insulation level of breaker	
	a) One minute dry withstand (KVrms)	:
	b) Impulse withstand (KVrms)	:
16.	Type of contacts	
	a) Main	:
	b) Arcing	
17.	Material of Contacts	
	a) Main	:
	b) Arcing	
	c) Whether contact are silver plated	:
	d) Thickness of silver plating	:
	e) Contact Pressure	:
18.	Minimum clearance in air	
	a) Between Poles	:
	b) Between Live parts & Ground	:
!9.	Type of operating mechanism	

	a) Closing	:		
	b) Tripping	:		
20.	Closing & Tripping Voltage	:		
21.	Allowable Range of Control Voltage variation			
	a) Closing	:		
	b) Tripping	:		
22.	Current required for			
	a) Closing (Amps)	:		
	b) Tripping (Amps)	:		
23.	Number of Auxiliary contacts furnished			
	a) Normally Open	:		
	b) Normally Closed	:		
24.	a) Number of spare auxiliary contacts furnished on stationary contacts Furnished on stationary para for switchgear as specified for interlock-ing purpose.	:		
	b) Are the contacts convertible type?	:		
	c) Contacts Rating in Amps	:		
25.	a) Operation counter furnished?	:		
	b) Mechanical Trip furnished?	:		
	c) Auxiliary switch as per requirement furnished?	:		
26.	Mechanical safety interlocks furnished?	;		
27.	Net weight of the Circuit Breaker	:		
28.	Foundation design to include dead load plus impact values on operating at maximum interrupting rating	:		
29.	Overall dimensions	:		
30.	Standard to which The Circuit Breaker conform	:		
C.	CURRENT TRANSFORMER	:	METERING	PROTECTION
1.	Type	:	:	
2.	Make	:	:	
3.	Frequency & Voltage	:	:	
4.	Rated VA Burden	:	:	
5.	Accuracy Class	:	:	
6.	Class of Insulation	:	:	
7.	Temperature Rise above 50^{0}C ambient	:	:	

8.	Insulation Level (KV) peak r.m.s	:	:
9.	Short Time thermal rating for 1 second–KA	:	:
10.	Dynamic Current Rating – KA peak	:	:
11.	Reference Standard	:	:
12.	Mounting	:	:
D.	LAMPS		
1.	Make	:	
2.	Type	:	
3.	Rating	:	
4.	Resistance	:	
E.	SWITCHGEAR ASSEMBLY		
1.	Type of Switchgear	:	
2.	Type of Enclosure	:	
3.	Thickness of Sheet Steel	:	
4.	Breaker provided with SERVICE – TEST –and WITHDRAWN position	:	
5.	Type of indication provided for breaker position	:	
6.	Breaker Auxiliary Switch provided	:	
7.	Insulation Level		
	a) Impulse Withstand to Earth and between phases (KVp)	:	
	b) 1 minute power frequency withstand voltage (KV r.m.s)	:	
8.	Space Heater		
	a) Thermostat Controlled Space Heater furnished for each cubicle	:	
	b) Rating		
	i) Voltage	:	
	ii) Watts	:	
9.	a) Ground Bus furnished	:	
	b) Material and size	:	
10.	Small Wiring		
	a) Size	:	
	b) Insulation	:	
	c) Voltage Grade	:	
11.	a) Switch Dis-connector Fuse Unit / MCB for control Supply furnished with each cubicle or not	:	

	b) Switch Dis-connector Fuse Unit / MCB for space heater and cubicle lamp furnished or not	:
	c) Whether Switch Dis-connector Fuse Unit / MCB are front or inside mounted	:
	d) Whether key interlock furnished	:
12.	a) Whether Incoming and Bus Coupler ACBs panels offered with all features as per enclosed Single Line Diagram	:
	b) Whether outgoing MCCBs / MCBs for various feeders as per enclosed Single Line Diagram	:
13.	Whether Switchgears are completely assembled, wired and tested at the Factory	:
14.	Overall dimension of LT PDB (L x B x W)	:
15.	Approximate Weight	:
F.	AMMETER	
1.	Make	:
2.	Type	:
3.	Scale Range	:
4.	Accuracy Class	:
5.	Coil Burden	:
6.	Case Size	:
G	VOLTMETER	
1.	Make	:
2.	Type	:
3.	Scale Range	:
4.	Accuracy Class	:
5.	Coil Burden	:
6.	Case Size	:
H.	MOULDED CASE CIRCUIT BREAKER	
1.a)	Microprocessor Releases MCCB	
	i) Nominal Current Rating	:
	ii) Number of Pole	:
	iii) O/L , S/C and E/F Releases furnished?	:
	iv) Breaking Capacity	:
	v) Short Time Current Rating for 1 Sec.	:
	vi) Current and Time Settings furnished?	:

b) Adjustable Thermal Magnetic Releases MCCB

i) Nominal Current Rating :

ii) Number of Pole :

iii) Adjustable Thermal Magnetic Releases furnished? :

iv) Breaking Capacity :

v) Short Time Current Rating for 1 Sec.

4. BATTERY, BATTERY CHARGER AND D.C DISTRIBUTION BOARD

4.01 For operation and control of 6.0KV VCB Switchboard and LT power Distribution Board , 110V DC power will be required. For this purpose one 110V DC Battery Bank of 100 AH capacity will have to be supplied. Battery bank shall consist of maintenance free type vent regulated lead acid cells housed in a sheet steel enclosure. The battery shall be complete with all accessories needed for satisfactory operation and maintenance.

4.02 One sheet steel enclosed dust and vermin proof floor mounted battery charger suitable to charge the above battery bank having float and boost charging facility is required to supply, install and commission. The charger shall operate from a 415V±10%, 50Hz ±5%, 3-Phase, 4-wire AC power supply. AC to DC conversion shall be done by means of solid state silicon controlled rectifier bridge with fully automatic current and voltage regulation. Float to boost and vice versa shall be automatic depending on the condition of the battery. The charger shall be provided with smoothing filter to minimize the voltage ripple as far as possible and inbuilt protective devices.

4.03 In the float mode of operation charger shall be able to deliver normal float current along with constant DC load of 20A. Boost charging current and voltage shall be as per recommendations of the battery manufacturer. In the boost charging mode charger voltage has to be maintained much above 110V DC. Hence load shall be fed through Doppler diodes.

4.04 Charger panel shall be provided with indicating lamps for both AC and DC voltages, AC and DC voltmeters and one centre zero ammeter of suitable range. All meters ,switches and indicating lamps shall be flush mounted on the front of the panel.

4.05 The charger panel shall also accommodate 6Nos. 10A double pole MCB for distribution of DC power to various consumers. The MCBs shall suitably be mounted and all outgoing cables from the MCBs shall be terminated on terminal blocks.

GUARANTEED TECHNICAL PARTICULARS OF THE BATTERY AND BATTERY CHARGER TO BE FUNISHED BY THE TENDERER

The tenderer shall furnish the technical particulars below without which the tender shall be considered incomplete.

Sl.No.	DESCRIPTION		TO BE FILLED IN BY THE TENDERER
A.	BATTERY		
1.	Make	:	
2.	Type	:	
3.	Voltage	:	
4.	No of Cells	:	
5.	Normal Cell Voltage	:	
6.	Cell voltage when fully discharged	:	
7.	Boost charging voltage	:	
8.	Trickle charging voltage	:	
9.	Boost charging current	:	
10.	Trickle charging current	:	
B.	CHARGER AND DC DB		
1.	Make	:	
2.	Incoming Voltage	:	
3.	Whether separate float and boost charger provided	:	
4.	Boost charging current in Amp.	:	
5.	Trickle charging current In Amp.	:	
6.	Constant DC load in Amp.	:	
7.	Transformer rating in KVA	:	
8.	Whether full wave rectifier provided	:	
9.	Whether gate control provided for diodes	:	
10.	Rating of SCRs in Amp.	:	
11.	Whether automatic trickle boost changeover provided	:	
12.	Whether Doppler diodes provided	:	
13.	Whether DC voltage regulator provided	:	
14.	Ripple content in rectified DC output (Float Charger)	:	
15.	Whether DC Ammeter and Voltmeter provided	:	
16.	Protection provided in the charger	:	
17.	Rating of outgoing feeders in Amp.	:	
18.	Nos. of outgoing feeders	:	

5.0 DIESEL GENERATOR SET

5.01 The diesel generating set shall be of capacity250KVA comprising of 310 BHP capacity diesel engine of 1500RPM, duly coupled with 250KVA (200KW at .08 pf), 415 V, 50C/S, 3-phase 4-Wire Alternator on MS channel Base Frame, AVM pads, 1ST fill lub. Oil, 375Ltrs Fuel Tank, 375Ltrs Diesel, coolant, acoustic controlled enclosure, control panel with ammeter, voltmeter, frequency meter, phase indicating lamp,generator protection device, engine protection unit, fuel pre- filter and water separator, dry type air cleaner, radiator, residential exhaust silencer, SS flexible exhaust bellows. The Diesel Generator set shall be suitable to start / stopautomatically with A.M.F operation with suitable capacity batterybank with static battery charger having auto cut system.

5.02 Though the D.G set is with A.M.F operation, provision for manual start / stop shall be incorporated.Formaintenance purpose the DG set may be required to be operated as and when necessary. Control logic for manual operation shall be such that in presence of normal power supply the DG set can be operated manually without changeover of the A.M.F unit.

5.03 The DG set shall be installed by the side of the sub-station as per direction of Engineer- in-Charge.

5.04 The exhaust pipe shall be extended up to the top floor of the Research Building. The portion of the exhaust pipe from DGset to wall of the Research Building shall be laid horizontally on structural support made of 50mmx50mmx6mm thick MS equal angle and 35mmx6mm MS flat with proper clamping arrangement and the rest portion of the exhaust pipe shall be laid vertically on wall up to the top floor of the Research Building with proper clamping arrangement. Before taking up the work, necessary design and drawing showing in details therein the arrangement of laying the exhaust pipe shall have to be submitted to the department for approval.

5.05 The additional length of exhaust pipe of 150mm dia and 4.68mm thick shall be connected with the existing exhaust pipe of the D.G set by flange jointing. Immediately after jointing, using a bend the pipe shall be laid vertically upward to such a height so that it can be laid horizontally just over the temporary garage roof and using a bend the pipe shall be laid horizontally up to the wall of the building and then the pipe shall be laid on the wall of the building vertically upward up to the roof top of the building.

The horizontal portion of the pipe shall be supported by a truss system made of flat iron and angle iron. 4Nos 50mmx50mmx6mm thick MS angle and 25x6mm thick MS flat shall be used for fabrication of the truss by welding. 4Nos angles of required length shall be placed horizontally as if to placethem at the four corners of a rectangular parallelepiped each at 300mm apart. Conveniently cut flat iron pieces each of equal lengthshall be welded by continuous welding on the flanges of two angles at the same side in zigzag manner. One end of a piece of flat iron of approximate length 400mm shall be welded on one of the angles and the other end of the flat shall be welded on the other angle on the same side at a horizontal distance of 250mm from the vertical line passing through the first welding point. There shall be 4 Nos. flats welded per meter length per face of the truss. The same procedure shall be followed for other three faces also. The vertical portion of the exhaust pipe shall be laid on wall of the building by MS supports grouted in the wall rigidly at 2 meters interval. Top end of the exhaust pipe shall be covered with stainless steel wire messand a rain water protection hood.

The MS exhaust pipe shall be painted with two coats anticorrosive paint over a coat of red lead primer. After the paint is dry entire length of pipe shall be wrapped tightly with asbestos rope of 19mm dia. over which glass wool shall be wrapped and then it shall be covered with aluminium sheet of 24 SWG.

5.06 Before putting the DG set in the system, it is mandatory on the part of the tenderer to obtain "ON OBJECTION CETIFICATE" from Pollution Control Board Govt. of West Bengal or any other authority as required including supply of necessary drawings and tests reports etc. as required by them for obtaining all that clearance of D.G set.

POWER COMMAND CONTROLLER

The power command controller (PCC 1301) shall be microprocessor based integrated generator set monitoring, metering, protection and control system with built in torque matched volts, Hz, over load contacts.

STANDARD FEATURES OF GENSET CONTROLLER

ENGINE:

Metering	Protections
-RPM	-Low Lube oil pressure
-Battery Voltage	-High water temperature
-Lube oil pressure	-High / Low DC voltage
-Coolant Temperature	-Weak battery
-Running Houres	-Over speed
	-Fail to crank
	-Fail to start
	-Sensor failure

ALTERNATOR:

Metering	Protection
-3 phase Voltage(L-L and L-N)	-Under voltage
-3 phase Current	-Over voltage
-Frequency	-Over current
-KVA	-Under / Over frequency
	-Loss of sensing
	-Field overload

MISC :

- Battle switch function
- Delay Start / Stop
- Configurable Cranking Cycle
- Sleep mode time
- Vibration Damper
- Flexible Coupling
- Flywheel with housing

B. ALTERNATOR

Synchronous alternator of Stamford make of 250KVA rating, suitable for continuous operation at 1500RPM generating 415V, 50 Hz at 0.8 p.f.(lag), 3 phase 4- wire system. The alternator shall be Brushless type, self-excited & self-regulated through an AVR. The alternator will be suitable for tropical climate and shall generally confirm to IS : 4722. The salient features of the alternator are:-

- ± 1% voltage regulation (max) in static condition.
- IP : 23 protection with Class – H insulation.
- Permanent Lubricating Bearing.
- Permissible overload of 10% for one hour in 12 hours of operation.

C. INSTRUMENT PANEL COMPRISING OF:

i) Starting push button.
ii) Lubricating oil temperature & pressure gauge with protection.
Iii) Water temperature gauge with protection.
iv) Battery charging Ammeter.
v) Hour meter.
vi) R.P.M Indicator.

The generator set shall be installed on RCC foundation as per manufacturer's recommendation with anti-vibration pad mounting arrangement. Before commissioning, the DG set shall perfectly be leveled and proper

alignment of the alternator and the engine shall be checked and corrected. The Generator set shall be installed on a metalistic cushy foot with proper earthing arrangement . Test of DG set shall have to be made for 4 hours by supplying diesel oil, lubricating oil and supplying all other materials that will be necessary at the time of testing. After installation and before use of the D.G set , the supplier shall arrange for Registration and obtain necessary clearance from CESC / Chief Electrical Inspector, Directorate of Electricity, Govt. West Bengal / Pollution Control Board Govt. of West Bengal or any other authority as required including supply of necessary drawings and test reports etc as required by them for obtaining all that clearance.

GUARANTEED TECHNICAL PARTICULARS TECHNICAL SPECIFICATION FOR 250KVA SILENT DG SET

A. DIESEL ENGINE:

Cummins make diesel engine (Engine Model : 6CTAA8.3G4) rated at 1500 RPM, water cooled, four stroke, electric start, six cylinder diesel engine conforming to BS : 5514 / ISO : 3046 with capacity of 10% over loading for one hour in twelve hours duration having following accessories as scope of supply.

i) AIR INTAKE SYSTEM

Air intake manifold.

Dry type air cleaner.

Vacuum indicator.

ii) EXHAUST SYSTEM

Turbocharger.

Flexible connection.

Exhaust manifold.

Exhaust silencer- Residential type.

iii) COOLANT SYSTEM

Engine water pump

Radiator.

Coolant additive concentrate.

iv) LUBRICATING SYSTEM

Oil pan.

Engine mounted lube oil pump.

Full flow lube oil filter.

Lube oil by-pass filter.

v) FUEL SYSTEM

In line fuel pump with Electronic Governor.

PTD injector.

24V DC solenoid coil.

Replaceable fuel filter.

vi) STARTING SYSTEM

24V DC electric starter.

24V DC battery charging alternator.

vii) SAFETY CONTROLS

Low lube oil pressure trip.

High water temperature trip.

