

NATIONAL AGRI-FOOD BIOTECHNOLOGY INSTITUTE

**Department of Biotechnology,
Ministry of Science & Technology
(Govt. of India)**



e-Tender Notice

**for the award of work of Supply, Installation, Testing &
Commissioning of 200kVA/KW Modular UPS system for
Central Instrumentation Facility, LAB Bldg.,
National Agri-Food Biotechnology Institute(NABI)
Campus, Knowledge City, sector-81,
Mohali-Punjab, India**

TENDER NO: NABI/7(171)/2019-Works

VOLUME-1

**Tender Issued from: 22-12-2018
Last date of receipt of tender: 15-03-2019 upto 4:00pm
Tender Opening date: 18-03-2019 @ 10:00am**

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NATIONAL AGRI-FOOD BIOTECHNOLOGY INSTITUTE

e-NOTICE INVITING TENDER

1.0 Item rate e-Tenders in two parts [Part(A)-Technical Bid & Part(B)-Financial/Price Bid] are invited on the behalf of Executive Director, NABI from the specialized agencies/contractors/firms who have executed similar works with some Central Govt. department/State Govt. Department/Central Autonomous body/State Autonomous Body/Central PSU/State PSU/Central Govt. undertaking/State Govt. Undertaking/City Development Authority/Municipal Corporation of City/Reputed Private Companies & Organizations for carrying out the work of **Supply, Installation, Testing & Commissioning of 200kVA/KW Modular Uninterruptible Power Supply(UPS) system for Central Instrumentation Facility, LAB Bldg., National Agri-Food Biotechnology Institute(NABI) Campus, Knowledge City, sector-81, Mohali-Punjab, India**

1.1 The work is estimated to cost **Rs.39,96,650/- only i/c GST**. This estimate, however, is given merely as a rough guide.

NOTE: NABI is registered with Department of Scientific & Industrial Research (DSIR) for purposes of availing Customs Duty Exemptions in terms of notification No: 51/96 – Customs dated 23.07.1996, Notification No: 28/2003-customs dated 01.03.2003, Notification No: 43/2017 - customs dated 30.06.2017, Notification No: 47/2017-Integrated Tax (Rate) dated 14.11.2017, Notification No: 10/2018-Integrated Tax (Rate) dated 25.01.2018, and Notification No: 45/2017-Central Tax (Rate) dated 14.11.2017, Notification No: 45/2017 – Union Territory Tax (Rate) dated 14.11.2017 & Notification No: 9/2018 – Central Tax (Rate) dated 25.01.2018, Notification No: 9/2018 – Union Territory Tax (Rate) dated 25.01.2018, as amended from time to time for research purposes only.

1.2 Technical Eligibility Criteria for Bidders-

1.2.1 Experience of having successfully completed works during the last 07 years ending last day of the month previous to the one in which applications are invited. The works completed upto previous day of last date of submission of tenders shall also be considered.

Three similar completed works costing not less than the amount equal to 40% of estimated cost put to tender,

or

Two similar completed works, costing not less than the amount equal to 60% of the estimated cost put to tender,

or

One similar completed work of aggregate cost not less than the amount equal to 80% of the estimated cost.

Similar work shall mean the work of Supply, Installation, Testing and Commissioning of UPS system and allied installations or Internal/External Electrification works like substation equipment (Transformer/LT & HT panels, DG sets etc.) installations, HT/LT cable laying works, Bus duct Installation works etc. in Institutional campus/Universities/Hospitals/Multistorey Office buildings/ Commercial complexes/Power Plants/Refineries/Manufacturing Plants & Industries/Research Centres and Laboratories/Any other Industry/Organization.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to last date of receipt of applications for tenders.

1.2.2 The firm/contractor shall be authorized from the Original Equipment Manufacturer (OEM)/UPS Manufacturer, the authorization certificate shall be submitted by the bidder as per the format given in Annexure-1.

1.2.3 The Agency/firm must have valid GST Registration No. The proof for the same shall be enclosed with the bid.

1.2.4 The Average Annual financial turnover of the firm should be at least 100% of the estimated cost during the last 03 consecutive financial years ending 31-03-2018. Copies of duly attested statement (for last 03years) by Chartered Accountant should be provided.

1.2.5 The bidder shall have Employees Provident Fund (EPF) enlistment and proof of the same shall be attached along with the Technical Bid clearly showing the Provident Fund Code number. In case of non-eligibility/non requirement of bidder for EPF enlistment, satisfactory document proof shall be enclosed by the bidder along with the Technical bid.

Note- The Tenderer shall produce definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified above. Completion Certificates/proofs need to be enclosed.

2. Agreement shall be drawn with the successful tenderer on prescribed format by the Competent Authority. Tenderer shall quote his rates as per various terms and conditions laid down in the tender document.

3. The time allowed for carrying out the work will be **15 weeks** from the date of start as defined in Schedule 'C' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.

4. The site for the work is available.

5.(i)Tender documents can be downloaded directly from the NABI website www.nabi.res.in or E-Central public procurement portal <https://eprocure.gov.in/eprocure/app> (up to 15-03-19).

(ii)Tender forms, NIT and all the Tender documents consisting of all the set of terms & conditions of contract to be complied with by the contractor whose tender may be accepted and other necessary documents can be seen in the office of Assistant Engineer-Electrical, NABI on all working days between 10:00am to 5:00pm.

6.(i)Tenders shall be accompanied with **tender cost of Rs 590/-** only in the form of Demand Draft in favour of "National Agri-Food Biotechnology Institute" payable at Mohali or cash receipt in case of tender fee submitted to NABI office in cash.

(ii)Tenders shall be accompanied with **Earnest money of Rs.80,000/- only** in cash (up to Rs.10000/-)/Receipt Treasury Challan/Deposit at Call receipt of a scheduled bank/fixed deposit receipt of a scheduled bank/demand draft of a scheduled bank issued in favour of "National Agri-Food Biotechnology Institute" payable at Mohali.