Over speed stop.

6.0 POWER FACTOR CORRECTION CAPACITORS PANEL

6.01 There shall be two(2Nos) numbers power factor correction capacitor panels to be installed at either side of the Main LT panel in the sub-station. Total KVAR rating of one panel is 180 KVAR and that of other panel is 230KVAR. 180 KVAR panel shall be installed by the side of LT distribution panel of 500KVA transformer and the other one of 230KVAR shall be installed by the side of LT distribution panel of 750KVA transformer. Two numbers630A, 4-pole, MCCBO/Gfeeders one each from LT distribution panel of 500KVA transformer and 750KVA transformer shall be connected respectively to 630A, 4-pole MCCB incomers of both the capacitor panels through 2x3½ core, 185sqmm, XLPE insulated, armouredaluminium conductor cable of 1.1 KV grade. Power factor of the loads shall have to be raised up to 0.95 lag from the existing level automatically using 14-stage A.P.F.C relay. Necessary timer shall be providedto ensure at least one minute's delay before next operation of a capacitor bank after it was switched off. An auto-manual selector switch in each panel shall be provided for selection the mode of operation.

6.02 Power factor correction capacitors shall beof super heavy duty power capacitor, type : ESHDC rated for 440V It shall be cylindrical in shape fitted inside the cubicle in separate chamber. Each capacitor bank shall be connected through suitable rating MCCB andcapacitor duty power contactors as mentioned in the SLD. Others shall be as per I.S specification.

7.0 INTERNAL & EXTERNALILLUMINATION OF SUB-STATION

7.01 Complete internal and external illumination work of the sub-station shall be done by the tenderer.

7.02 WIRING INSTALLATION

Wiring of the illumination work in side the sub-station shall be done by rigid PVC conduit laid on wall with PVC saddles as per direction. Power shall be drawn for illumination work through two outgoing feeders of 4-pole ,40A MCCB in main LT panel . One feeder is for ground floor and the other one for 1ST floor of the sub-station. Power for external illumination shall be drawn from 1ST floor. Wiring includes Rigid PVC pipe , PVC insulated stranded copper conductor wire, junction box, including supply of all required materials & fittings, fabrication and erection of brackets & supports etc. 3X6sqmm+1x2.5sqmmECC PVC insulated stranded copper conductor wire laid in pre-laid rigid PVC pipe shall draw power from O/G feeders in main LT panel and shall be terminated to the isolator of a TPN MCB DB installed in the respective floor. Power will be distributed from TPN DB to SPN MCB DB and SPN DB to switch board and power plug and then to end utilization point.

7.03 FITTING

Fitting means lighting fixtures, switchboard, MCB distribution board, fan & regulator, switch, receptacle, junction box etc. or any other item connected to lighting distribution system.

7.04 MOUNTING

All the fittings in side shall be surface mounted on wall or ceiling in proper alignments as required including supply of necessary hard wares, masonry work, welding, gas cutting or any other materials and consumables that may be required for proper fixing of the fitting. Outdoor fittings shall be fitted or projected from the wall of the sub-station building using GI pipe bracket rigidly fixed on wall including supply of all other accessories that may be required for satisfactory completion of the entire work.

7.05 SCOPE OF WORK FOR WIRING INSTALLATION

The scope of work is to supply and wiring in rigid PVC conduit using stranded copper conductor , PVC insulated wire of 1.1KV grade originating from main LT panel up to end utilization point including supply all other accessories required to complete the work.

7.06 The scope includes supply and fixing of lighting fixture with lamps, fans with regulators, exhaust fan, plug sockets, with starting devices as mentioned in the schedule of works.

7.07 The scope also include supply & erection of brackets, clamps, ceiling rose, crimping type lugs, terminal blocks, junction box, earth clamp, jointing & fixing materials (including all consumables), switchboards with switches, receptacles etc. , suspension arrangements, conduit accessories & ancillaries, involved masonry work, electric &

gas welding works fabrication of brackets, supports, including supply of steel materials, painting, testing & commissioning.

7.08 WIRING SPECIFICATION

All the wirings for the illumination works shall be done by PVC insulated stranded copper conductor wire of 1.1KV grade. The minimum required size of the conductor for internal wiring and external fittings shall be as following:

i)	Main wiring from LT Panel to TPN DB	:	3x6sqmm + 1x2.5sqmm ECC.
ii)	Sub-Main wiring from TPN DB to SPN DB	:	2x4sqmm + 1x2.5sqmm ECC.
iii)	SPN DB to Switchboard	:	2x2.5sqmm + 1x1.5sqmm ECC.
iv)	Switchboard to light, C.Fan, 5A Plug Point	:	3x1.5sqmm.
v)	Switchboard to outdoor fittings / Exhaust Fan Point	:	2x2.5sqmm + 1x1.5sqmm ECC.
vi)	SPN DB to 15A Plug Point	:	2x2.5sqmm + 1x1.5sqmm ECC.

All lighting fixtures and fittings shall be provided with suitable conduit entry and termination of two single core wire. One termination stud shall be provided complete with necessary electro galvanized nuts, plain and spring washers for termination of earth continuity conductor.

All lighting fixtures and fittings shall be completely wired with PVC insulated copper conductor wire upto the inbuilt supply termination connection chamber. The internal wiring shall be terminated by crimping type lugs.

8.0 CABLE

8.01 11KV POWER CABLE

801.1 11 KV earthed grade heavy duty power cable with stranded aluminium conductor, XLPE insulated, PVC taped inner sheath, each core screen on conductor as well as on insulation, round wire or flat steel wire strip armoured for multicore cables and over all PVCsheathed shall generally conforming to latest revision of IS :7098 (Part- II).

8.01.2 Thermal properties of cable shall permit maximum conductor operating temperature of 90°C and short circuit temperature of 250°C in order to have high continuous current rating and high short circuit rating. It shall also be able to operate even at higher operating temperature in case of emergency. It shall have low dielectric losses and lower charging current.

8.01.3 The conductor shall be made of high purity electrolytic grade aluminium wire and stranded together for compactness. All conductor construction shall comply to IS : 8130 (latest revision). Insulation of high quality XLPE shall be used and applied by extrusion process. It shall be cross linked. The cable shall be provided with both conductor shielding and insulation shielding with semi-conducting tape or compound.

8.01.4 The outer sheath shall be embossed with manufacturer's name & brand, voltage grade. Routine & type test certificates shall have to be submitted at the time of actual supply of the cable.

8.02 1100 VOLT POWER& CONTROL CABLE

8.02.1 1100 volt grade power cable shall be hard drawn aluminium stranded conductor conforming IS : 8130 with latest revision, XLPE insulated, PVC inner sheath, galvanized flat steel strip armoured having an overall PVC sheathing and shall comply with IS : 7098 (Part –II) latest revision.

8.02.2 Thermal properties of power cables shall permit maximum conductor operating temperature of 70°C and short circuit temperature of 160°C. However, it shall be capable to sustain overload for short periods without effecting the cable life. It shall also safely withstand short circuit current without any deformation of insulation or displacement of conductors. It shall be tough and abrasion proof and shall have long service life.

8.02.3 Control cable shall be stranded copper conductor, PVC insulated armoured of 1.1KV grade conforming to IS :1554 (Part-I). For multicore cables, armouring shall be applied over the inner sheath. Control cable of 2.5 sqmm shall be used for current circuit and that of 1.5 sqmm shall be used for voltage circuit.

8.02.4 Both for power and control cable, Manufacturer's name and trade mark shall be embossed over the outer sheath of the cable having ISI certification mark.

8.03 CABLE TERMINATION

8.03.1 Ready to use, push on type, premoulded or heat shrinkable type cable termination kit shall be used for all 11KV(E) grade XLPE insulated cable. Premoulded silicon rubber insulators or EPDM rubber compounds with built-in stress core shall be used for push on type.

8.03.2 For 1.1 KV grade aluminium conductor power cable crimping type joints (Aluminium Lug of proper size) are to be used. Compression type brass glands are to be used at each entry point of power cable for dust and moisture proof entry and the core termination shall be done on insulated cable core termination block of proper rating installed inside the cable allay of the cubicle. Identification tag made of 3mm thick aluminium sheet shall be tagged at both end of a cable. Necessary identification markings shall be embossed on the tags.

8.03.3 For 1.1 grade stranded copper conductor control cable crimping type joints (Copper Lug of proper size)are to be used.Compression type brass glands are to be used at each entry point of control cable for dust and moisture proof entry and the core termination shall be done on connectors. Proper ferrule markings shall be done on each core of the control cable for easy identification.

9.0 EARTHING

9.01 GENERAL

The Earthing Installation shall generally be carried out in accordance with the Indian Electricity Rules, 1956, as amended from time to time and in conformity with requirement included in the Indian Standard Code of practice for earthing IS : 3043 –1987. All terminal connections for earthing shall be carried out by bolting earth strip / PVC insulated copper wire with suitable lugs. A drawing showing the main earth connections & earth electrodes shall be prepared & submitted by the tenderer for approval prior to commencement of work.

9.02 EQUIPMENT BODY EARTHING

9.02.1 Equipment body earthing shall be done by pipe electrode made of galvanized steel of Class – B medium quality (TATA – Medium) and shall be 80mm internal diameter and of length not less than 3.0 Mtrs. A hole shall be provided at 100mm from the top end to receive a 20mm dia.x 125mm long galvanized bolt, double nuts, double washers and the bottom end shall be chiseled out for penetration in the soil. Galvanized earth strip of size 65x8mm shall be connected securely on the properly cleaned surface of top end of the pipe electrode by a GI bolt , double nuts and double washers.

9.02.2 A suitable trench shall be excavated about 0.6 Mtr. deep below G.L and except where rock is encountered, the pipe electrode shall be driven to an average depth of 3.65Mtrs below G.L. without hammering the pipe electrode.

9.02.3 Soil around the pipe electrode shall be treated by using salt & charcoal or coke.

9.02.4 After soil treatment, the excavated area around the electrode shall be back filled and consolidated and restored properly and the site left clean and tidy.

9.02.4 One end being connected to the earth electrode, the G.I earth strip of size 65x8mm shall be laid through 3Mtrs long, 80mm dia. G.I Pipe (I.S.I- Medium) protection to be filled with bitumen partly under the ground level and partly above ground level and shall be terminated to the ring main earth bus-bar of size 65mmx8mm laid on the wall inside the sub-station.

9.02.5 Earth bus-bar made of G.I strip of size 65mmx8mm laid on the wall inside the sub-station shall form a ring. 2Nos G.I earth strips of equal length and of size 65mmx8mm shall be laid horizontally 250mm apart on porcelain insulator rigidly fixed on entire length of back and two side walls of the sub-station. Maximum horizontal distance of 1.0Mtr shall be maintained between two successive porcelain insulators. Both ends of horizontally laid G.I strip shall be connected with G.I strip of same size to form a ring.

9.02.6 The distance between the pipe electrodes where multiple earthing is employed shall preferably be not less than the length of the electrodes.

9.02.7 Earth resistance for individual electrode shall not be more than 1Ω.

9.03 EARTH CONTINUITY CONDUCTORS

9.03.1 Bodyeathingof all individual electrical cubicle shall be done at two distinct points by connecting it to ring main earth bus-bar using two numbers G.I strips of size 65mmx8mm. All equipment inside the cubicle required to be earthed shall be done by PVC insulated stranded copper conductor wire of adequate size as per provision made in IS : 3043 with latest amendment.

9.04 TRANSFORMER NEUTRAL EARTHING

9.04.1 Earthing system is to be designed primarily to preserve the security of the system by ensuring that the potential on each conductor is restricted to limitations of insulation level applied. Earthing shall ensure efficient & fast operation of protective gear in case of earth faults. So method of solid neutral point earthing of each transformer shall be done with two separate earth installations with copper plate electrode as per specification. The size of the copper plate shall be 610mmx610mmx3mm thick weighing 9.84 KG. The copper plate shall be silvered to avoid corrosion. Thetenderer shall furnish the system Earthing design to the E.I.C for approval.

9.04.2 Each earth installations shall be provided with masonry enclosureon the top of the earth electrode as per specification.

10.0 INSTALLATION & COMMISSIONING OF H.T & L.T SWITCHBOARD

10.01 GENERAL

A set of drawing shall be drawn by the successful tenderer indicating the layout of the installation of the equipment , cabling & the wiring system. Arrangement of cable trenches, showing the detailed size therein & clearance from the building wall& the H.T board / L.T board shall be indicated. Before commencement of any erection work approval of the above drawing is required to be taken from the competent authority. Manufacturer's specification, if any, shall also be followed.

10.02 FOUNDATIONS

The foundation shall be so designed so as to carry the static loads & impact loads imposed on switchgear during breaker operation under normal and fault conditions. Manufacturer's recommendation to this effect shall also be considered.

10.03 LEVELING AND GROUTING

Great care shall be taken to ensure that the equipment has been correctly installed and leveled properly before the holding down bolts are grouted in the foundation for efficient, smooth and correct operation of isolation mechanism and jointing of bus-bars of various units.

10.04 CONNECTIONS

10.04.1 Connections of bus-bars between the sections of the switchgear panel to form a complete unit shall properly be done & bolts, nuts and washers properly tightened. The bus-bar shall be aligned and to be connected in such a way so as to provide adequate clearance between the phases as per IS specification.

10.04.2 When making connections to terminals of switchgear care shall be taken to avoid undue stress on insulators. Connections to the switchgear shall be done carefully making sure that they are tight and are in the correct phase sequence.

10.04.3 All auxiliaries such as relays, meters, etc. shall be connected properly in accordance with the drawings supplied by the manufacturer.

10.05 EARTHING

All equipment shall be solidly & efficiently earthed generally as per provisions made in IS : 3043 with latest amendment.

10.06 DRYING OUT OF INSULATION

All sorts of precautions and cares shall be taken to ensure that its insulation has been thoroughly dried before final commissioning & energizing. Bonded resin laminates, if found to be of low insulation value during commissioning, shall be dried out.

10.07 DRYING OUT

If the measured insulation resistance is found to be less than 100MΩ it shall be first dried out before it is switched on. Due care and attention shall be paid when measuring insulation resistance with particular reference to climatic conditions, cleanliness of insulation etc. Measurement of insulation resistance shall be done by a motorized megger of at least 2.5KV& above for H.T system and 500 V megger for L.T system.

10.08 Circuit breaker shall be checked against the manufacturer's drawing to ensure workshop settings have not been disturbed during transit.

10.09 TESTING & COMMISSIONING

10.09.1 On completion of the erection work, the equipment shall be thoroughlycleaned& checked to ensure that all nuts, bolts & clamps are tight, all moving parts are lubricated, breaker operates mechanically, all wiring is accordance with the diagram, earth connection are made properly, arc chutes are fitted in position, wherever applicable.

10.09.2 Insulation resistance of main circuits shall be measured & shall never be less than the values specified hereinafter. The I.R to earth of each phase & between phases shall be measured in turn & recorded properly.

10.09.3 Insulation resistance to earth of all secondary wiring circuits shall be tested using a 500V megger. Insulation resistance test shall be carried out both before & after high voltage test.

10.09.4 High voltage test for main circuit in accordance with relevant IS Standard shall be conducted after all pre-commissioning checks are completed.

10.09.4 Secondary circuits shall be tested by all ends together and applying 2000Volts A.C for 1minute.

10.09.5 A thorough check on protective scheme shall have to be carried out before commissioning the equipment. Primary injection testing shall be done wherever conditions permit. Secondary injection test shall be made on all protective relays and readings be recorded properly. The settings (time & current) of all protective relays shall have to be done according to the system condition.

10.09.6 When all checks mentioned above are completed, the equipment maybe switched on to the supply. However, before switch on necessary approval shall be obtained from the Chief Electrical Inspector, Directorate of Electricity, Govt. of West Bengal.