(iii) **Submission of Tender-** The tender should be submitted/uploaded as e-Tender only in the following covers as detailed below:

1. Cover -1 marked as Technical Bid containing the following-

- a) Scanned copy of Demand draft (DD) of Rs.590/-only as cost of tender documents or cash receipt in case of tender fee submitted to NABI office in cash.
- b) Scanned Copy of Earnest Money Deposit (EMD) of Rs.80,000/-only in the prescribed format(i.e., DD/cash receipt, as the case may be)
- c) Scanned copies of Documents related to Technical eligibility criteria 1.2 i.e., Completion certificates/proofs of the similar works completed, Authorization certificate from the OEM and all other required documents as mentioned in the Technical Eligibility criteria i.e., GST registration document, Annual Financial Turnover certificates, EPF registration/enlistment document.
- d) Scanned copy of duly filled in and signed/stamped Tender form-1
- e) Scanned copy of signed and stamped complete Notice Inviting Tender (NIT) documents i.e., Volume-1.
- f) Scanned Copy of Indemnity Bond as per format given in Annexure-2.
- g) Scanned Copy of Price Reasonability Certificate as per format given in Annexure-3.

2. Envelope-2 marked as Price Bid containing the following-

- a) This shall contain the price for the execution of the works specified as per Volume-2 of the tender document.

3. The above documents shall be uploaded by the bidder on E-Central public procurement portal <https://eprocure.gov.in/eprocure/app> by 4:00 PM on 15-03-2019 and will be opened on 18-03-2019 by NABI at 10:00 AM.

Note:- a) Documents to be uploaded in PDF format only. b) The original payment instrument like Demand Draft of any Nationalized Bank against Earnest Money and Cost of Tender document should be sent to the address- National Agri-Food Biotechnology Institute, Sector-81, knowledge City, PO- Manauli, SAS Nagar, Mohali 140306, Punjab by post/speed post/courier/by hand before bid opening date & time.

REGARDING TENDER FEE AND EMD EXMPTION

Only Tender Fee and EMD exemption is allowed for Micro & Small Enterprises (MSEs) who are registered with District Industries Centers(DICs)/Khadi & Village Industries Commission(KVIC)/ Khadi & Village Industries Board(KVIB)/ National Small Industries Corporation (NSIC)/MSEs registered under Udyog Aadhar Memorandum(UAM)/Directorate of Handicrafts and Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises(MoMSME) but relevant certificates of registration need to be enclosed by the bidder along with the Technical bid, claiming for exemption.

7. The contractor whose tender is accepted, will be required to furnish performance guarantee of 5% (Five Percent) of the tendered amount within the period specified in Schedule 'C'. This guarantee shall be in the form of cash (in case guarantee amount is less than Rs. 10000/-) or Deposit at Call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'C' including the extended period if any,

the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor.

8. The description of the work is as follows:

Supply, Installation, Testing & Commissioning of 200kVA/KW Modular Uninterruptible Power Supply(UPS) system for Central Instrumentation Facility, LAB Bldg., National Agri-Food Biotechnology Institute(NABI) Campus, Knowledge City, sector-81, Mohali-Punjab, India

Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the type of system (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed.

The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and local conditions and other factors having a bearing on the execution of the work.

9. The Competent Authority does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.

10. Canvassing whether directly or indirectly, in connection with tenderers is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.

11. The Competent Authority reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.

12. The tender for the works shall remain open for acceptance for a period of one hundred twenty (120) days from the date of opening of tenders/120 days from the date of opening of Price bid in case tenders are invited on 2/3 envelop system (strike out as the case may be) if any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, then the Institute shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.

13. This Notice Inviting Tender shall form a part of the contract document. The successful tenderer/contractor, on acceptance of his tender by the Accepting/Competent Authority shall within 15 days from the date of award of work, sign the contract agreement consisting of:-

a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming the tender as issued/downloaded at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

b) Tender form-1

14. No price preference to any corporate society/Registered society, Govt. Public Sector undertakings / bodies shall be given and tenders shall be exclusively dealt with on merit.

15. The contractor shall comply with the provisions of the Apprentices Act 1961, minimum wages Act 1948, Workmen's compensation Act 1923, contract labour (Regulation and Abolition Act 1970), payment of wages Act 1938, Employer's liability Act 1938, Maternity Benefits Act 1961, Employee's State Insurance Act, 1948, Employees Provident Fund Act, 1952 and the Industrial disputes Act 1947 as applicable and the rules and regulations issued there under and by the local Administration/ Authorities from time to time as well all provisions of law applicable to workmen. Failure to do so shall amount to breach of the contract and the Engineer-in-Charge may at his discretion terminate the contract. The Contractor shall also be liable for any pecuniary liability arising on account of violation by him of any of the said Acts and shall indemnify the Institute on that account. Institute will not be liable for any act or omission on the part of the contractor in so far as any violation of any of the aforementioned acts.

16. Each tenderer shall submit only one tender; either by him or as partners in a joint venture. A tenderer who submits or participates in more than one tender will be disqualified.

17. Unless otherwise stated, the contract shall be for the whole work as described in the "Schedule of Scope of Work" and the drawings. The contractor shall be bound to complete the whole work as described in the schedule of items of works and the drawings, including additional items, if any, as per drawings and instructions. The issuance of certificate of completion as issued by the Engineer-in-Charge shall be mandatory and will be conclusive proof of completion of work.

18. Interpretations, corrections and changes to the Tenders Documents shall be made by Addendum, if required.

19. Each Tenderer shall ascertain prior to submitting his Tender that he has received all Addenda issued and he shall so acknowledge their receipt in his Tender.

20. The provisions in the Tender documents shall govern over the contents of the above paragraphs if in contradiction or variation.

21. All pages of the Tender should be page numbered and indexed.

22. It is the responsibility of tenderer to go through the tender document to ensure furnishing all required documents in addition to above, if any.

23. The authorized signatory of the tenderer must sign the tender duly stamped at appropriate places and initial all the remaining pages of the tender.

24. A tender, which does not fulfill any of the above requirements and/or gives evasive information/reply against any such requirement, shall be liable to be ignored and rejected.

25. Only E-tenders shall be accepted, Tenders sent by fax/telex/by hand etc. shall not be acceptable.

NATIONAL AGRI-FOOD BIOTECHNOLOGY INSTITUTE

Item rate Tender & Contract for Works

- (i) Tender for the work of:- **Supply, Installation, Testing & Commissioning of 200kVA/KW Modular Uninterruptible Power Supply(UPS) system for Central Instrumentation Facility, LAB Bldg., National Agri-Food Biotechnology Institute(NABI) Campus, Knowledge City, sector-81, Mohali-Punjab, India**
- (ii) To be uploaded by the bidder on E-Central public procurement portal <https://eprocure.gov.in/eprocure/app> by 16:00 hours on 15-03-2019.
- (iii) To be opened at 10:00 hours on 18-03-2019.

Estimated Cost of Work -	Rs.39,96,650/- only
Performance Guarantee -	@ 5% of Tendered value
Security Deposit-	@ 2.5% of Value of work completed
Earnest Money Deposit(EMD)-	Rs.80,000/- only
Completion Period -	15 weeks from the reckoning date of start of work as mentioned in NIT
Place of opening of tender document -	National Agri-Food Biotechnology Institute, Knowledge City, sector-81, Mohali-Punjab
COST OF TENDER DOCUMENT-	Rs. 590/-only (Non-refundable)

Issued to*: _____

Signature of officer issuing the documents*: _____

Designation*: _____

Date of Issue*: _____

*Not to be filled if tender is downloaded from website.

TENDER

I/We have read and examined the notice inviting tender, schedule A, B, C, D Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for the Institute within the time specified in Schedule 'C' viz., schedule of quantities and in accordance in all respect with the specifications, designs, drawing and instructions in writing referred to in General Rules and Directions and in Clauses of the Conditions of contract and with such materials as are provided for, by, and in respect of accordance with, such conditions so far as applicable.

We agree to keep the tender open for one hundred and twenty (120) days from the due date of its opening/ 120 days from the date of opening of Price bid in case tenders are invited on 2/3 envelop system (strike out as the case may be) and not to make any modification in its terms and conditions.

A sum of Rs.80,000/- only is hereby forwarded in cash/receipt treasury challan/deposit at call receipt of a scheduled bank/fixed deposit receipt of scheduled bank/demand draft of a scheduled bank/bank guarantee issued by a scheduled bank as earnest money. If I/We, fail to furnish the prescribed performance guarantee within prescribed period, I/We agree that the Executive Director, NABI or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I/We fail to commence work as specified, I/We agree that the Executive Director, NABI or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained.

I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/We shall be debarred for tendering in the Institute in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than a person to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated:

Signature of Contractor

Witness:

Postal Address

Address:

Occupation:

GENERAL RULES & DIRECTIONS

1. All work proposed for execution by contract will be notified in a form of invitation to tender pasted in public places and signed by the officer inviting tender or by publication in Newspapers or posted on website as the case may be.

This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the tender, and the amount of the security deposit and Performance guarantee to be deposited by the successful tenderer and the percentage, if any, to be deducted from bills. Copies of the specifications, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the officer inviting tender shall also be open for inspection by the contractor at the office of officer inviting tender during office hours.

2. In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power-of attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act, 1952.
3. Any person who submits a tender shall fill up the usual printed form, stating at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort including conditional rebates, will be summarily rejected. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall submit separate tender for each. Tender shall have the name and number of the works to which they refer, written on the envelopes.
4. The Bidder/Contractor Firm should possess all the necessary clearance from all the Govt. authorities/departments for the related work as well as the regulatory affairs.
5. The Executive Director, NABI shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.
6. Use of correcting fluid, anywhere in tender document is not permitted. Such tender is liable for rejection.
7. The Contractor whose tender is accepted, will be required to furnish performance guarantee of 5% (Five Percent) of the tendered amount within the period specified in Schedule 'C'. This guarantee shall be in the form of cash (in case guarantee amount is less than Rs. 10,000/-) or Deposit at call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form.
8. Goods and Services Tax(GST), turnover tax or any other tax applicable in respect of this contract shall be payable by the Contractor and Institute will not entertain any claim whatsoever in respect of the same. The bidder shall give the total composite price inclusive of all Central & State's levies and taxes etc.

If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Government of India and does not any time become payable

by the contractor to the State Government, Local authorities in respect of any material used by the contractor in the works, then in such a case, it shall be lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor.

9. The tender for the work shall not be witnessed by a contractor or contractors who himself/ themselves has/have tendered or who may and has/have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.
10. The statutory deductions such as TDS, security deposit, labour cess, WCT, etc. shall be deducted at source as per prevailing percentage/rates/rules as amended from time to time by Central/State Govt.
11. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Competent Authority may in his discretion, without prejudice to any other right or remedy available in law, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.
12. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Engineer-in-Charge shall be communicated in writing to the Engineer-in-Charge.