11.0 INSTALLATION, TESTING& COMMISSIONING OF TRANSFORMERS

11.01 All electrical installation shall comply with the requirements of the Indian Electricity Acts & Rules made thereunder and with any other regulations that may be applicable. The electrical installation shall be carried out only by authorized persons competent to undertake such work under the rules and regulations. All tools & tackles and other equipment required for the erection work shall be arranged at the site by the tenderer before the work is started.

11.02 A leveled RCC foundation or brick foundation which can withstand both the static and the dynamic load, if any, of the transformer is required to be constructed in the transformer roomas per drawing submitted by the tenderer.

11.03 After the foundation is ready, the transformer shall be placed on the foundation and the wheels shall be locked to prevent accidental movement of the transformersas per drawing submitted by the tenderer.

11.04 After erection and before commissioning of the transformer High Pressure Testing to check the insulation level shall have to be carried out. If the test results are found to be unacceptable necessary corrective measure shall immediately be undertaken to raise the insulation level up to the standard mark. When the transformer is ready in

all respect ,HT, LT and control cabling work shall be carried out including that of winding temperature scanner, protective control , fan control module etc in the marshaling box.

12.0 CABLING WORK

12.01 Generally all cable shall be brought to site in cable drums and be kept preferably at concrete surface having well drainingfacility, cable drums shall be positioned in such a manner so that proper air circulation can be maintained. It is desirable for the drums to stand on battens placed directly under the flanges. In no case, cable drums shall be stored flat with flanges horizontal.

12.02 Cable drums shall be rolled in the direction on arrow mark inscribed on the flange of the drum. Cable drums shall not be slung except by a bar through centre. Cable shall be taken from the top of the drum with a supporting ramp. If necessary. Cable drums shall if required to be shifted at site shall generally be done by means of cable wheels.

12.03 When three cables will be laid in an underground trench in single tier formation (horizontal) the trench size shall be 915mmx760mm average depth with brick protection on the top of each cable with 8Nos bricks per Mtr and 4Nos bricks per Mtr as separator between every two cables.

12.04 When the cables will be laid on wall or in air, it shall be laid on cable rack made of 50mmx50mmx6mm thick M.Sequal angle for horizontal and vertical run and 30mmx30mm x5mm thick MS equal angle for cross run including fabrication by welding and paining.

12.05 Cable laying as far as possible will be done with larger bending radii. The bending radius shall be as below.

Voltage Rating of cable	Multicore core cable	Single core cable
Up to 1.1 KV	12D	15D
Up to 11KV	15D	----

Where D is the overall diameter of the cable.

12.06 Cable trenches inside the sub-station will be constructed by others as per the drawings submitted by the tenderer. All cable boxes and metallic sheathing and armouring shall be efficiently earthed. Clamping of cables wityh proper identification cable tag shall also be provided.

13.0 ERECTION PROGRAMME AND PROGRESS RESPONSIBILITIES

13.01 The tenderer shall submit at such times and in such forms as may be required by the Engineer-in- charge, schedule of work showing the programme and the order in which the tenderer proposes to carry out the work with dates and estimated completion time for various parts of the work.

13.02 Such schedule shall be approved by the Engineer-in-charge prior to starting the erection work. The tenderer shall adhere to this approved programme for all practical purposes. If for any reason the work is held up, the tenderer shall bring it to the attention of Engineer-in- charge in writing without any delay.

13.03 During the progress of work the tenderer shall submit monthly progress reports and such other reports on erection work as the Engineer-in-Charge may direct.

13.04 All works shall be carried out in a first class, neat and good workmanship manner by technicians skilled in the trade involved.

13.05 The erection work shall be supervised by competent supervisors holding requisite supervisory license from the Directorate of Electricity, Government of West Bengal.

13.06 The installation shall be carried out in such a manner so as to preserve access to other equipment installed.

13.07 Evidence in support of qualification and experience and the certificate of competency, all in original shall be submitted to the department for approval before assigning any engineer or supervisor on the job. The tenderer shall be fully and finally responsible for proper erection and safe and satisfactory operation of the sub-station and equipment under his scope of work to the entire satisfaction of Engineer-in-Charge. The work shall be executed

in accordance with the directions, instructions, drawings and specifications which shall be supplied to the tenderer by the Engineer-in-Charge from time to time.

13.08 If in the opinion of the tenderer any work is insufficiently specified or require modification, the tenderer shall refer the same in writing to the Engineer-in-Charge and obtain his instruction / approval in writing before proceeding with the work.

13.09 If the tenderer fails to refer such instances, any excuse for faulty erection, poor workmanship or delay in completion will not be entertained. Equipment and materials which are wrongly installed shall be removed and reinstalled to comply with the design requirement at the tenderer's expenses to the satisfaction of the Engineer-in-Charge.

13.10 The tenderer shall at all times work in close co-ordination with the department and its representatives / supervisory personnel and afford them every facility to become familiar with the erection and maintenance of the equipment. Such direction and supervision shall not relieve the tenderer of his responsibility of correctness and quality of workmanship and of other obligations under the contract.

13.11 The tenderer shall arrange his schedule of work and method of operation in such a way so as to minimize inconvenience to other tenderers on the project. The co-ordination of work among the tenderers shall be made and the programme of work shall be chalked out accordingly so as to avoid any undue delay in completing the work.

13.12 For clearance of site prior to starting the work, the tenderer shall notify the Engineer-in-Charge in writing at least 2(two) weeks ahead. The tenderer shall start the work as soon as the site is made available for the work.

14.0 ERECTION, INSPECTION, START-UP & TRIAL OPERATION AND TAKING OVER

14.1 The erection work will be carried out in the manner and sequence as may be directed by the Engineer-in-charge. As erection proceeds each completed part before being permanently covered up or sealed shall be placed for inspection for approval of the department and should any defect be noticed during such inspection, the tenderer shall make it good as desired by the Engineer-in-Charge.

14.2 INSPECTION

After completion of erection or installation and before start-up each unit and all its components shall be thoroughly cleaned and then inspected in presence of departmental officer for correctness and completeness of the installation and acceptability for start-up.

The inspection and checking of individual pieces of equipment upon receipt of permission from the departmental officer be done at any convenient time during the installation period. A check list, if found necessary, in triplicate will be furnished by the department wherein all items to be checked and necessary instructions therefore shall be listed.

14.3 START UP & TRIAL OPERATION

Following the satisfactory completion of inspection, checking of the entire installation and after obtaining necessary approval from the Electrical Inspector Directorate of Electricity, Government of West Bengal, necessary start-up and trial operation may be done step by step. But before putting the equipment into the system necessary arrangement for firefighting equipment like Fire Extinguishers, Fire Buckets, Shock Treatment Charts,FirstAid Box shall be made ready and installed in convenient places in the sub-station as directed by the Engineer-in-Charge.

On completion of satisfactory trial operation the entire installation including illumination work, the same shall be placed under initial operation for seven days by the tenderer. All repairs, adjustments, setting of relays etc. shall be carried out during these period.

14.4 TAKING OVER.

On successful completion of 7 day's initial operation and maintenance and the tenderer having completed all the work under this contract, each unit will be taken over by the department.

TECHNICAL SPECIFICATION OF P.D.BS, CAPACITOR PANEL, D.G CONTROL PANEL

1.	Type	:	Industrial, cubicle, Form 3B
2.	Mounting	:	Floor, self-supporting
3.	Configuration	:	Double front non-draw out, fully compartmentalized
4.	Voltage / Frequency rating	:	415V±10%, 50Hz±5%
5.	Sheet steel thickness	:	2mm. for enclosure, door, covers & barriers
6.	Type of Sheet steel	:	CRCA
7.	Type & size of base Frame	:	ISMC – 75
8.	Type & Thickness of gland plate	:	Detachable, 3mm. thick
9.	Type of Sheet Treatment	:	Chemical (Degreasing, Pickling, Phosphatizing
10.	Primer Coating	:	2 Coats of Anti Corrosive Primer
11.	Finish Paint Type	:	Powder Coated
12.	Finish Paint Shade	:	RAL 7032
13.	Measure against Ingress	:	All opening shall be covered with neoprene gasket
14.	Degree of Protection	:	I P – 54
15.	Cable Entry	:	From bottom through detachable gland plate
16.	Cable Termination	:	In separate Cable Alley
17.	Type of cable Terminals	:	Stud Type
18.	Bus-Bar Material	:	E91E grade aluminium
19.	Main Bus-Bar rating	:	As per specification
20.	Vertical Dropper Rating for Outgoing	:	Half the Rating of Phase Bus-Bars
21.	Maximum Current Density for Bus-Bar	:	1A / sq.mm.
22.	Type of Bus-Bar Insulation	;	1.1 KV grade colour coded PVC heat shrunk type sleeves
23.	Minimum Bus-Bar clearance between Phases & Phase to Earth	:	As per I.S
24.	Material of Bus-Bar Support	:	FRP
25.	Maximum Fault Level of Bus-Bar	:	50KA (r.m.s) for 1sec.
26.	Type of Bolts for Bus-Bar Joints	:	High Tensile
27.	Anti-corrosive Chemical for Bus-Bar Joints	:	Petroleum Jelly
28.	Type of doors at front of the panel	:	Concealed Hinged Doors
29.	Type of Coves / Doors at rear of the panel	:	Bolted Covers / Doors
30.	Door Interlocking	:	Each Feeder Door shall be Interlocked with respective Switchgear
31.	Size of Control Wires	:	1.1 KV grade PVC insulated 2.5 sqmm. Flexible Copper Wire for Current Circuits and 1.5 sqmm. Flexible Copper Wire for Voltage and control circuits.
32.	Control Wire Termination	:	With tinned Copper Lugs
33.	Type of Control Wire Identification Marking	:	Interlocked Type Ferrule Marker
34.	Size and material of Earth Bus-Bar	:	(50x6opper)mmAluminium Flat
35.	Connection of hinged doors with earth Bus-Bar	:	By flexible Copper Wire
36.	Reference Standard	:	I.S – 8623

AM			MAIN LT PANEL IN THE PROPOSED SUB-STATION		
Feeder Name	FDR.Qty	Sl.No.	FEEDER COMPONENTS	MAKE	QTY/ FDR
INCOMER - I	1	1	1250A 4P EDO ACB, 50KA with Microprocesor based release for O/C, S/C & E/F protection, spring charged motor: 240V AC, closing coil:240V DC, ST coil:230V DC, Trip Signalling Micro Switch, Automatic safety shutters with 4NO+ 4NC Aux. Contact	L&T / ABB / SIEMENS	1
		2	Aux. Contactor with 2No+2NC contact, 240V AC	L&T / ABB / SIEMENS	5
		3	800/5A Bar Primary type C.T, Class 1.0, 15VA (Tape Wound) For APFC Relay	KAPPA	1
		4	1000/5A Bar Primary type C.T, Class 1.0, 15VA (Tape Wound)	KAPPA	3
		5	0-1000A AC Digital Ammter, 96mm, CL: 1.5, CT Sec : 5A	SCHNEIDER	1
		6	0-500V AC digital Voltmeter, 96mm, CL : !.5	SCHNEIDER	1
		7	Ammeter & Voltmeter Selector Switch	KAYCEE/RECOM	2
		8	3-Phase 4-wire Digital Multifunction Me	SCHNEIDER	1
		9	R-Y-B Indication Lamp, LED Type , 230	VAISHNO/SIEMENS	3
		10	On/Off/Trip/Spring Charge/ D.C Fail Ind	VAISHNO/SIEMENS	5
		11	T-N-C Breaker Control Switch	KAYCEE/RECOM	1
		12	6A TPN MCB, 10 KA	LEGRAND/SIEMENS/ L&T	2
		13	6A TP MCB, 10 KA	LEGRAND/SIEMENS/ L&T	1
		14	6A DP MCB, 10 KA	LEGRAND/SIEMENS/ L&T	6
		15	Disconnecting Type Terminals, 2 BA si	ELMEX	6
		16	Clip on type Control Terminals, size 10	ELMEX	10
		17	63A TP MCCB with Thermal Magnetic	LEGRAND/SIEMENS/ABB	1
		18	20 KVAR Super Heavy Duty Capacitor	EPCOS/L&T	1
		19	Off / On / Trip Indication Lamp LED Typ	VAISHNO/SIEMENS	3
INCOMER - II	1	1	1000A 4P EDO ACB, 50 KA with Microprocessor based released for O/C, S/C,& E/F Protection, Spring Charge motor : 240V AC, Closing Coil : 240VDC, ST coil: 230V DC, Trip	L&T/ABB/SIEMENS	1
		2	Aux. Contactor with 2No+2NC contact,	L&T/ABB/SIEMENS	5
		3	600/5A Bar Primary type C.T, Class 1.0	KAPPA	1
		4	700/5A Bar Primary type C.T, Class 1.0	KAPPA	3
		5	0-700A AC Digital Ammter, 96mm, CL:	SCHNEIDER	1
		6	0-500V AC digital Voltmeter, 96mm, CL	SCHNEIDER	1
		7	Ammeter & Voltmeter Selector Switch	KAYCEE/RECOM	2
		8	3Phase 4-wire Digital Multifunction Meter, CL: 1.0, CT Sec:5A, Aux. Supply 230VAC	SCHNEIDER	1
		9	R-Y-B Indication Lamp, LED Type , 230	VAISHNO/SIEMENS	3
		10	On/Off/Trip/Spring Charge/ D.C Fail Ind	VAISHNO/SIEMENS	5
		11	T-N-C Breaker Control Switch	KAYCEE/RECOM	1
		12	6A TPN MCB, 10 KA	LEGRAND/SIEMENS/L&T	2
		13	6A TP MCB, 10 KA	LEGRAND/SIEMENS/L&T	1
		14	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L&T	6
		15	Disconnecting Type Terminals, 2 BA si	ELMEX	6
		16	Clip on type Control Terminals, size 10	ELMEX	10

		17	63A TP MCCB with Thermal Magnetic	LEGRAND/SIEMENS/ABB	1
		18	20 KVAR Super Heavy Duty Capacitor	EPCOS/L&T	1
		19	On/Off/Trip Indication Lamp LED Type	VAISHNO/SIEMENS	3
BUS-COUPLER	1	1	1250A 4P EDO ACB, 50KA with Microprocesor based release for O/C, S/C & E/F protection, spring charged motor: 240V AC, closing coil:240V DC, ST coil:230V DC, Trip Signalling Micro Switch, Automatic safety shutters with 4NO+ 4NC Aux. Contact	L&T/ABB/SIEMENS	1
		2	Aux. Contactor with 2No+2NC contact,	L&T/ABB/SIEMENS	3
		3	On/Off/Trip/Spring Charge/ D.C Fail Ind	VAISHNO/SIEMENS	5
		4	T-N-C Breaker Control Switch	KAYCEE/RECOM	1
		5	6A DP MCB, 10 KA	LEGRAND/SIEMENS /L&T	6
		6	Clip on type Control Terminals, size 10	ELMEX	10
INTERLOCK	1	1	Electro-Mechanical interlocking arrange	Approved make	1
1000A ACB O /G Feeder to distribution panel in Hospital Building	1	1	1000A 4P EDO ACB, 50 KA with Microprocessor based released for O/C, S/C,& E/F Protection, Spring Charge motor : 240V AC, Closing Coil : 240VDC, ST coil: 230V DC, Trip Signalling Micro Switch, Automatic safety shutter with 4 NO+ 4NC contact.	L&T / ABB / SIEMENS	1
		2	Aux. Contactor with 2No+2NC contact,	L&T/ABB/SIEMENS	5
		3	700A/5A Bar Primary type CT, Class : 1	KAPPA	3
		4	0 - 700A AC Digital Ammeter, 96mm, C	SCHNEIDER	1
		5	Ammeter Selector Switch	KAYCEE/RECOM	
		6	On / Off / Trip Spring Charge / D.C Fail	VAISHNO/SIEMENS	5
		7	T-N-C Breaker Control Switch	KAYCEE/RECOM	1
		8	6A DP MCB, 10 KA	LEGRAND/SIEMENS / L&T	6
		9	Disconnecting Type Terminals, 2 BA si	ELMEX	6
		10	Clip on type Control Terminals, size 10	ELMEX	10
630A MCCB FEEDER TO CAPACITOR PANEL	2	1	630A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection, Extended Door Drive Kit & Spreader with 1NO + !NC Aux. Switch & 1 No. Alarm Switch	LEGRAND/SIEMENS / L&T	1
		2	350/5A Bar Primary type CT, Class: 1.0	KAPPA	3
		3	0-350A AC Digital Ammeter, 96mm, CL	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off / Trip Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS /L&T	2
400A MCCB FEEDER FOR DISTRIBUTION PANELS+ SPARE	3	1	400A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection, Extended Door Drive Kit & Spreader with 1NO + !NC Aux. Switch & 1 No. Alarm Switch	LEGRAND/SIEMENS / L&T	1
		2	350A/5A Bar Primary type CT, Class :	KAPPA	3
		3	0-350A AC Digital Ammeter, 96mm, CL	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off /Trip Indication Lamp, LED Typ	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS / L&T	2