CONDITIONS OF CONTRACT

Definitions

1. The Contract means the documents forming the tender and acceptance thereof and the formal agreement executed between competent authority on behalf of the Executive Director, NABI and the contractor, together with the document referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by Engineer-in-charge and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.
2. In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them:-
 - a) 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.
 - b) The **site** shall mean the land/ or other places like building etc. on into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
 - c) The **contractor** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of 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.
 - d) **Institute** shall mean the National Agri-Food Biotechnology Institute(NABI), Mohali.
 - e) **Administration** shall mean the administration of NABI, Mohali.
 - f) **Local authority** shall mean the Municipal Corporation of Mohali and shall also deemed to include any other body, State Govt. Department or department of the administration.
 - g) **Accepting Authority** shall mean the authority mentioned in Schedule 'C'.
 - h) **Engineer-Incharge** shall mean the Assistant Engineer-Electrical of NABI.
 - i) **Schedule(s)** referred to in these conditions shall mean the relevant schedule(s) annexed to the tender papers.
 - j) **Department** means National Agri-Food Biotechnology Institute (NABI), Mohali.
 - k) **District Specifications** means the specifications followed by the State Government in the area where the work is to be executed.
 - l) **Tendered value** means the value of the entire work as stipulated in the letter of award.

- m) **Date of commencement of work:** The date of commencement of work shall be the date of start as specified in schedule 'C' or the first date of handing over of the site, whichever is later, in accordance with the phasing if any, as indicated in the tender document.
- n) **Excepted Risk** are risks due to riots (other than those on account of contractor's Employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by owner of the part of the works in respect of which a certificate of completion has been issued or a cause solely due to owner's faulty design of works.
- o) **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour as per market at the site where the work is to be executed plus the percentage, all overheads and profits.

Works to be carried out

3. The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of Scope of Work (Schedule A) shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.

Sufficiency of Tender

4. The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.

Discrepancies and Adjustment of Errors

5. The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.
- 5.1 In the case of discrepancy between the schedule of work, the Specifications and/or the Drawings, the following order of preference shall be observed:-
- a) Description of Schedule of Scope of Work.
 - b) Particular Specification and Special Condition, if any.
 - c) Drawings.
 - d) CPWD Specifications with upto date amendments.
 - e) Indian Standard Specifications of B.I.S.
- 5.2 If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.

- 5.3 Any error in description, quantity or rate in Schedule of Quantities or any omission there from shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.
- 5.4 In case of any conflict/discrepancy on any specification or item to be executed or any other issue related to the contract, the CPWD guidelines shall be referred to for the same with further recommendations and approvals of the Competent Authority.
6. No payment for the work done will be made unless contract is signed by the contractor.
7. The contractor shall give a list of both gazetted and non-gazetted NABI employees related to him (if any).

CLAUSES OF CONTRACT

CLAUSE 1

(i) The contractor shall submit an irrevocable Performance Guarantee of 5% (Five percent) of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within period specified from the date of issue of letter of acceptance. This period can be further extended by the Competent Authority up to a maximum period as specified in schedule 'C' on written request of the contractor stating the reason for delays in procuring the Performance Guarantee, to the satisfaction of the Engineer-in-Charge. This guarantee shall be in the form of Cash (in case guarantee amount is less than Rs. 10,000/-) or Deposit at Call receipt of any scheduled bank/Banker's Cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay Order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the form annexed hereto. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit.

(ii) The Performance Guarantee shall be initially valid up to the stipulated date of completion of work plus 60 days beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest.

(iii) The Engineer-in-Charge shall not make a claim under the performance guarantee except for amounts to which the owner is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

(a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.

(b) Failure by the contractor to owner any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-Charge.

(iv) In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Competent Authority.

CLAUSE 1 A

Recovery of Security Deposit

The person/persons whose tender(s) may be accepted (hereinafter called the contractor) shall permit Department at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 2.5% of the gross amount of each running and final bill till the sum deducted will amount to security deposit of 2.5% of the tendered value of the work. Such deductions will be made and held by Government by way of Security Deposit unless he/they has/have deposited the amount of Security at the rate mentioned above in cash or in the form of Government Securities or fixed deposit receipts. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the security deposit and the Bank

is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit. All compensations or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due to or may become due to the contractor by Government on any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by Scheduled Banks or Government Securities (if deposited for more than 12 months) endorsed in favour of the Engineer-in-Charge, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof. The security deposit shall be collected from the running bills and the final bill of the contractor at the rates mentioned above.

The security deposit as deducted above can be released against bank guarantee issued by a scheduled bank, on its accumulations to a minimum of Rs. 5 lac subject to the condition that amount of such bank guarantee, except last one, shall not be less than Rs. 5 lac. Provided further that the validity of bank guarantee including the one given against the earnest money shall be in conformity with provisions contained in clause 17 which shall be extended from time to time depending upon extension of contract granted under provisions of clause 2 and clause 5.

In case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned year wise proportionately.

CLAUSE 2

Compensation for Delay

If the contractor fails to maintain the required progress in terms of clause 5 or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the Government on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the authority specified in schedule 'C' (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day/month (as applicable) that the progress remains below that specified in Clause 5 or that the work remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified.

- (i) **Compensation @ half percent (0.5%) per week of delay** for delay of work to be computed on per day basis provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 5% of the Tendered Value of work or of the Tendered Value of the item or group of items of work for which a separate period of completion is originally given.
- (ii) The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the Government. In case, the contractor does not achieve a particular milestone mentioned in schedule C, or the re-scheduled milestone(s) in terms of Clause 5.4, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of Extension of Time. With-holding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

CLAUSE 3

When Contract can be Determined

Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

(i) If the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or unworkman like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.

(ii) If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continues to do so after a notice in writing of seven days from the Engineer-in-Charge.

(iii) If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.

(iv) If the contractor persistently neglects to carry out his obligations under the contract and/ or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.

(v) If the contractor shall offer or give or agree to give to any person in Government service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for Government.

(vi) If the contractor shall enter into a contract with Government in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Engineer-in-Charge.

(vii) If the contractor had secured the contract with Government as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement.

(viii) If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors.

(ix) If the contractor being a company shall pass a resolution or the court shall make an order

that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.

(x) If the contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days.

(xi) If the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer - in-Charge.

When the contractor has made himself liable for action under any of the cases aforesaid, the Competent Authority shall have powers:

(a) To determine the contract as aforesaid (of which termination notice in writing to the contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination, the Security Deposit already recovered and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the Government

(b) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be un-executed out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work.

In the event of above courses being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

CLAUSE 4

Contractor liable to pay Compensation even if action not taken under Clause 3

In any case in which any of the powers conferred upon the Competent Authority by Clause-3 thereof, shall have become exercisable and the same are not exercised, the non-exercise hereof shall not constitute a waiver of any of the conditions hereof and such powers shall Notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor 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 the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be

specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

CLAUSE 5

Time and Extension for Delay

The time allowed for execution of the Works as specified in the Schedule 'C' or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in schedule 'C' or from the date of handing over of the site whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, Government shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the performance guarantee absolutely.

5.1 Programme Chart

The Contractor shall prepare an integrated program chart for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, equipment and machinery required for the fulfilment of the program within the stipulated period or earlier and submit the same for approval of the Engineer-in-Charge within **07 days** of the issue of letter of acceptance/award for the contract. The work has to be completed in stages as indicated in the Milestones and the program should be prepared in such a manner to achieve these Milestones as indicated therein or earlier.

The program chart should include the following: -

- a) Descriptive note explaining sequence of various activities.
- b) Network (PERT / CPM / BAR CHART) which will indicate resources in terms of manpower and specialized equipment for every important stage.
- c) Program for Dismantling, packaging and Shifting Work of EM systems Floor wise from NABI interim facility to NABI main campus.

If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved program referred above, the contractor shall produce a revised program showing the modifications to the approved program by additional inputs to ensure completion of the work within the stipulated time. The submission of revised program or approval by the Engineer-in-Charge of such program or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibilities under the contract. This is without prejudice to the right of Engineer-in-Charge to take action against the contractor as per terms and conditions of the agreement.

5.2

If the work(s) be delayed by:-

- (i) Force majeure, or
- (ii) Abnormally bad weather, rains or
- (iii) Serious loss or damage by fire, or
- (iv) Civil commotion, local commotion of workmen, strike or lockout, affecting any of the Trades employed on the work, or
- (v) Delay on the part of other contractors or tradesmen engaged by owner in executing work not forming part of the Contract, or

- (vi) Non-availability of stores material , which are the responsibility of owner to supply or
- (vii) Non-availability or break down of tools and Plant to be supplied or supplied by Government, or
- (viii) Any other cause which, is beyond the Contractor's control. Then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the authority as indicated in Schedule 'C' but shall nevertheless use constantly his best endeavours to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

5.3 Request for rescheduling of Mile stones and extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed form to the authority as indicated in Schedule 'C'. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.

5.4 In any such case the authority as indicated in Schedule 'C' may give a fair and reasonable extension of time and reschedule the mile stones for completion of work. Such extension or rescheduling of the milestones shall be communicated to the Contractor by the authority as indicated in Schedule 'C' in writing, within 4 weeks of the date of receipt of such request respectively. Non application by the contractor for extension of time/ rescheduling of the milestones shall not be a bar for giving a fair and reasonable extension/ rescheduling of the milestones by the authority as indicated in Schedule 'C' and this shall be binding on the contractor.

CLAUSE 6

Measurements of Work Done

The work shall be measured item wise & entered in the measurement book. Accordingly payment shall be made against each measured item and in the end amount shall be calculated based on these measurements, item rate quote by bidder. Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement, the value in accordance with the contract of work done. All measurement of all items having financial value shall be entered in Measurement Book so that a complete record is obtained of all works performed under the contract.

All measurements and levels shall be taken jointly by the Engineer-in-Charge or his authorized representative and by the contractor or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by the Engineer in-Charge and the contractor or their representatives in token of their acceptance. If the contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by both the parties.

If for any reason the contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-Charge or his representative, the Engineer-in-Charge and the Department shall not entertain any claim from contractor for any loss or damages on this account. If the contractor or his authorized representative does not remain present at the time of such measurements after the contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Engineer-in-Charge or his representative shall be deemed to be accepted by the Contractor.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels. Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In

the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available, then a mutually agreed method shall be followed. The contractor shall give, not less than seven days' notice to the Engineer-in-Charge or his authorized representative 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 covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing, 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. Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels. It is also a term of this contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

CLAUSE 6A

Computerized Measurement Book

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract. All measurements of all items having financial value shall be entered by the contractor and compiled in the shape of the Computerized Measurement Book having pages of A-4 size as per the format of the department so that a complete record is obtained of all the items of works performed under the contract.

All such measurements and levels recorded by the contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the contractor from the Engineer-in-Charge or his authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his authorized representative. After the necessary corrections made by the Engineer-in-Charge, the measurement sheets shall be returned to the contractor for incorporating the corrections and for resubmission to the Engineer-in-Charge for the dated signatures by the Engineer-in-Charge and the contractor or their representatives in token of their acceptance.

Whenever bill is due for payment, the contractor would initially submit draft computerized measurement sheets and these measurements 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 computerized measurements, and submit to the department a computerized measurement book, duly bound, and with its pages machine numbered. The Engineer-in-Charge and/or his authorized representative would thereafter check this MB, and record the necessary certificates for their checks/test checks.

The final, fair, computerized measurement book given by the contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the contractor shall have to submit a fresh computerized MB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the department. Thereafter, the MB shall be taken in the Divisional Office records, and allotted a number as per the Register of Computerised MBs.

This should be done before the corresponding bill is submitted to the Division Office for payment. The contractor shall submit two spare copies of such computerized MB's for the purpose of reference and record by the various officers of the department.

The contractor shall also submit to the department separately his computerized Abstract of Cost and the bill based on these measurements, duly bound, and its pages machine numbered along with two spare copies of the "bill. Thereafter, this bill will be processed by the Division Office and allotted a number as per the computerized record in the same way as done for the measurement book meant for measurements.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for checking of measurements/levels by the Engineer-in- Charge or his representative.