250A MCCB FEEDER FOR DISTRIBUTION PANELS + SPARE & TO DG PANEL	6	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L&T	1
		2	250A/5A Bar Primary type CT, Class :	KAPPA	3
		3	0-250A AC Digital Ammeter, 96mm, CL	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off /Trip Indication Lamp, LED Typ	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L&T	2
160A MCCB FEEDER FOR DISTRIBUTION PANELS+ SPARE	4	1	160A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L&T	1
		2	150A/5A Bar Primary type CT, Class :	KAPPA	3
		3	0-150A AC Digital Ammeter, 96mm, CL	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off /Trip Indication Lamp, LED Typ	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L&T	2
100A MCCB FEEDER FOR 8th FL. OF RESEARCH BLDG. +SPARE	2	1	160A 4P MCCB, 50KA with Thermal-Magnetic release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L&T	1
		2	100A/5A Bar Primary type CT, Class :	KAPPA	3
		3	0-100A AC Digital Ammeter, 96mm, CL	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off /Trip Indication Lamp, LED Typ	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L&T	
		7	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER FOR SPARE	2	1	63A 4P MCCB, 50KA with Thermal-Magnetic release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L&T	1
		2	On / Off /Trip Indication Lamp, LED Typ	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER FOR ILLUMINATION OF SUB- STN. + SPARE	4	1	40A 4P MCCB, 50KA with Thermal-Magnetic release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L&T	1
		2	On / Off /Trip Indication Lamp, LED Typ	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L&T	1
		4	4 Way Power Terminal	DESUN	1

16A MCCB FEEDER FOR CONTROL SUPPLY+ SPARE	4	1	16A 4P MCCB, 50KA with thermal-magnetic release for O/C & S/C protection. Extended Door Drive Kit with 1NO + 1 NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/ L&T	1
		2	On/Off / Trip Indication Lamp, LED Typ	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/L&T	1
		4	4 Way Power Terminal	DESUN	1
0.75 KVA CONTROL TRANSFORMR.	2	1	4 A DP MCB, 10KA	LEGRAND/SIEMENS/L&T	1
		2	0.75 KVA, 415V / 240V AC Control Transformer, Tappings will be ±2.5% & ± 5% on primary side	INDUSREE	1
		3	10A DP MCB, 10KA 'C' Curve	LEGRAND/SIEMENS/L&T	1
		4	On (R) Indication Lamp, LED Type, 2	VAISHNO/SIEMENS	1
GENERAL ITEM		1	Thermostat Controlled Space Heater w	APPROVED MAKE	15
		2	5A 3-Pin Plug Socket	ANCHOR	2
		3	Panel Illumination lamp with MCB	APPROVED MAKE	15
		4	32A DP Selector Switch for Control T	KAYCEE/RECOM	1

DG CONTROL PANEL					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	2	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	250/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-250A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
DG INCOMER	1	1	400A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	350/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-350A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
AMF FEEDER	1	1	AMF Panel	PCE	1
O/G FEEDER FROM DG	2	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	250/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-250A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	Ammeter selector switch	KAYCEE/RECOM	1
		5	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
		7	4 Way Power Terminal	DESUN	1
ATS	2	1	250A 4P Automatic transfer switch with Electronic control BOX with 250A 4P MCCB with thermal magnetic release & Spraeder	LEGRAND/SIEMENS/ L&T	1
O/G FEEDER FOR EMERGENCY	2	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	250/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-250A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	Ammeter selector switch	KAYCEE/RECOM	1
		5	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
		7	4 Way Power Terminal	DESUN	1

EMERGENCY DISTRIBUTION BOARD - 1 IN GR. FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	63A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	50/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-50A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
40A MCCB FEEDER	6	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	8				

EMERGENCY DISTRIBUTION BOARD - 2 IN 1ST FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	63A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	25/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-25A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
40A MCCB FEEDER	2	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	4				

EMERGENCY DISTRIBUTION BOARD - 3 IN 2nd FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	40A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	20/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-20A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
40A MCCB FEEDER	3	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	5				

EMERGENCY DISTRIBUTION BOARD - 4 IN 3rd FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	100A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	50/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-50A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
40A MCCB FEEDER	4	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	6				

EMERGENCY DISTRIBUTION BOARD - 5 IN 4rd FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	63A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	25/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-25A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
40A MCCB FEEDER	3	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	5				

EMERGENCY DISTRIBUTION BOARD - 6 IN 5TH FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	63A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	50/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-50A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
40A MCCB FEEDER	3	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	5				

EMERGENCY DISTRIBUTION BOARD - 7 IN 6TH FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	63A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	25/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-25A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
40A MCCB FEEDER	3	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	5				

EMERGENCY DISTRIBUTION BOARD - 8 IN 7TH FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	40A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	15/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-15A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
25A MCCB FEEDER	2	1	25A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	4				

EMERGENCY DISTRIBUTION BOARD - 9 IN 8TH FL. OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	63A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	25/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-25A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
40A MCCB FEEDER	4	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	3	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		2	Stud type Power Terminal	Elmex/CW	2
	9				

LT POWER DISTRIBUTION BOARD IN GR. FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	160A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	100/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-100A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
63A MCCB FEEDER	3	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	3	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	12	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
	19				

DISTRIBUTION PANEL IN 1ST FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	160A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	125/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-125A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
63A MCCB FEEDER	8	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	12	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	Elmex/CW	2
	22				

DISTRIBUTION PANEL IN 2ND FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	250/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-250A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
63A MCCB FEEDER	12	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	6	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	9	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	Elmex/CW	2
	29				

DISTRIBUTION PANEL IN 3RD FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	400A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	300/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-300A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
63A MCCB FEEDER	6	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	12	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
	19				

DISTRIBUTION PANEL IN 4th FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	400A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	250/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-250A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
63A MCCB FEEDER	6	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	12	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	4	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
	23				

DISTRIBUTION PANEL IN 5th FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	200/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-200A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
63A MCCB FEEDER	2	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	6	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	15	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
	24				

DISTRIBUTION PANEL IN 6th FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	160A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	150/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-150A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
100A MCCB FEEDER	2	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER	2	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A MCCB FEEDER	2	1	32A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	18	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
	25				

DISTRIBUTION PANEL IN 7th FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	150/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-150A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
63A MCCB FEEDER	9	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A MCCB FEEDER	4	1	32A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	2	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
	16				

DISTRIBUTION PANEL IN 8th FL. SW. ROOM OF RESEARCH BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	50/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-50A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
100A MCCB FEEDER	2	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER	2	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A MCCB FEEDER	2	1	32A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	5	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
	12				

SUB DISTRIBUTION PANEL - 1 IN SW. ROOM OF HOSPITAL BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	400A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	250/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-250A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
250A MCCB FEEDER	6	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	200/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-200A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	Ammeter selector switch	KAYCEE/RECOM	1
		5	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
100A MCCB FEEDER	4	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	75/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-75A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	Ammeter selector switch	KAYCEE/RECOM	1
		5	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
		7	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER	5	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	6	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
		4	4 Way Power Terminal	DESUN	1
6A DP MCB	2	1	10A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	ELMEX/CW	4
	24				

SUB DISTRIBUTION PANEL - 2 IN SW. ROOM OF HOSPITAL BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	100/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-100A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
		10	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER	4	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	4	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	4	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	2	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	Elmex/CW	2
	15				

SUB DISTRIBUTION PANEL - 3 IN SW. ROOM OF HOSPITAL BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	160A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	150/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-150A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
100A MCCB FEEDER	3	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER	4	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	4	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
63A SFU FEEDER	2	1	63A TPN Switch Fuse Unit with 63A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	8	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
6A DP MCB	2	1	10A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	ELMEX/CW	4
	24				

SUB DISTRIBUTION PANEL - 4 IN SW. ROOM OF HOSPITAL BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	80/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-80A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
		10	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER	1	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	1	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
63A SFU FEEDER	2	1	63A TPN Switch Fuse Unit with 63A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	3	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
6A DP MCB	2	1	10A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	ELMEX/CW	4
	10				

SUB DISTRIBUTION PANEL - 5 ON 1ST FL. WALL IN HOSPITAL BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	150/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-150A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
100A MCCB FEEDER	2	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER	4	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	7	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	2	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	Elmex/CW	2
	16				

SUB DISTRIBUTION PANEL - 6 ON 5th FL. OF HOSPITAL BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	80/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-80A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
63A MCCB FEEDER	7	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	5	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
6A MCB FEEDER	1	1	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	Elmex/CW	2
	14				

MAIN POWER DISTRIBUTION BOARD IN SW. ROOM OF HOSPITAL BUILDING					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/FDR.**
INCOMER	1	1	1000A 4P EDO ACB, 50KA with Micro-processor based release for O/C, S/C & E/F Protection. Spring charge motor : 240V AC, Closing coil : 240V DC, St. Coil : 230V DC, Trip Signalling Micro Switch, Automatic safety shutters with 4 NO + 4 NC Aux-Contact	L&T/ABB/SIEMENS	1
		2	Aux. Contactor with 2 NO + 2 NC contact, 240V AC Coil	LEGRAND/SIEMENS/ L&T	5
		3	750/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		4	0-750A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		5	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		6	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		7	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	ON/OFF/TRIP/SPRING CHARGE/DC FAIL Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	5
		9	T-N-C Breaker control switch	KAYCEE/RECOM	1
		10	6A TPN MCB, 10KA	LEGRAND/SIEMENS/ L&T	2
		11	6A TP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		12	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	6
		13	Disconnecting type Terminals, 2 BA size, stud type	ELMEX/CW	6
		14	Clip on type Control Terminals, size 10 sq. mm.	ELMEX/CW	10
400A MCCB FEEDER	3	1	400A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
250A MCCB FEEDER	4	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
160A MCCB FEEDER	3	1	160A 4P MCCB, 50KA with Thermal Magnetic release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1

100A MCCB FEEDER	3	1	100A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER	3	1	63A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER	2	1	40A 4P MCCB, 50KA with Thermo-magnetic release for O/C & S/C protection. Extended Door drive kit with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	ON/OFF/TRIP Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER	4	1	32A TPN Switch Fuse Unit with 32A Fuse Link	LEGRAND/SIEMENS/ L&T	1
		5	4 Way Power Terminal	DESUN	1
10A DP MCB	4	1	10A DP MCB, 10KA	LEGRAND/SIEMENS/ L&T	1
		5	Stud type Power Terminal	ELMEX/CW	4
GENERAL ITEM	1	1	Thermo-stat Operated space heater with MCB	REPUTED	**8**
		2	5A 3 Pin Plug & Socket	REPUTED	**2**
		3	Panel illumination lamp with MCB	REPUTED	**8**
	28				

180KVAR CAPACITOR BANK PANEL					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/ FDR.**
CAP. BANK INCOMER:	**1**	1	630A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	350/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-350A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 240V AC.	VAISHNO/SIEMENS	3
		7	14 Point Micro processor based APFC Relay with PF display, 240V AC	L&T/EPCOS	1
		8	Aux. contactor, 4NO+4NC, 240V AC,	LEGRAND/SIEMENS/ L&T	2
		9	Aux. contactor, 2NO+2NC 240V AC,	LEGRAND/SIEMENS/ L&T	2
		10	Aux. contactor, 6NC 240V AC,	LEGRAND/SIEMENS/ L&T	1
		11	A/M Selector Switch, 1 pole 2 way with OFF	KAYCEE/RECOM	1
		12	ON Delay Timer, 0-30 Sec, 240VAC, 2 C/O Contact	SIEMENS/EAPL	1
		13	6A TPN MCB	LEGRAND/SIEMENS/ L&T	1
		14	6A TP MCB	LEGRAND/SIEMENS/ L&T	1
		15	6A DP MCB	LEGRAND/SIEMENS/ L&T	2
20KVAR CAPACITOR BANK	**3**	1	63A TP MCCB, 50KA with Thermal Magnetic release for O/C, S/C Protection. Extended type door drive kit with 1 NO + 1 NC Aux. Switch	LEGRAND/SIEMENS/ L&T	1
		2	440V, 3 Phase, 50Hz, 20KVAR Super Heavy Duty Power Capacitor, type: ESHDC	EPCOS/SCHNEIDER	1
		3	70A TP Air Break Contactor (AC3 duty), with 2 NO + 2 NC contact, 240V AC	LEGRAND/SIEMENS/ L&T	1
		4	ON/OFF Indication Lamp, LED Type, 240V AC	VAISHNO/SIEMENS	2
		5	START/STOP Push Button with 2NO & 1NC Contact	VAISHNO/SIEMENS	2
		6	3 Way Power Terminal	DESUN	1
15KVAR CAPACITOR BANK	**4**	1	63A TP MCCB, 50KA with Thermal Magnetic release for O/C, S/C Protection. Extended type door drive kit with 1 NO + 1 NC Aux. Switch	LEGRAND/SIEMENS/ L&T	1
		2	440V, 3 Phase, 50Hz, 15KVAR Super Heavy Duty Power Capacitor, type: ESHDC	EPCOS/SCHNEIDER	1
		3	60A TP Air Break Contactor (AC3 duty), with 2 NO + 2 NC contact, 240V AC	LEGRAND/SIEMENS/ L&T	1
		4	ON/OFF Indication Lamp, LED Type, 240V AC	VAISHNO/SIEMENS	2
		5	START/STOP Push Button with 2NO & 1NC Contact	VAISHNO/SIEMENS	2

10KVAR CAPACITOR BANK	**5**	1	63A TP MCCB, 50KA with Thermal Magnetic release for O/C, S/C Protection. Extended type door drive kit with 1 NO + 1 NC Aux. Switch	LEGRAND/SIEMENS/ L&T	1
		2	440V, 3 Phase, 50Hz, 10KVAR Super Heavy Duty Power Capacitor, type: ESHDC	EPCOS/SCHNEIDER	1
		3	50A TP Air Break Contactor (AC3 duty), with 2 NO + 2 NC contact, 240V AC	LEGRAND/SIEMENS/ L&T	1
		4	ON/OFF Indication Lamp, LED Type, 240V AC	VAISHNO/SIEMENS	2
		5	START/STOP Push Button with 2NO & 1NC Contact	VAISHNO/SIEMENS	2
5KVAR CAPACITOR BANK	**2**	1	32A TP MCCB, 50KA with Thermal Magnetic release for O/C, S/C Protection. Extended type door drive kit with 1 NO + 1 NC Aux. Switch	LEGRAND/SIEMENS/ L&T	1
		2	440V, 3 Phase, 50Hz, 5KVAR Super Heavy Duty Power Capacitor, type: ESHDC	EPCOS/SCHNEIDER	1
		3	18A TP Air Break Contactor (AC3 duty), with 2 NO + 2 NC contact, 240V AC	LEGRAND/SIEMENS/ L&T	1
		4	ON/OFF Indication Lamp, LED Type, 240V AC	VAISHNO/SIEMENS	2
		5	START/STOP Push Button with 2NO & 1NC Contact	VAISHNO/SIEMENS	2
	15				

230KVAR CAPACITOR BANK PANEL					
FEEDER NAME	**FDR. QTY**	**SL. NO.**	**FEEDER COMPONENTS**	**MAKE**	**QTY/ FDR.**
CAP. BANK INCOMER	**1**	1	630A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door drive kit & Spreader with 1 NO + 1 NC Aux. Switch & 1 NO Alarm Switch	LEGRAND/SIEMENS/ L&T	1
		2	350/5A Bar Primary type C.T, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-350A AC Digital Ammeter, 96 Sq mm, Cl : 1.5, CT sec: 5A	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96 Sq mm, Cl : 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 240V AC.	VAISHNO/SIEMENS	3
		7	14 Point Micro processor based APFC Relay with PF display, 240V AC	L&T/EPCOS	1
		8	Aux. contactor, 4NO+4NC, 240V AC,	LEGRAND/SIEMENS/ L&T	2
		9	Aux. contactor, 2NO+2NC 240V AC,	LEGRAND/SIEMENS/ L&T	2
		10	Aux. contactor, 6NC 240V AC,	LEGRAND/SIEMENS/ L&T	1
		11	A/M Selector Switch, 1 pole 2 way with OFF	KAYCEE/RECOM	1
		12	ON Delay Timer, 0-30 Sec, 240VAC, 2 C/O Contact	SIEMENS/EAPL	1
		13	6A TPN MCB	LEGRAND/SIEMENS/ L&T	1
		14	6A TP MCB	LEGRAND/SIEMENS/ L&T	1
		15	6A DP MCB	LEGRAND/SIEMENS/ L&T	2
25KVAR CAPACITOR BANK	**4**	1	100A TP MCCB, 50KA with Thermal Magnetic release for O/C, S/C Protection. Extended type door drive kit with 1 NO + 1 NC Aux. Switch	LEGRAND/SIEMENS/ L&T	1
		2	440V, 3 Phase, 50Hz, 25KVAR Super Heavy Duty Power Capacitor, type: ESHDC	EPCOS/SCHNEIDER	1
		3	80A TP Air Break Contactor (AC3 duty), with 2 NO + 2 NC contact, 240V AC	LEGRAND/SIEMENS/ L&T	1
		4	ON/OFF Indication Lamp, LED Type, 240V AC	VAISHNO/SIEMENS	2
		5	START/STOP Push Button with 2NO & 1NC Contact	VAISHNO/SIEMENS	2
		6	3 Way Power Terminal	DESUN	1
20KVAR CAPACITOR BANK	**4**	1	63A TP MCCB, 50KA with Thermal Magnetic release for O/C, S/C Protection. Extended type door drive kit with 1 NO + 1 NC Aux. Switch	LEGRAND/SIEMENS/ L&T	1
		2	440V, 3 Phase, 50Hz, 20KVAR Super Heavy Duty Power Capacitor, type: ESHDC	EPCOS/SCHNEIDER	1
		3	70A TP Air Break Contactor (AC3 duty), with 2 NO + 2 NC contact, 240V AC	LEGRAND/SIEMENS/ L&T	1
		4	ON/OFF Indication Lamp, LED Type, 240V AC	VAISHNO/SIEMENS	2
		5	START/STOP Push Button with 2NO & 1NC Contact	VAISHNO/SIEMENS	2
		6	3 Way Power Terminal	DESUN	1

15KVAR CAPACITOR BANK	**2**	1	63A TP MCCB, 50KA with Thermal Magnetic release for O/C, S/C Protection. Extended type door drive kit with 1 NO + 1 NC Aux. Switch	LEGRAND/SIEMENS/ L&T	1
		2	440V, 3 Phase, 50Hz, 15KVAR Super Heavy Duty Power Capacitor, type: ESHDC	EPCOS/SCHNEIDER	1
		3	60A TP Air Break Contactor (AC3 duty), with 2 NO + 2 NC contact, 240V AC	LEGRAND/SIEMENS/ L&T	1
		4	ON/OFF Indication Lamp, LED Type, 240V AC	VAISHNO/SIEMENS	2
		5	START/STOP Push Button with 2NO & 1NC Contact	VAISHNO/SIEMENS	2
5KVAR CAPACITOR BANK	**4**	1	32A TP MCCB, 50KA with Thermal Magnetic release for O/C, S/C Protection. Extended type door drive kit with 1 NO + 1 NC Aux. Switch	LEGRAND/SIEMENS/ L&T	1
		2	440V, 3 Phase, 50Hz, 5KVAR Super Heavy Duty Power Capacitor, type: ESHDC	EPCOS/SCHNEIDER	1
		3	18A TP Air Break Contactor (AC3 duty), with 2 NO + 2 NC contact, 240V AC	LEGRAND/SIEMENS/ L&T	1
		4	ON/OFF Indication Lamp, LED Type, 240V AC	VAISHNO/SIEMENS	2
		5	START/STOP Push Button with 2NO & 1NC Contact	VAISHNO/SIEMENS	2
	15				

MAIN LT PANEL IN THE PROPOSED SUB-STATION					
Feeder Name	FDR.Qty	Sl.No.	FEEDER COMPONENTS	MAKE	QTY/ FDR
INCOMER - I	1	1	1250A 4P EDO ACB, 50KA with Microprocesor based release for O/C, S/C & E/F protection, spring charged motor: 240V AC, closing coil:240V DC, ST coil:230V DC, Trip Signalling Micro Switch, Automatic safety shutters with 4NO+ 4NC Aux. Contact	L&T / ABB / SIEMENS	1
		2	Aux. Contactor with 2No+2NC contact, 240V AC	L&T / ABB / SIEMENS	5
		3	800/5A Bar Primary type C.T, Class 1.0, 15VA (Tape Wound) For APFC Relay	KAPPA	1
		4	1000/5A Bar Primary type C.T, Class 1.0, 15VA (Tape Wound)	KAPPA	3
		5	0-1000A AC Digital Ammter, 96mm, CL: 1.5, CT Sec : 5A	SCHNEIDER	1
		6	0-500V AC digital Voltmeter, 96mm, CL : !.5	SCHNEIDER	1
		7	Ammeter & Voltmeter Selector Switch	KAYCEE/RECOM	2
		8	3-Phase 4-wire Digital Multifunction Meter,Cl:1.0,CT Sec.5A,Aux.Suply240V AC	SCHNEIDER	1
		9	R-Y-B Indication Lamp, LED Type , 230V	VAISHNO/SIEMENS	3
		10	On/Off/Trip/Spring Charge/ D.C Fail Indication Lamp LED Type, 230Vac	VAISHNO/SIEMENS	5
		11	T-N-C Breaker Control Switch	KAYCEE/RECOM	1
		12	6A TPN MCB, 10 KA	LEGRAND/SIEMENS/ L&T	2
		13	6A TP MCB, 10 KA	LEGRAND/SIEMENS/ L&T	1
		14	6A DP MCB, 10 KA	LEGRAND/SIEMENS/ L&T	6
		15	Disconnecting Type Terminals, 2 BA size, stud type	ELMEX	6
		16	Clip on type Control Terminals, size 10 sqmm	ELMEX	10
		17	63A TP MCCB with Thermal Magnetic Release	LEGRAND/SIEMENS/ABB	1
		18	20 KVAR Super Heavy Duty Capacitor Bank, 440V	EPCOS/L&T	1
		19	Off / On / Trip Indication Lamp LED Type 230V	VAISHNO/SIEMENS	3
INCOMER - II	1	1	1000A 4P EDO ACB, 50 KA with Microprocessor based released for O/C, S/C,& E/F Protection, Spring Charge motor : 240V AC, Closing Coil : 240VDC, ST coil: 230V DC, Trip Signalling Micro Switch, Automatic safety shutter with 4 NO+ 4NC contact.	L&T/ABB/SIEMENS	1
		2	Aux. Contactor with 2No+2NC contact, 240V AC	L&T/ABB/SIEMENS	5
		3	600/5A Bar Primary type C.T, Class 1.0, 15VA (Tape Wound) for APFC Relay	KAPPA	1
		4	700/5A Bar Primary type C.T, Class 1.0, 15VA (Tape Wound)	KAPPA	3
		5	0-700A AC Digital Ammter, 96mm, CL: 1.5, CT Sec : 5A	SCHNEIDER	1
		6	0-500V AC digital Voltmeter, 96mm, CL : !.5	SCHNEIDER	1
		7	Ammeter & Voltmeter Selector Switch	KAYCEE/RECOM	2
		8	3Phase 4-wire Digital Multifunction Meter, CL: 1.0, CT Sec:5A, Aux. Supply 230VAC	SCHNEIDER	1
		9	R-Y-B Indication Lamp, LED Type , 230V	VAISHNO/SIEMENS	3
		10	On/Off/Trip/Spring Charge/ D.C Fail Indication Lamp LED Type, 230VAC	VAISHNO/SIEMENS	5
		11	T-N-C Breaker Control Switch	KAYCEE/RECOM	1
		12	6A TPN MCB, 10 KA	LEGRAND/SIEMENS/L&T	2
		13	6A TP MCB, 10 KA	LEGRAND/SIEMENS/L&T	1
		14	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L&T	6
		15	Disconnecting Type Terminals, 2 BA size, stud type	ELMEX	6
		16	Clip on type Control Terminals, size 10 sqmm	ELMEX	10

		17	63A TP MCCB with Thermal Magnetic Release	LEGRAND/SIEMENS/ABB	1
		18	20 KVAR Super Heavy Duty Capacitor Bank, 440V	EPCOS/L&T	1
		19	On/Off/Trip Indication Lamp LED Type, 230AC	VAISHNO/SIEMENS	3
BUS-COUPLER	1	1	1250A 4P EDO ACB, 50KA with Microprocesor based release for O/C, S/C & E/F protection, spring charged motor: 240V AC, closing coil:240V DC, ST coil:230V DC, Trip Signalling Micro Switch, Automatic safety shutters with 4NO+ 4NC Aux. Contact	L&T/ABB/SIEMENS	1
		2	Aux. Contactor with 2No+2NC contact, 240V AC	L&T/ABB/SIEMENS	3
		3	On/Off/Trip/Spring Charge/ D.C Fail Indication Lamp LED Type, 230VAC	VAISHNO/SIEMENS	5
		4	T-N-C Breaker Control Switch	KAYCEE/RECOM	1
		5	6A DP MCB, 10 KA	LEGRAND/SIEMENS /L&T	6
		6	Clip on type Control Terminals, size 10 sqmm	ELMEX	10
INTERLOCK	1	1	Electro-Mechanical interlocking arrangement betwween two incomers & Bus-Coupler	Approved make	1
1000A ACB O /G Feeder to distribution panel in Hospital Building	1	1	1000A 4P EDO ACB, 50 KA with Microprocessor based released for O/C, S/C,& E/F Protection, Spring Charge motor : 240V AC, Closing Coil : 240VDC, ST coil: 230V DC, Trip Signalling Micro Switch, Automatic safety shutter with 4 NO+ 4NC contact.	L&T / ABB / SIEMENS	1
		2	Aux. Contactor with 2No+2NC contact, 240V AC	L&T/ABB/SIEMENS	5
		3	700A/5A Bar Primary type CT, Class : 1.0, 15VA (TapeWound)	KAPPA	3
		4	0 - 700A AC Digital Ammeter, 96mm, CL - 1.5, CT Sec: 5A	SCHNEIDER	1
		5	Ammeter Selector Switch	KAYCEE/RECOM	
		6	On / Off / Trip Spring Charge / D.C Fail Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	5
		7	T-N-C Breaker Control Switch	KAYCEE/RECOM	1
		8	6A DP MCB, 10 KA	LEGRAND/SIEMENS / L&T	6
		9	Disconnecting Type Terminals, 2 BA size, stud type	ELMEX	6
		10	Clip on type Control Terminals, size 10 sqmm	ELMEX	10
630A MCCB FEEDER TO CAPACITOR PANEL	2	1	630A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection, Extended Door Drive Kit & Spreader with 1NO + !NC Aux. Switch & 1 No. Alarm Switch	LEGRAND/SIEMENS / L&T	1
		2	350/5A Bar Primary type CT, Class: 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-350A AC Digital Ammeter, 96mm, CL: 1.5, CT Sec: 5A	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off / Trip Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS /L&T	2
400A MCCB FEEDER FOR DISTRIBUTION PANELS+ SPARE	3	1	400A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection, Extended Door Drive Kit & Spreader with 1NO + !NC Aux. Switch & 1 No. Alarm Switch	LEGRAND/SIEMENS / L&T	1
		2	350A/5A Bar Primary type CT, Class : 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-350A AC Digital Ammeter, 96mm, CL: 1.5, CT Sec: 5A	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off /Trip Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS / L&T	2

250A MCCB FEEDER FOR DISTRIBUTION PANELS + SPARE & TO DG PANEL	6	1	250A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L &T	1
		2	250A/5A Bar Primary type CT, Class : 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-250A AC Digital Ammeter, 96mm, CL: 1.5, CT Sec: 5A	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off /Trip Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L &T	2
160A MCCB FEEDER FOR DISTRIBUTION PANELS+ SPARE	4	1	160A 4P MCCB, 50KA with Microprocessor based release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L &T	1
		2	150A/5A Bar Primary type CT, Class : 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-150A AC Digital Ammeter, 96mm, CL: 1.5, CT Sec: 5A	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off /Trip Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L &T	2
100A MCCB FEEDER FOR 8th FL. OF RESEARCH BLDG. +SPARE	2	1	160A 4P MCCB, 50KA with Thermal-Magnetic release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L &T	1
		2	100A/5A Bar Primary type CT, Class : 1.0, 15VA (Tape Wound)	KAPPA	3
		3	0-100A AC Digital Ammeter, 96mm, CL: 1.5, CT Sec: 5A	SCHNEIDER	1
		4	Ammeter Selector Switch	KAYCEE/RECOM	1
		5	On / Off /Trip Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	3
		6	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L &T	
		7	4 Way Power Terminal	DESUN	1
63A MCCB FEEDER FOR SPARE	2	1	63A 4P MCCB, 50KA with Thermal-Magnetic release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L &T	1
		2	On / Off /Trip Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L &T	1
		4	4 Way Power Terminal	DESUN	1
40A MCCB FEEDER FOR ILLUMINATION OF SUB- STN. + SPARE	4	1	40A 4P MCCB, 50KA with Thermal-Magnetic release for O/C & S/C protection. Extended Door Drive Kit & Spreader with 1NO + 1NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/L &T	1
		2	On / Off /Trip Indication Lamp, LED Type, 230V	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10 KA	LEGRAND/SIEMENS/L &T	1
		4	4 Way Power Terminal	DESUN	1

16A MCCB FEEDER FOR CONTROL SUPPLY+ SPARE	4	1	16A 4P MCCB, 50KA with thermal- magnetic release for O/C & S/C protection. Extended Door Drive Kit with 1NO + 1 NC Aux. Switch & 1No. Alarm Switch.	LEGRAND/SIEMENS/ L&T	1
		2	On/Off / Trip Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/L &T	1
		4	4 Way Power Terminal	DESUN	1
0.75 KVA CONTROL TRANSFORMR.	2	1	4 A DP MCB, 10KA	LEGRAND/SIEMENS/L &T	1
		2	0.75 KVA, 415V / 240V AC Control Transformer, Tappings will be ±2.5% & ± 5% on primary side	INDUSREE	1
		3	10A DP MCB, 10KA 'C' Curve	LEGRAND/SIEMENS/L &T	1
		4	On (R) Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	1
GENERAL ITEM		1	Thermostat Controlled Space Heater with MCB	APPROVED MAKE	15
		2	5A 3-Pin Plug Socket	ANCHOR	2
		3	Panel Illumination lamp with MCB	APPROVED MAKE	15
		4	32A DP Selector Switch for Control Transformer	KAYCEE/RECOM	1