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications not withstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed.

The contractor shall give not less than seven days' notice to the Engineer-in-Charge or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of checking and/or test checking the measurement of any work in order that the same may be checked and/or test checked and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of checking and/or test checking measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if anywork shall be covered up or placed beyond the reach of checking and/or test checking measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing 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.

Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded by contractor and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

It is also a term of this contract that checking and/or test checking the measurements of any item of work in the measurement book and/or its payment in the interim, on account of final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

CLAUSE 7

Payment on Intermediate Certificate to be Regarded as Advances

No payment shall be made for work, estimated to cost Rs. Twenty thousand or less till after the whole of the work shall have been completed and certificate of completion given. For works estimated to cost over Rs. Twenty thousand, the interim or running account bills shall be submitted by the contractor for the work executed on the basis of such recorded measurements on the format of the Department in triplicate on or before the date of every month fixed for the same by the Engineer-in-Charge. The contractor shall not be entitled to be paid any such interim payment if the gross work done together with net payment/ adjustment of advances for material collected, if any, since the last such payment is less than the amount specified, in which case the interim bill shall be prepared on the appointed date of the month after the requisite progress is achieved. Engineer-in-Charge shall arrange to have the bill

verified by taking or causing to be taken, where necessary, the requisite measurements of the work. In the event of the failure of the contractor to submit the bills, Engineer-in-Charge shall prepare or cause to be prepared such bills in which event no claims whatsoever due to delays on payment including that of interest shall be payable to the contractor. Payment on account of amount admissible shall be made by the Engineer-in-Charge certifying the sum to which the contractor is considered entitled by way of interim payment at such rates as decided by the Engineer-in-Charge. The amount admissible shall be paid by 10th working day after the day of presentation of the bill by the Contractor to the Engineer-in-Charge or his Asstt. Engineer together with the account of the material issued by the department, or dismantled materials, if any. In the case of works outside the headquarters of the Engineer-in-Charge, the period of ten working days will be extended to fifteen working days.

All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-Charge relating to the work done or materials delivered forming part of such payment, may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-Charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

Pending consideration of extension of date of completion, interim payments shall continue to be made as herein provided without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

The Engineer-in-Charge in his sole discretion on the basis of a certificate from the Asstt. Engineer to the effect that the work has been completed up to the level in question make interim advance payments without detailed measurements for work done (other than foundations, items to be covered under finishing items) up to lintel level (including sunshade etc.) and slab level, for each floor working out at 75% of the assessed value. The advance payments so allowed shall be adjusted in the subsequent interim bill by taking detailed measurements thereof.

Payments in composite Contracts

In case of composite tenders, running payment for the major component shall be made by EE of major discipline to the main contractor. Running payment for minor component shall be made by the Engineer-in-Charge of the discipline of minor component directly to the main contractor. In case main contractor fails to make the payment to the contractor associated by him within 15 days of receipt of each running account payment, then on the written complaint of contractor associated for such minor component, Engineer in charge of minor component shall serve the show cause to the main contractor and if reply of main contractor either not received or found unsatisfactory, he may make the payment directly to the contractor associated for minor component as per the terms and conditions of the agreement drawn between main contractor and associate contractor fixed by him. Such payment made to the associate contractor shall be recovered by Engineer-in-charge of major or minor component from the next R/A/ final bill due to main contractor as the case may be.

CLAUSE 8

Completion Certificate and Completion Plans

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in-Charge and within thirty days of the receipt of such notice, the Engineer-in-Charge shall inspect the work and if there is no defect in the work, shall furnish the contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and/or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the 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, and not until the work shall have been measured by the Engineer-in-Charge. If the contractor shall fail to comply with the requirements of this Clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning off dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding, surplus materials and rubbish etc., and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

CLAUSE 8A

Contractor to Keep Site Clean

After the work is carried out by the Contractor carried out, the contractor shall remove the wastage, debris etc. from the site completely arising out during the execution of the work. In case the contractor fails to comply with the requirements of this clause, the Engineer-in-Charge shall have the right to get this work done at the cost of the contractor either departmentally or through any other agency. Before taking such action, the Engineer-in-Charge shall give ten days notice in writing to the contractor.

CLAUSE 8B (NOT APPLICABLE)

Completion Plans to be Submitted by the Contractor

The contractor shall submit completion plan as required vide General Specifications for Electrical works (Part-I internal) 2005 and (Part-II External) 1994 as applicable within thirty days of the completion of the work.

In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum equivalent to 2.5% of the value of the work subject to a ceiling of Rs.15,000 (Rs. Fifteen thousand only) as may be fixed by the Superintending Engineer concerned and in this respect the decision of the Superintending Engineer shall be final and binding on the contractor.

The contractor shall submit completion plan for water, sewerage and drainage line plan within thirty days of the completion of the work.

In case, the contractor fails to submit the completion plan as aforesaid, the department will get it done through other agency at his cost and actual expenses incurred plus Rs. 15,000/-for the same shall be recovered from the contractor.

CLAUSE 9A

Payment of Running bills

The running bills shall be submitted by the contractor as per the progress of work done at site. However, the following will be the basis of payment for the items claimed under running bills:

- a) Gross Payment to be made on supply of material at site: 60% of Item value
- b) Gross Payment to be made on installation of material at site: 30% of Item value
- c) Gross Payment to be made on satisfactory Testing & Commissioning of material at site: 10% of Item value

After receipt of running bill at NABI, the contractor shall get the work executed/claimed in bill checked and verified from the Engineer-Incharge within 02weeks time and after satisfactory verification of work executed at site, the payment to the contractor shall be released within a maximum of 02weeks time from the date of verification of work executed.