EMERGENCY DISTRIBUTION PANELS FOR GR. FL. TO 5TH. FL. OF HOSPITAL BUILDING.					
FEEDER NAME	FDR. QTY	Sl. No.	FEEDER COMPONENTS	MAKE	QTY/ FDR
INCOMER	1	1	63A MCCB, 50KA WITH Thermal Magnetic release for O/C & S /C Protetion. Extended Door Drive Kit with 1NO + 1NC Aux. Switch & 1No Alarm Contact	LEGRAND/SIEMENS/L&T	1
		2	25/5A Bar Primary type CT, Class :1.0, 15 VA (Tape Wound)	KAPPA	3
		3	0-25A AC Digital Ammeter, 96mm, CL: 1.5	SCHNEIDER	1
		4	0-500V AC Digital Voltmeter, 96mm, CL: 1.5	SCHNEIDER	1
		5	Ammeter + Voltmeter selector switch	KAYCEE/RECOM	2
		6	R-Y-B Indication Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		7	On / Off / Trip Indcation Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		8	6A TPN MCB, 10KA	LEGRAND/SIEMENS/L&T	1
		9	6A DP MCB, 10KA	LEGRAND/SIEMENS/L&T	2
40A MCCB FEEDER		1	40A MCCB, 50KA WITH Thermal Magnetic release for O/C & S /C Protetion. Extended Door Drive Kit with 1NO + 1NC Aux. Switch & 1No Alarm Contact	LEGRAND/SIEMENS/L&T	1
		2	On / Off / Trip Indcation Lamp, LED Type, 230V AC	VAISHNO/SIEMENS	3
		3	6A DP MCB, 10KA	LEGRAND/SIEMENS/L&T	1
	4	4	4 Way Power Terminal	DESUN	1
32A SFU FEEDER		1	32A TPN Switch Fuse Unit with 32A Fuse Link	lEGRAND/SIEMENS/L&T	1
	3	2	4 Way Power Terminal	DESUN	1
6A MCB FEEDER		1	6A DP MCB, 10KA	LEGRAND/SIEMENS/L&T	1
	1	2	Stud Type Power Terminal	ELMEX/ CW	2

Type, Physical Dimension of panel, Bus Bar Size Type of Installation

SL.NO.	ITEMS	APPROXIMATE ENCLOSURE SIZE (H X W X D) mm	AL. BUS BAR SIZE	INSTALLATION DETAILS
1	MAIN LT PANEL IN THE PROPOSED SUB-STATION	2350 X 8100 X 1250 / 600	PH: 2 X 2½" X 1/2" N: 1 X 2½" X 1/2"	FLOOR MOUNTED
2	230 KVAR CAPACITOR BANK PANEL	2350 X 2700 X 550	PH: 1 X 2½" X 1/2" N : 1 X 2½" X 1/2"	FLOOR MOUNTED
3	180 KVAR CAPACITOR BANK PANEL	2350 X 2750 X 550	PH: 1 X 2½" X 1/2" N : 1 X 2½" X 1/2"	FLOOR MOUNTED
4	MAIN POWER DISTRIBUTION BOARD IN SWITCH ROOM OF HOSPITAL BUILDING	2350 X 3350 X 1150 / 550	PH :2 X 2" X 1/2" N: 1 X 2" X 1/2"	FLOOR MOUNTED
5	SUB DISTRIBUTION PANEL -1 IN GR. FL. SWITCH ROOM OF HOSPITAL BUILDING	2350 X3700 X 550	PH: 1 X 2" X 1/2" N : 1 X 1" X 1/2"	FLOOR MOUNTED
6	SUB DISTRIBUTION PANEL -2 IN GR. FL. SWITCH ROOM OF HOSPITAL BUILDING	2350 X 2250 X 550	PH: 1 X 2" X 1/2" N : 1 X 1" X 1/2"	FLOOR MOUNTED
7	SUB DISTRIBUTION PANEL -3 IN GR. FL. SWITCH ROOM OF HOSPITAL BUILDING	2350 X 2800 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
8	SUB DISTRIBUTION PANEL - 4 IN GR. FL.. SWITCH ROOM IN HOSPITAL BUILDING	2350 X 2250 X550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
9	SUB DISTRIBUTION PANEL - 5 IN 1ST. FL.. SWITCH ROOM IN HOSPITAL BUILDING	2350 X 2250 X550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
10	SUB DISTRIBUTION PANEL - 6 IN 5TH. FL. SWITCH ROOM IN HOSPITAL BUILDING	2350 X 2250 X550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
11	POWER DISTRIBUTION BOARD - 1 IN GR. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 2800 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
12	POWER DISTRIBUTION BOARD - 2 IN 1ST. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 2800 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
13	POWER DISTRIBUTION BOARD - 3 IN 2ND. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 3650 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
14	POWER DISTRIBUTION BOARD - 4 IN 3RD. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 2800 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
15	POWER DISTRIBUTION BOARD - 5 IN 4TH. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 3650 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
16	POWER DISTRIBUTION BOARD - 6 IN 5TH. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 3650 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
17	POWER DISTRIBUTION BOARD - 7 IN 6TH. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 3650 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
18	POWER DISTRIBUTION BOARD - 8 IN 7TH. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 2250 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
19	POWER DISTRIBUTION BOARD - 9 IN 8TH. FL. SWITCH ROOM OF RESEARCH BUILDING	2350 X 2250 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED
20	EMERGENCY POWER DISTRIBUTION BOARD - 1 IN GR. FL. OF RESEARCH BUILDING	1575 X 1400 X 5OO	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
21	EMERGENCY POWER DISTRIBUTION BOARD - 2 IN 1ST. FL. OF RESEARCH BUILDING	850 X 1100 X 300	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
22	EMERGENCY POWER DISTRIBUTION BOARD - 3 IN 2ND. FL. OF RESEARCH BUILDING	900 X 1100 X 300	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
23	EMERGENCY POWER DISTRIBUTION BOARD - 4 IN 3RD. FL. OF RESEARCH BUILDING	1575 X 1400 X 5OO	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
24	EMERGENCY POWER DISTRIBUTION BOARD - 5 IN 4TH. FL. OF RESEARCH BUILDING	900 X 1100 X 300	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
25	EMERGENCY POWER DISTRIBUTION BOARD - 6 IN 5TH. FL. OF RESEARCH BUILDING	900 X 1100 X 300	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
26	EMERGENCY POWER DISTRIBUTION BOARD - 7 IN 6TH. FL. OF RESEARCH BUILDING	900 X 1100 X 300	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
27	EMERGENCY POWER DISTRIBUTION BOARD - 8 IN 7TH. FL. OF RESEARCH BUILDING	850 X 1100 X 300	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
28	EMERGENCY POWER DISTRIBUTION BOARD - 9 IN 8TH. FL. OF RESEARCH BUILDING	1575 X 1400 X 5OO	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED
29	EMERGENCY POWER DISTRIBUTION BOARD – 1– 6 IN GR. FL. TO 5TH. FL. OF RESEARCH BUILDING	1575 X 1400 X 5OO	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	WALL MOUNTED

Type, Physical Dimension of panel, Bus Bar Size Type of Installation

30	D.G CONTROL PANEL	2350 X 2250 X 550	PH: 1 X 2" X1/2" N: 1 X 1" X 1/2"	FLOOR MOUNTED

PROFORMA OF BANK GUARANTEE FOR
(ISD / PERFORMANCE)

To
NPCC Ltd.,
Eastern Zone
Kolkata.

"NPCC" which expression shall include its successors and assigns/ supply order No…… dated …….. (hereinafter called the contract) to M/s. …….. (hereinafter called the contractor / supplier) at a total price of Rs…… subject to the terms and conditions contained in the contract.

WHEREAS the terms and conditions of the contract require the contractor to furnish a bank guarantee for Rs…….. (Rupees……..) for proper execution and due fulfillment of the terms and conditions contained in the contract.

We, the …….. Bank, (hereinafter called the "Bank") do hereby unconditionally and irrevocably undertake to pay to NPCC immediately on demand in writing and without protest/or demur all moneys payable by the contractor /supplier to NPCC in connection with the execution/supply of and performance of the works/equipment. Inclusive of any loss, damages, charges, expenses and costs caused to or suffered by or which would be caused to or suffered by NPCC by reason of any breach by the contractor/supplier of any of the terms and conditions contained in the contract as specified in the notice of demand made by NPCC to the bank. Any such demand made by NPCC on the bank shall be conclusive evidence of the amount due and payable by the bank under this guarantee. However, the Bank's liability under this guarantee, shall be limited to Rs……. in the aggregate and the bank hereby agrees to the following terms and conditions.

(i) This guarantee shall be a continuing guarantee and irrevocable for all claims of NPCC as specified above and shall be valid during the period specified for the performance of the contract including the period of maintenance /warranty i.e. up to ……

(ii) We, the said bank further agree with NPCC that NPCC shall have the fullest liberty without our consent and without affecting in any manner our obligations and liabilities hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of contract by the contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by NPCC or any indulgence by NPCC to the contractor or by any such matter or thing whatsoever, which under the law relating to the sureties would, but for this provision, have effect of so relieving us.

(iii) This guarantee / undertake shall be in addition to any other guarantee or security whatsoever NPCC may now or at any time have in relation to the performance of the works/ equipment and the company shall have full re-course to or enforce this security in performance to any other security or guarantee which the NPCC may have or obtained and there shall be no forbearance on the part of the company in enforcing or requiring enforcement of any other security which shall have the effect of releasing Bank from its full liability. It shall not be necessary for NPCC to proceed against the said contractor/supplier before proceeding against the Bank.

(iv) This guarantee / undertaking shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier / contractor, but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to NPCC in terms thereof are paid by the Bank.

(v) The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the Bank in terms hereof, shall not be otherwise effected of suspended by reasons of any dispute or disputes having been raised by the supplier/ contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial of liability by the Bank to NPCC in terms hereof.

We, the said Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of NPCC in writing. Unless a claim is made in writing within three months from the date of expiry of this guarantee i.e. …….. we shall be relieved from all liabilities under this guarantee thereafter.

Signed this ……. day of …….. at ……..

For and on behalf of bank

WITNESS

1._____

2._____

	Name of work: Supply, installation,testing & commissioning of 1.25MVA capacity (1No. 750 KVA & 1No. 500KVA Transformers) 6.0 / 0.433KV Sub - Station along with all other ancillary Works in C.N.C.I Kolkata					
			ABSTRACT OF COST			
Sl No	Name of Work	Estimated amount	% above/below or at par (in figure)	% above/below or at par (in words)	Quoted amount(in figure)	Quoted amount(in words)
1	Supply & Installation of Equipment)	38354144				
2	Operation & maintenance	662464				
	TOTAL(In Figure)	39016608				
	TOTAL(In Word)					
				Signature of Bidder		
	NOTE:-					
		BIDDERS ARE TO QUOTE THEIR RATE IN THIS SHEET ONLY				

	SCHEDULE OF WORKS				
	Name of work: Supply, installation,testing & commissioning of 1.25MVA capacity (1No. 750 KVA & 1No. 500KVA Transformers) 6.0 / 0.433KV Sub - Station along with all other ancillary Works in C.N.C.I Kolkata				
	PART - A (Supply & Installation of Equipment)				
Sl.No.	Description of works	Qty.	Unit	Rate (RS.)	Amount (RS.)
1	Supply, delivery and installation at site 3-Panel, 6.0KV, 250MVA fault level, 800A, motorised Vacuum Circuit Breaker Switch Board along with all other accessories complete in all respect as per technical specification S.L.D and direction of E.I.C	1	Set	1330200	1330200
2	Supply, delivery and installation at site Vacuum Pressure Impregnated, 6.0 / 0.433KV, Dyn-II, natural air cooled, copper wound, Dry Type Distribution Transformers of following capacity for indoor installation along with all other accessories complete in all respect as per technical specification and direction of E.I.C:			0	0
	i) 500KVA ----------	1	Each	1583800	1583800
	ii) 750KVA----------	1	Each	2097100	2097100
3	Supply, deliver and installation at site of 110V, 65AH capacity sealed and maintenance free VRLA battery bank, suitable battery charger having float and boost charging facilities with integral D.C distribution Board along with all other accessories complete in all respect as per technical specification and direction of E.I.C	1	Set	266200	266200
4	Supply, delivery and installation at site of 1250A Main L.T Power Distribution Board with two Incomers and one Bus-Coupler A.C.Bs, along with in all respect as per technical , S.L.D and direction of E.I.C	1	Set	3613300	3613300
5	Supply, delivery and laying at site 11KV (E) grade XLPE insulated 3-core , 300sqmm aluminium conductor galvanised steel tape armoured cable as per technical specification and direction of E.I.C ----------	70	R/M	3381.30	236691

6	Supply, delivery and laying at site 1.1KV grade XLPE insulated aluminium conductor galvanised steel tape armoured cable of following sizes as per technical specification and direction of E.I.C:				0
	A) On wall / Suface including S&F MS clamps with earthing attaching in 2X 10 SWG GI (Hot dip) wire, making holes etc. as necessary, mending good damages and painting as per technical specification and direction of E.I.C :				0
	i) 3½ core 400sqmm----------	80	R/M	3322.15	265772
	ii) 3½ core 300sqmm----------	107	R/M	2688.50	287669.5
	iii) 3½ core 240sqmm----------	6	R/M	2216.35	13298.1
	iv) 3½ core 185sqmm----------	259	R/M	1776.50	460113.5
	v) 3½ core 150sqmm----------	243	R/M	1425.95	346505.85
	vi) 3½ core 120sqmm----------	500	R/M	1218.85	609425
	vii) 3½ core 95sqmm----------	275	R/M	975.65	268303.75
	viii) 3½ core 70sqmm----------	137	R/M	791.35	108414.95
	ix) 3½ core 50sqmm----------	217	R/M	597.55	129668.35
	x) 3½ core 35sqmm----------	237	R/M	467.40	110773.8
	xi) 3½ core 25sqmm----------	100	R/M	385.70	38570
	xii) 4 core 16sqmm	800	R/M	317.30	253840
	B) Through existing R.C.C / Hume / G.I pipe / open masonry trench as per technical specification and direction of E.I.C			0.00	0
	i) 3½ core 400sqmm----------	9	R/M	3350.65	30155.85
	ii) 3½ core 300sqmm----------	3	R/M	2666.65	7999.95
	iii) 3½ core 240sqmm----------	18	R/M	2194.50	39501
	iv) 3½ core 185sqmm----------	6	R/M	1754.65	10527.9
	v) 3½ core 150sqmm----------	7	R/M	1404.10	9828.7
	vi) 3½ core 120sqmm----------	15	R/M	1197.00	17955
	vii) 3½ core 95sqmm----------	5	R/M	960.45	4802.25
	viii) 3½ core70sqmm----------	3	R/M	776.15	2328.45
	ix) 3½ core 50sqmm----------	3	R/M	573.80	1721.4
	x) 3½ core 35sqmm----------	3	R/M	449.35	1348.05

	C) One No. cable above 185sqmm as mentioned below in underground trench 460mmwide x 760mm average depth with brick protection on the top of the cable with 8 (eight) nos bricks per metre including filling the space between the bricks and cable and also the trench with shifted soil, leveling up and restoring the surface duly rammed as per specification and direction of EIC			0.00	0
	i) 3½ core 400 sqmm ----------	431	R/M	3420.00	1474020
	ii) 3½ core 300 sqmm----------	10	R/M	2736.00	27360
	iii) 3½ core 240 sqmm ----------	446	R/M	2263.85	1009677.1
	D) One No. cable from 35sqmm and up to 185sqmm as mentioned below in underground trench 460mm wide x 760mm average depth with brick protection on the top of the cable with 8 (eight) Nos. bricks per metre including filling the space between the bricks and cable and also the trench with shifted soil, leveling up and restoring the surface duly rammed as per specification and direction of EIC			0.00	0
	i) 3½ core 185sqmm ----------	35	R/M	1834.45	64205.75
	ii) 3½ core 150sqmm ----------	30	R/M	1466.80	44004
	iii) 3½ core 120sqmm----------	285	R/M	1259.70	359014.5
	iv) 3½ core 95sqmm ----------	30	R/M	1023.15	30694.5
	v) 3½ core 70sqmm----------	10	R/M	838.85	8388.5
	vi) 3½ core 50sqmm ----------	30	R/M	645.05	19351.5
	vii) 3½ core 35sqmm----------	10	R/M	520.60	5206

7	Supply, delivery and laying at site on wall of 1.1KV grade P.V.C				0
	insulated 2.5sqmm stranded copper conductor galvanized steel				0
	i) 5 Core ----------	200	R/M	442.00	88400
	ii) 3 Core ----------	200	R/M	317.00	63400
	iii)16 Core----------	100	R/M	1076.00	107600
8	End termination of H.T cable with supply & fixing of 11KV (E)			0.00	0
	grade 3- Core Push-on / Heat Shrinkable type end termination kit suitable for 3-Core x 300 sqmm Aluminium conductor XLPE insulated armoured cable as per technical specification complete in all respect including supply of al necessary materials and hard wares as per direction of E.I.C. ----------	6	Set	16580.00	99480
9	Supplying and fixing of brass compression gland complete with brass gland, brass ring & rubber ring for dust and moisture proof entry of XLPE / PVC insulated armoured cables as below.			0.00	0
	a) 3½ x 400sqmm Al. conductor ----------	20	Each	417.00	8340
	b) 3½ x 300sqmm Al. conductor ----------	2	Each	417.00	834
	c) 3½ x 240sqmm Al. conductor ----------	8	Each	310.00	2480
	d) 3½ x 185sqmm Al. conductor ----------	6	Each	310.00	1860
	e) 3½ x150 Al. conductor ----------	8	Each	214.00	1712
	f) 3½ x 120sqmm Al. conductor ----------	10	Each	214.00	2140
	g) 3½ x 95sqmm Al. conductor ----------	6	Each	214.00	1284
	h) 3½ x 70sqmm Al. conductor ----------	6	Each	137.00	822
	i) 3½ x 50sqmm Al. conductor ----------	8	Each	137.00	1096
	j) 3½ x 35sqmm Al. conductor ----------	6	Each	106.00	636
	k) 3½ x 25sqmm Al. conductor ----------	6	Each	106.00	636
	l) 3 /4 / 5/ 16 core 2.5 sqmm copper conductor --------	20	Each	39.00	780
	m) 4 core 16sqmm Al. conductor ----------	30	Each	69.00	2070
10	Finishing the end of following XLPE / PVC insulated armoured cable by crimping method incl. supplying and fixing solderless socket (Dowel's make), tape, anticorrosive paste & jointing materials complete as per technical specification and direction of EIC.			0	0
	a) 3½ x 400sqmm Al. conductor ----------	20	Each	1263.00	25260
	b) 3½ x 300sqmm Al. conductor ----------	2	Each	829.00	1658
	c) 3½ x 240sqmm Al. conductor ----------	8	Each	646.00	5168
	d) 3½ x 185sqmm Al. conductor ----------	6	Each	467.00	2802
	e) 3½ x 150sqmm Al. conductor ----------	8	Each	351.00	2808
	f) 3½ x 120sqmm Al. conductor ----------	10	Each	299.00	2990
	g) 3½ x 95sqmm Al. conductor ----------	6	Each	231.00	1386
	h) 3½ x 70sqmm Al. conductor ----------	6	Each	190.00	1140
	i) 3½ x 50sqmm Al. conductor ----------	8	Each	142.00	1136
	j) 3½ x 35sqmm Al. conductor ----------	6	Each	110.00	660
	k) 3½ x 25sqmm & 4 x 16 x sqmm Al. conductor ----------	6	Each	83.00	498
	l) 3 /4 / 5 core 2.5sqmm copper conductor ----------	20	Each	35.00	700
11	Supply, delivery and installation at site floor mounting, cubicle type L.T Capacitor Panels of following capacity along with all of its accessories complete in all respect as per technical specification SLD and direction of EIC				0

	i)180 KVAR panel ----------	1	Each	997300.00	997300
	ii) 230 KVAR panel ----------	1	Each	1008700.00	1008700
12	Supply, delivery and installation at site factory assembled silent 250KVA Diesel Engine- Alternator set mounted on a common base frame along with fuel tank, residential silencer, AVM pads, battery with its leads and charger, genset controller, first fill of lube oil, AMF control panel and acoustic enclosure, complete in all respect as per technical specification and direction of EIC. ----	1	Set	2415000	2415000
13	Supply, delivery and installation at site floor mounting, cubicle type D.G control panel along with all of its accessories complete in all respect as per technical specification and direction of E.I.C				0
		1	Each	494400	494400
14	Supply, delivery and installation at site floor mounting, cubicle type L.T power distribution board along with all of its accessories complete in all respect as per technical specification, Single Line Diagram and direction of E.I.C				0
	A) For Research Building				0
	i) Ground Floor P.D.B -1 ----------	1	Each	5,30,800.00	530800
	ii) First Floor P.D.B -2 ----------	1	Each	5,80,300.00	580300
	iii) Second Floor P.D.B - 3 ----------	1	Each	9,81,800.00	981800
	iv) Third Floor P.D.B - 4 ----------	1	Each	8,79,100.00	879100
	v) Fourth Floor P.D.B - 5 ----------	1	Each	9,74,900.00	974900
	vi) Fifth Floor P.D.B - 6 ----------	1	Each	7,17,200.00	717200
	vii) Sixth Floor P.D.B - 7 ----------	1	Each	6,26,700.00	626700
	viii) Seventh Floor P.D.B -8 ----------	1	Each	6,73,100.00	673100
	ix) Eighth Floor P.D.B -9 ----------	1	Each	4,42,100.00	442100
	B) For Hospital building			0.00	0
	i) Ground Floor Main P.D.B ----------	1	Each	1435700.00	1435700
	ii) Ground Floor Sub P.D.B -1----------	1	Each	1232500.00	1232500
	iii) Ground Floor Sub P.D.B -2 ----------	1	Each	503400.00	503400
	iv) Ground Floor Sub P.D.B -3 ----------	1	Each	6,58,400.00	658400
	v) Ground Floor Sub P.D.B -4 ----------	1	Each	2,43,400.00	243400
	vi) First Floor Sub P.D.B -5 ----------	1	Each	4,85,400.00	485400
	vii) Fifth Floor Sub P.D.B -6----------	1	Each	4,76,700.00	476700

15	Supply, delivery and installation at site wall mounting, cubicle type Emergency Power Distribution board along with all of its accessories complete in all respect as per technical specification, SLD, and direction of EIC.				0
	A) For Research Building				0
	i) Ground Floor Emergency P.D.B -1----------	1	Each	173300	173300
	ii) First Floor Emergency P.D.B -2 ----------	1	Each	98500	98500
	iii) Second Floor Emergency P.D.B - 3 ----------	1	Each	114300	114300
	iv) Third Floor Emergency P.D.B – 4 ----------	1	Each	128100	128100
	v) Fourth Floor Emergency P.D.B – 5 ----------	1	Each	115100	115100
	vi) Fifth Floor Emergency P.D.B - 6----------	1	Each	115500	115500
	vii) Sixth Floor Emergency P.D.B – 7 ----------	1	Each	115900	115900
	viii) Seventh Floor Emergency P.D.B – 8 ----------	1	Each	100800	100800
	ix) Eighth Floor Emergency P.D.B - 9 ----------	1	Each	191900	191900
	B) For Hospital building			0	0
	i) Ground Floor Emergency P.D.B -1 ----------	1	Each	188800	188800
	ii)First Floor Emergency P.D.B -2 ----------	1	Each	188200	188200
	iii) Second Floor Emergency P.D.B -3 ----------	1	Each	189600	189600
	iv) Third Floor Emergency P.D.B -4 ----------	1	Each	190000	190000
	v) Fourth Floor Emergency P.D.B -5 ----------	1	Each	190400	190400
	vi) Fifth Floor Emergency P.D.B -6 ----------	1	Each	195700	195700
16	Fabrication, supply, delivery and erection at site MS truss system for supporting the portion of exhaust pipe as mentioned in Item No 16 above running horizontally from DG set up to the wall of the research building made of 4Nos (35x35x6)mm MS equal angle and 25x6mm MS flat by welding and the same shall be erected horizontally fixing one end over a MS truss system of same specification as above erected on 2 pair of 80mm dia. GI pipe each of length 6Mtrs grouted vertically at a suitable place near the D.G set.. Pipes in a pair shall be 300mm apart and each pair of pipe shall be 2000mm apart. The other end of the truss shall be grouted on the wall of the research building by suitable means including painting as per technical specification, drawing and direction of EIC----------	1	Item	74800	74800

17	Fabrication, supply, delivery and fixing of 5mm thick , 150mm dia. additional length of exhaust pipe horizontally below the MS truss system as mentioned in Item No 16 above with proper clamping arrangement each set at approximately 2Mtrs apart. One end of the the pipe shall be flenged jointing with the excisting exhaust pipe of the D.G set and the other end shall be extended by welding towards the wall and then using proper bend /elbow etc. it shall be laid on wall vertically upward up to the top of the building. Necessary rigid clamping arrangements shall be grouted on the wall each set at 2 Mtrs apart for holding the pipe including supply of all fixing and jointing materials, welding, scafolding arrangement necessary for the work mending good damages to the building work, painting as per technical specification and direction of E.I.C----------	50	R/M	5047	252350
				0	0
18	Supply, delivery and fitting fixing 2 x 36W industrial luminaire complete with 2Nos fluorescent lamps, stove enameled reflector consisting of TMC-55 mounting rail and TKA reflector directly on wall / ceiling with H.D wood block and suitable size M.S fastener, ceiling plate, nipples etc. as required as per direction of EIC.------	8	Each	3077	24616
	Type: Phillips TKC 24/236 HPF or approved equivalent			0	0
19	Supply, delivery and fitting fixing 2 x 36W industrial luminaire complete with 2Nos fluorescent lamps, stove enameled reflector consisting of TMC-55 mounting rail and TKA reflector being suspended 25cm below the ceiling with 2Nos. 20mm dia. EI conduit (14SWG) supports including S & F EI conduit, ball socket / socket type ceiling plate and connecting the length of PVC insulated wire and painting etc. as required by 3 x 1.5 sqmm stranded copper conductor wire of length 1.10Mtrs as per direction of EIC.----------	16	Each	3125	50000
	Type: Phillips TKC 24/236 HPF or approved equivalent.			0	0

20	Supply, delivery and fitting fixing on wall 250W metal halide street light luminaire with single piece pressure die cast aluminium housing, POT Optics reflector and heat resistant toughened flat glass cover (IP-65) suitable for 1 x HPI- T 250W lamp complete with C.G box with all other accessories complete including supply and fixing of 1 x HPI – T 250W lamp being projected from t wall of the building including making holes / providing clamping arrangement and necessary GI reducer as required. S & F 40mm dia. GI pipe (ISI- medium) quality 1.5Mtrs average length having suitable bend S & F necessary length of 1.5 sqmm PVC insulated single core stranded annealed copper wire and making connections as required and mending good damages to wall including painting etc as per direction of EIC. ---	6	Each	12002	72012
	Type: Philips SGP 325/ HPI-T 250 GLA or approved equivalent			0	0
21	Supply, delivery and fitting fixing wall mounted decorative			0	0
	luminaire complete with all other accessories including supply and fixing 1No. 18W PL-C lamp, making connection as required and mending good damages to wall including painting as per direction of EIC ----------	24	Each	3375	81000
	Type: Philips HWS360 1x PL-C 18 or approved equivalent			0	0
22	Supply, delivery and fitting fixing on wall of 230V, single phase heavy duty exhaust fan of 380mm sweep, 1400RPM including supply & fixing of suitable size louver shutter with necessary bolts, nuts & washers (6mm dia. x 62mm long)and making good damages and smooth cement finish etc as practicable as possible and providing necessary length of PVC insulated wire and making connection as per direction of EIC ----------	12	Each	4448	53376
23	Supply, delivery and fitting fixing at site 1200mm sweep high speed ceiling fan of 230v rating complete with stepped regulator,			0	0
	blades, canopy, fork, rubber bush etc. including S & F connecting wire for down rod up to 30cmm including painting the rod with approved paint and making necessary connection as required by 2 x 1.5sqmm flexible copper wire as per direction of EIC ----------	24	Each	2782	66768
24	Distribution wiring in 1.1 KV grade PVC insulated and unsheathed copper wire (approved make) in 20 mm size PVC rigid conduit 'FR' (Precision make) including necessary fittings as required as per technical specification and direction of EIC			0	0
	a) 3 x 4 sqmm + 1 x 2.5sqmm + 1 x 1.5 sqmm ECC----------	100	R/M	188	18800
	b) 2 x 4 sqmm + 1 x 1.5sqmm ECC ----------	1000	R/M	131	131000

	c) 2 x 2.5sqmm + 1 x 1.5sqmm ECC ----------	240	R/M	109	26160
	d) 3 x 6sqmm + 1 x 2.5sqmm + 1 x 1.5sqmm ECC----------	700	R/M	257	179900

25	Distribution wiring in 2 x 1.5sqmm single core stranded 'FR' PVC insulated & unsheathed copper wire (approved make) in 20mm size PC rigid conduit 'FR" (Precision make), with 1 x 1.5 sqmm single core stranded 'FR' PVC insulated & unsheathed copper wire for ECC, to light/fan/ call bell points with Piano Key type switch fixed on MS CRC sheet steel metal (16SWG) switch board cum JB on wall complete with 2Nos suitable size " Ph & N " copper bar with holes fixed on bakelite / hard rubber insulation over the JB welded chairs including bakelite / Perspex (wall matching color) top cover 3mm thick and including 175mm x 100mm x 65mm inspection box , making earthing attachment, painting the MS box and mending good damages to original finish:			0	0
	a) Average run 8 Mtrs ----------	280	Pt	712	199360
26	Distribution wiring in 2 x 1.5sqmm single core stranded 'FR' PVC			0	0
	insulated & unsheathed copper wire (approved make) in 20mm			0	0
	a) On Board ----------	20	Pt	60	1200
				0	0
27	Supplying and fixing 250V, 3 pin 15A flush type plug socket with 15A Piano type (Anchor make) switch on sheet metal box with Bakelite top cover and attachment including S & F sheet metal box of size 175mm x 100mm (16 SWG) with 3mm thick Bakelite top cover.----------	20	Pt	261	5220
28	Supplying and fixing 250V, 5A flush type plug socket with switch (Anchor make), without plug top, on existing sheet metal switch board with Bakelite / Perspex top cover by screws after making housing for plug switch by cutting Bakelite / Perspex top cover and making necessary connections with PVC wire and earth continuity wire ETC as per direction of EIC ----------	20	Each	51	1020
29	Supply, delivery at site and fixing on wall ISI marked 5Kg capacity Dry Powder type Fire Extinguisher fitted with gun metal wheel cap conforming to IS : 2171 complete with initial refill consisting of ISI marked Co2 gas cartridge of 120gms capacity conforming to IS ; 4947 and ISI marked Sodium base dry chemical powder conforming to IS : 4308 as per direction of EIC----------	14	Each	4193	58702
30	Supply, delivery at site and fixing of round bottom type fire bucket made of 24 SWG G.I sheet conforming to IS : 2546 half filled with fine dry sand including supplying MS mounting bracket as per direction of EIC ----------	12	Each	665	7980
31	Supply, delivery at site and placing 12mm thick rubber mat of 11KV grade each of size 2M x !M as per direction of EIC ----	8	Each	5099	40792
32	Supply, delivery at site and fixing First Aid Box complete with all accessories and medicine as per direction of EIC----------	1	Each	1000	1000