CLAUSE 9B

Payment of Final Bill

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within 01month of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge whichever is earlier. No further claims shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Engineer-in-Charge, will, as far as possible be made within the period specified here in under, the period being reckoned from the date of receipt of the bill by the Engineer-in-Charge or his authorized Asstt. Engineer, complete with account of materials issued by the Department and dismantled materials.

- (i) If the Tendered value of work is up to Rs. 45 lac: 2 months
- (ii) If the Tendered value of work is more than Rs.45 lac and up to Rs. 2.5 Crore: 3 months
- (iii) If the Tendered value of work exceeds Rs. 2.5 Crore: 6 months

CLAUSE 9C

Payment of Contractor's Bills to Banks

Payments due to the contractor may, if so desired by him, be made to his bank, registered financial, co-operative or thrift societies or recognized financial institutions instead of direct to him provided that the contractor furnishes to the Engineer-in-Charge (1) an authorization in the form of a legally valid document such as a power of attorney conferring authority on the bank; registered financial, co-operative or thrift societies or recognized financial institutions to receive payments and (2) his own acceptance of the correctness of the amount made out as being due to him by Government or his signature on the bill or other claim preferred against Government before settlement by the Engineer-in-Charge of the account or claim by payment to the bank, registered financial, co-operative or thrift societies or recognized financial institutions. While the receipt given by such banks; registered financial, co-operative or thrift societies or recognized financial institutions shall constitute a full and sufficient discharge for the payment, the contractor shall whenever possible present his bills duly receipted and discharged through his bank, registered financial, co-operative or thrift societies or recognized financial institutions.

Nothing herein contained shall operate to create in favour of the bank; registered financial, co-operative or thrift societies or recognized financial institutions any rights or equities visavisthe President of India.

CLAUSE 10A

Materials to be provided by the Contractor

The contractor shall, at his own expense, provide all materials, required for the works other than those which are stipulated to be supplied by the Government. The contractor shall, at his own expense and without delay, supply to the Engineer-in- Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in-Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within thirty days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the Engineer-in-Charge shall be issued after the test results are received.

The Contractor shall at his risk and cost submit the samples of materials to be tested or analyzed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer-in-Charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer in- Charge or his authorized representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the Contractor.

CLAUSE 11

Work to be executed in Accordance with Specifications, Drawings, Orders etc.

The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner 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 design, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not

included in the standard specifications of Central Public Works Department or in any Bureau of Indian Standard or any other, published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract. The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

CLAUSE 12:

Deviations/ Variations Extent and Pricing

The Engineer-in-Charge after approval from Competent Authority shall have power

i) Execute any extra item which was not initially considered in tender or could not be envisaged during estimation. The contractor shall be paid for same item based on DSR rates or market rate in case item is not available in DSR. In case of market rate, contractor has to submit analysis of rate in CPWD DAR format along with quotation/back up documents.

ii) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and

(iii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

12.1 The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered be extended, if requested by the contractor, as follows:

(i) In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value plus

(ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

12.2 A. For Project and original works:

Deviation, Extra Items and Pricing

In the case of extra item(s) (items that are completely new, and are in addition to the items contained in the contract), the contractor may within fifteen days of receipt of order or occurrence of the item(s) claim rates, supported by proper analysis, for the work and the engineer-in-charge shall within prescribed time limit of the receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

B. For Maintenance works including works of up gradation, aesthetic, special repair, addition/ alteration:

In the case of Extra Item(s) being the schedule items (Delhi Schedule of Rates items), these shall be paid as per the schedule rate plus cost index (at the time of tender) plus/minus

percentage above/ below quoted contract amount. Payment of Extra items in case of non-schedule items (Non-DSR items) shall be made as per the prevailing market rate.

Deviation, Substituted Items, Pricing

A. For Project and original works:

In the case of substituted items (items that are taken up with partial substitution or in lieu of items of work in the contract), the rate for the agreement item (to be substituted) and substituted item shall also be determined in the manner as mentioned in the following para.

(a) If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted). (b) If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

B. For Maintenance works including works of up gradation, aesthetic, special repair, addition/alteration: **NOT APPLICABLE**

Deviation, Deviated Quantities, Pricing

A. For Project and original works:

In the case of contract items, substituted items, contract cum substituted items, which exceed the limits laid down in schedule C, the contractor may within fifteen days of receipt of order or occurrence of the excess, claim revision of the rates, supported by proper analysis for the work in excess of the above mentioned limits, provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities, the Engineer-in-Charge shall within prescribed time limit of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

B. For Maintenance works including works of up gradation, aesthetic, special repair, addition/alteration:

In the case of contract items, which exceed the limits laid down in schedule C, the contractor shall be paid rates specified in the schedule of quantities.

The prescribed time limits for finalising rates for Extra Item(s), Substitute Item(s) and Deviated Quantities of contract items are as under:

(i) If the Tendered value of work is up to Rs. 45 lac : 30 days.

(ii) If the Tendered value of work is more than Rs 45 lac and up to Rs. 2.5 Crore : 45 days.

(iii) If the Tendered value of work exceeds Rs. 2.5 Crore : 60 days.

12.3 A. For Project and original works:

The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the limits laid down in Schedule C, and the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of the receipt of the notice, revise the rates for the work in question within one month of the expiry of the said period of fifteen days having regard to the market rates.

B. For Maintenance works including works of upgradation, aesthetic, special repair, addition/alteration: **NOT APPLICABLE**

12.4 The contractor shall send to the Engineer-in-Charge once every three months, an up to date account giving complete details of all claims for additional payments to which the contractor may consider himself entitled and of all additional work ordered by the Engineer-in-Charge which he has executed during the preceding quarter failing which the contractor shall be deemed to have waived his right. However, the Competent Authority may authorise consideration of such claims on merits.

12.5 For the purpose of operation of Schedule "C", the following works shall be treated as works relating to foundation unless & otherwise defined in the contract:

(i) For Buildings : All works up to 1.2 metres above ground level or up to floor 1 level whichever is lower.