33	Supply, delivery at site and fixing electric shock treatment chart duly framed with glass cover as per direction of EIC -----	2	Each	600	1200
34	Measurement of insulation resistance of both L T and HT equipment by insulation Megger , measurement earth resistance of individual earth pit by earth Megger, statutory High Pressure testing of both HT and LT equipment and obtaining necessary clearance from Directorate of Electricity govt. of West Bengal as per technical specification and direction of EIC ----------	1	Item	250000	250000
35	Supply, delivery and fitting and fixing chequered plate of 7mm thick over the masonry duct inside the substation flushing the floor level including painting and mending good damages of the building work as per direction of EIC ----------	35	SqM	4344	152040
36	Fabrication, supply delivery at site of 1.2 Mtr wide cable rack made of 2x50x50x6mm equal angle placed longitudinally 1.2Mtr apart over which flat iron and angle iron of size 25x5mm and 25x25x5mm respectively each of length 1.2Mtr shall be welded alternately crosswise 300mm apart Either side of the tray 2No angle iron leg each of length 750mm and of size 50x50x5)mm per meter length of the tray shall rigidly be fixed on the ceiling vertically downward by rowel bolt of adequate size. The tray shall be fixed horizontally at the bottom end of the legs by 19mm bolts, double nuts, and spring washers after making drilled holes as per technical specification, drawing , design and direction of EIC ----------	30	R/M	4120	123600
37	Fabrication, supply, delivery at site of 750mm wide ladder for cable lying made of 2x50x50x6mm equal angle placed longitudinally 750mm apart over which pieces of flat iron (25x5mm) and angle iron (25x25x5mm) each of length 750mm shall be welded alternately 250mm apart. One end of the ladder shall be fixed rigidly in the ground and the other end shall be fixed on the cable tray as per specification and direction of EIC.--	50	R/M	2677	133850
38	Transfer of entire load of both Research Building & Hospital building from old sub-station to new sub-station step by step hiring a Diesel Generator set of suitable capacity having acoustic enclosure to keep the power supply uninterrupted at the time of transfer of load from old system to new system including supply of Diesel, Lubricating oil, 5 core flexible copper conductor cable, necessary tools and plants, necessary operating personnel as required on 24 Hrs. basis as per direction of EIC ----------	1	Item	700000	700000
39	Supply, delivery and laying of P.V.C /G.I pipes & fittings (medium duty) conforming to ASTMD- 1785 for P.V.C pipe in under ground trench 760mm average depth for cable protection of following size as per direction of EIC			0	0
	a) 150mm dia. P.V.C pipe ----------	26	R/M	1375	35750
	b) 100mm dia. P.V.C pipe ----------	20	R/M	755	15100

	c) 150mm dia. G.I pipe ----------	26	R/M	1766	45916
40	Supply & fixing only fan clamp for RC ceiling as per specification and direction of E.I.C ----------	24	Each	50	1200
41	Supply, delivery and fixing at site of 600mm sweep 230V, AC , single phase pedestal type air circulator complete with stepped regulator as per direction of EIC. ----------	2	Each	9528	19056
42	Earthing with 80mm dia GI pipe (TATA- medium) x 3.0Mtrs long and 1No. 65mmx8mm galvanized (Hot Dip) steel strip (4Mtrs long) 20mm dia. x 125mm long galvanized bolts, double nuts, double washers including finishing both ends by making holes etc. and S & F 80mm dia.pipe (ISI – medium) protection 3Mtrs long to be filled with bitumen partly under the ground level and partly above ground level to an average depth of 3.65 Mtrs as per technical specification and direction of EIC----------	6	Set	5370	32220
43	Transformer neutral earthing with copper plate(610mm x 610mm x 3mm thick) duly silverized having weight of 9.84 KG and 1No. 25mm x 5mm copper strip (3.2Mtrs long) duly silverized and 1No. 6sqmm PVC insulated stranded copper wire (4Mtrs long) including S & F 15mm dia. GI pipe (ISI- medium) protection (4Mtrs long) to be filled with bitumen, partly under the ground leve and partly above ground level to an average depth of 3.65 Mtrs below the ground level and restoring the surface duly rammed and providing 3.0Mtrs long 25mm dia. GI pipe (ISI- medium) for periodic treatment, including providing masonry enclosure on the top of the earth electrode of overall size 86.36x86.36x46cm deep (below G.L) complete with cemented brick work (1: 6) of 25cm width, duly plastered with cement mortar (inside) CI hinged inspection cover of size 36.56 x 35 56 cm with locking arrangement, GI reducer and treatment of soil by using salt and charcoal or coke for plate electrode for soft soil ---	4	Set	10359	41436
44	Supplying and fixing earth bus-bar of galvanized (Hot Dip) MS flat 65mm x 8mm on wall having clearance of 6mm from the wall including providing drilled holes on the bus-bar complete with GI bolts, nuts, washers, spacing insulator as required as per direction of EIC ----------	300	R/M	292	87600
45	Connecting the neutral of transformer / Earth bus-bar to earth electrode including S & F galvanized (Hot Dip) MS strip 65mm x 8mm on wall / floor with GI saddles & insulating the same by one layer of PVC strip over one layer of ampere tape as per direction of EIC ----------	200	R/M	292	58400

46	Connecting the equipment body to earth bus-bar including S & F 50mm x 6mm galvanized (Hot Dip) MS flat on wall / floor with GI saddle as required and connection to equipment including drilling holes, bolts, nuts, washers complete as per technical specification and direction of EIC ----------	100	R/M	175	17500
47	Providing masonry enclosure on the top of the earth electrode of overall size 86.36cm x 86.36cm x 46cm deep (below ground level) complete with cemented brick work (1:6) of 25cm width duly plastered with cement mortar (inside) CI hinged inspection cover of size 36.56cm x 36.56cm with locking arrangement GI			0	0
	reducer including drilling 46Nos 12 mm dia. holes on GI pipe as per technical specification and direction of EIC---	6	Set	1285	7710
48	Treatment of soil by using salt and charcoal or coke for pipe electrode for soft soil ----------	6	Item	559	3354
49	Supplying & fixing 415V, 16-32A per way, TPN MCBDB with sheet steel enclosure double door with IP- 42/43 protection with 4 pole isolator as incomer and SPMCBs ('C' Curve, 10KA) as outgoing on wall with necessary fixing arrangement and mending good the damages to original finish including interconnection with suitable size of copper wire and neutral link & provision of earthing attachment & painting as per direction of EIC :			0	0
	i)4-way, 40A 4-pole isolator, 12Nos SPMCBs Enclosure (607715) LEGRAND or approved equivalent	20	Each	5038	100760
50	Supplying and fixing 250V, 6-10A per way, SPN MCBDB with sheet steel enclosure double door with IP- 42/43 protection with DP isolator as incomer and SPMCBs ('C' curve, 10KA as outgoing, on wall with necessary fixing arrangement and mending good the damages to original finish including interconnection with suitable size of copper wire and neutral link & provision of earthing attachment & painting as per direction of EIC:			0	0
	I) 2 + 8 way,40A DP isolator, 8Nos SPMCBs Enclosure (607712) LEGRAND or approved equivalent.----------	60	Each	3019	181140
51	Testing and commissioning the entire installation including carry out the functional tests of all the protective relays individually using relay testing set and calibrate the same according to the system condition after obtaining clearance from Directorate of Electricity Govt. of W. Bengal as per direction of EIC(obtaining clearance is bidders resposibility) ----------	1	Item	200000	200000

52	Dismantling and removing the old H.T switch gear panels, 1No 250 KVA transformer and 1 No 500KVA transformers, L.T panel boards from old sub-station and from different floors of Research and Hospital Buildings, cable, ETC after disconnecting the power supply using tripod chain pulley block ETC as required including loading and loading and stacking the same to store as per direction of EIC----------	1	Item	150000	150000
	Total of PART- A (Supply and Installation)				37974400
	Add 1.00% towards construction workers' welfare cess				379744
	GROSS TOTAL FOR PART-A				**38354144**
	PART – B (Operation & Maintenance)				
1	Operation and maintenance of the entire installations under this contract from the date of handing over for a period of 365 days engaging Supervisor(as & when required) one Electrician and one wire man on 24Hrs basis including supply of all Tools and Plants necessary for operation and maintenance work as per technical specification and direction of E.I.C ----------	365	days	1797.00	655905
	Total of PART- B				655905
	Add 1.00% towards construction workers' welfare cess				6559
	GROSS TOTAL FOR PART-B				662464

CONTRACT AGREEMENT

This agreement No. …….. between the National Projects Construction Corporation Limited (NPCC), a company incorporated under the Companies Act, 1956 having its Registered Office at 30-31, Raja House, Nehru Place, New Delhi- 110 019 and Corporate Office at Plot No. 67-68, Sector-25, Faridabad in the state of Haryana (hereinafter referred to as the "NPCC" which expression shall include its administrators, executors and assigns) of the one part and M/s. …… (hereinafter referred to as the 'Contractor' which expression shall unless the context requires otherwise include its administrators, successors, executors and permitted assigns) of the other part.

WHEREAS, NPCC, has desirous of Construction of ……..(SH: Construction of……..)(hereinafter referred to as the "PROJECT") on behalf of the Director, Chittaranjan National Cancer Institute, Kolkata (hereinafter referred to as "OWNER"), had invited tenders as per Tender documents vide ……..

AND WHEREAS M/s. …… participated in the above-referred tender vide their tender dated …….. and NPCC has accepted their aforesaid tender and award the contract for Construction of ……. on the terms and conditions contained in its Letter of Award No. ……dated ……..and the documents referred to therein, which have been unequivocally accepted by M/s. ……. vide their acceptance letter dated …….. resulting into a contract.

NOW THEREFORE THIS DEED WITNESSETH AS UNDER:

ARTICLE 1.0 – AWARD OF CONTRACT

1.1 SCOPE OF WORK

NPCC has awarded the contract to M/s. ……. for the work of Construction of …… on the terms and conditions in its letter of Award No. …….dated ……and the documents referred to therein. The award has taken effect from …… i.e. the date of issue of aforesaid letter of intent. The terms and expressions used in this agreement shall have the same meanings as are assigned to them in the "Contract Documents" referred to in the succeeding Article.

ARTICLE 2.0 – CONTRACT DOCUMENTS

2.1 The contract shall be performed strictly as per the terms and conditions stipulated herein and in the following documents attached herewith (hereinafter referred to as "Contract Documents").

a) NPCC Notice Inviting Tender vide No. ……. Dated……, along with subsequent amendments issued vide ref. no. ……..dated ……., …… dated…….., & ……..dated……., and NPCC's tender documents consisting of:

i) Form of Tender
ii) Instructions to tenderers
iii) General Conditions of Contract (GCC)
iv) Special Conditions of Contract
v) Technical Specifications
vi) Acceptance of Tender
vii) Tender Drawings
viii) Priced Schedule of Works/BOQ along with amendments/corrigendum issued vide ref. No. …….. dated ……of schedule items.

b) M/s. …… proposal letter No. ……. dated ….. opened Technical bid on …….. and Price bid on …… and subsequent communication.
i) Submission of offer vide letter dated ……
ii) Letter of Acceptance of Tender Conditions dated ……..
iii) Form of Tender dated ……

2.2 NPCC'S letter of Award No. ……dated ……including Abstract Price schedule as Annexure ……. and agreed Mile Stones as Annexure …… and subsequent communication:

i) Submission of acceptance of LOI and Bank Guarantee in lieu of Performance Guarantee vide letter No. ……dated ……..
ii) Copy of Bank Guarantee in lieu of Performance Guarantee No. ……dated …… amounting to Rs. ……. issued from ……. Bank Limited, ……., Kolkata –
iii) Confirmation of Bank Guarantee from ……Bank vide letter No. …….dated …… through EZO, NPCC letter No. ……..dated……...
iv) Copy of Power of Attorney as submitted with tender document.

2.3 All the aforesaid contract documents referred to in Para 2.1 and 2.2 above shall form an integral part of this Agreement, in so far as the same or any part thereof column, to the tender documents and what has been specifically agreed to by NPCC in its Letter of Intent. Any matter inconsistent therewith, contrary or repugnant thereto or deviations taken by the Contractor in its "TENDER" but not agreed to specifically by NPCC in its Letter of Intent, shall be deemed to have been withdrawn by the Contractor without any cost implication to NPCC. For the sake of brevity, this Agreement along with its aforesaid contract documents and letter of intent shall be referred to as the "Contract".

ARTICLE 3.0 – CONDITIONS & CONVENANTS

3.1 The scope of Contract, Consideration, terms of payments, advance, security deposits, taxes wherever applicable, insurance, agreed time schedule, compensation for delay and all other terms and conditions contained in NPCC's Letter of Award No. …… dated …… are to be read in conjunction with other aforesaid contract documents. The contractor shall duly perform the contract strictly and faithfully in accordance with the terms of this contract.

3.2 The scope of work shall also include all such items which are not specifically mentioned in the Contract Documents but which are reasonably implied for the satisfactory completion of the entire scope of work envisaged under this contract unless otherwise specifically excluded from the scope of work in the Letter of Intent.

3.3 Contractor shall adhere to all requirements stipulated in the Contract documents.

3.4 Time is the essence of the Contract and it shall be strictly adhered to. The progress of work shall conform to agreed works schedule/contract documents and Letter of Intent.

3.5 This agreement constitutes full and complete understanding between the parties and terms of the presents. It shall supersede all prior correspondence to the extent of inconsistency or repugnancy to the terms and conditions contained in Agreement. Any modification of the Agreement shall be effected only by a written instrument signed by the authorized representative of both the parties.

3.6 The total contract price for the entire scope of this contract as detailed in Letter of Intent is Rs. ……. (Rupees ……), which shall be governed by the stipulations of the contract documents.

ARTICLE 4.0 – NO WAIVER OF RIGHTS

4.1 Neither the inspection by NPCC or the Engineer-in-Charge or Owner or any of their officials, employees or agents nor order by NPCC or the Engineer-in-Charge for payment of money or any payment for or acceptance of, the whole or any part of the work by NPCC or the Engineer-in-Charge nor any extension of time nor any possession taken by the Engineer-in-Charge shall operate as waiver of any provisions of the contract, or of any power herein reserved to NPCC, or any right to damage herein provided, nor shall any waiver of any breach in the contract be held to be a waiver or any other or subsequent breach.

ARTICLE 5.0 – GOVERNING LAW AND JURISDICTION

5.1 The Laws applicable to this contract shall be the laws in force in India and jurisdiction of Calcutta Court (s) only.
5.2 Notice of Default

Notice of default given by either party to the other party under the Agreement shall be in writing and shall be deemed to have been duly and properly served upon the parties hereto, if delivered against acknowledgement due or by FAX or by registered mail duly addressed to the signatories at the address mentioned herein above.

IN WITNESS WHEREOF, the parties through their duly authorized representatives have executed these presents (execution whereof has been approved by the Competent Authorities of both the parties) on the day, month and year first above mentioned at Kolkata

For and on behalf of: For and on behalf of:
M/s. National Projects Construction Corporation Limited