(ii) For abutments, piers and well staining : All works up to 1.2 m above the bed level.

(iii) For retaining walls, wing walls, compound walls, chimneys, over head reservoirs/tanks and other elevated structures : All works up to 1.2 metres above the ground level.

(iv) For reservoirs/tanks (other than overhead reservoirs/tanks) : All works up to 1.2 metres above the ground level.

(v) For basement: All works up to 1.2 m above ground level or up to floor 1 level whichever is lower.

(vi) For Roads, all items of excavation and filling including treatment of sub base.

12.6 Any operation incidental for testing to or necessarily has to be in contemplation of tenderer while filing tender, or necessary for proper execution of the item included in the Schedule of quantities or in the schedule of rates mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said schedule of rates, as the case may be. Nothing extra shall be admissible for such operations.

CLAUSE 13

Foreclosure of contract due to Abandonment or Reduction in Scope of Work

If at any time after acceptance of the tender Competent Authority shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works to be carried out, the Engineer-in-Charge shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part

of the works. The contractor shall be paid at contract rates, full amount for works executed at site and, in addition, a reasonable amount as certified by the Engineer-in-Charge for the items hereunder mentioned which could not be utilized on the work to the full extent in view of the foreclosure;

(i) Any expenditure incurred on preliminary site work, e.g. temporary access roads, temporary labour huts, staff quarters and site office; storage accommodation and water storage tanks.

(ii) Owner shall have the option to take over contractor's materials or any part thereof either brought to site or of which the contractor is legally bound to accept delivery from suppliers (for incorporation in or incidental to the work) provided, however owner shall be bound to take over the materials or such portions thereof as the contractor does not desire to retain. For materials taken over or to be taken over by owner, cost of such materials as detailed by Engineer-in-Charge shall be paid. The cost shall, however, take into account purchase price, cost of transportation and deterioration or damage which may have been caused to materials whilst in the custody of the contractor.

(iii) If any materials supplied by owner are rendered surplus, the same except normal wastage shall be returned by the contractor to owner at rates not exceeding those at which these were originally issued, less allowance for any deterioration or damage which may have been caused whilst the materials were in the custody of the contractor.

In addition, cost of transporting such materials from site to owner stores, if so required by owner, shall be paid.

(iv) Reasonable compensation for transfer of T & P from site to contractor's permanent stores or to his other works, whichever is less. If T & P are not transported to either of the said places, no cost of transportation shall be payable.

(v) Reasonable compensation for repatriation of contractor's site staff and imported labour to the extent necessary.

The contractor shall, if required by the Engineer- in-Charge, furnish to him, books of account, wage books, time sheets and other relevant documents and evidence as may be necessary to enable him to certify the reasonable amount payable under this condition.

The reasonable amount of items on (i), (iv) and (v) above shall not be in excess of 2% of the cost of the work remaining incomplete on the date of closure, i.e. total stipulated cost of the work as per accepted tender less the cost of work actually executed under the contract and less the cost of contractor's materials at site taken over by the owner as per item (ii) above. Provided always that against any payments due to the contractor on this account or otherwise, the Engineer-in-Charge shall be entitled to recover or be credited with any outstanding balances due from the contractor for advance paid in respect of any tool, plants and materials and any other sums which at the date of termination were recoverable by the owner from the contractor under the terms of the contract.

A compensation for such eventuality, on account of damages etc. shall be payable @ 0.5% of cost of work remaining incomplete on date of closure i.e. total stipulated cost of the work less the cost of work actually executed under the contract shall be payable.

Clause 14

Carrying out part work at risk & cost of contractor

If contractor:

(i) At any time makes default during currency of work or does not execute any part of the work with due diligence and continues to do so even after a notice in writing of 7 days in this respect

from the Engineer-in-Charge; or

(ii) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 days even after a notice in writing is given in that behalf by the Engineer-in-Charge; or Fails to complete the work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Engineer-in-Charge. The Engineer- in-Charge without invoking action under clause 3 may, without prejudice to any other right or remedy against the contractor which have either accrued or accrue thereafter to Government, by a notice in writing to take the part work / part incomplete work of any item(s) out of his hands and shall have powers to:

(a) Take possession of the site and any materials, constructional plant, implements, stores, etc., thereon; and/or

(b) Carry out the part work / part incomplete work of any item(s) by any means at the risk and cost of the contractor.

The Engineer- in-Charge shall determine the amount, if any, is recoverable from the contractor for completion of the part work/ part incomplete work of any item(s) taken out of his hands and execute at the risk and cost of the contractor, the liability of contractor on account of loss or damage suffered by Government because of action under this clause shall not exceed 10% of the tendered value of the work.

In determining the amount, credit shall be given to the contractor with the value of work done in all respect in the same manner and at the same rate as if it had been carried out by the original contractor under the terms of his contract, the value of contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the contractor.

The certificate of the Engineer-in-Charge as to the value of work done shall be final and conclusive against the contractor provided always that action under this clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the department are less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor.

Any excess expenditure incurred or to be incurred by Government in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by Government as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to Government in law or per as agreement be recovered from any money due to the contractor on any account, and if such money is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract.

In the event of above course being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

CLAUSE 15

Suspension of Work

(i) The contractor shall, on receipt of the order in writing of the Competent Authority, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:

(a) on account of any default on the part of the contractor or;

(b) for proper execution of the works or part thereof for reasons other than the default of the contractor; or

(c) for safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer in-Charge.

(ii) If the suspension is ordered for reasons (b) and (c) in sub-para (i) above:

(a) the contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;

(b) If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Engineer-in-Charge may consider reasonable in respect of salaries and/or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within fifteen days of the expiry of the period of 30 days.

(iii) If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in sub para (i) above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer in-Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by owner or where it affects whole of the works, as an abandonment of the works by owner, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by owner, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in-Charge may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within 30 days of the expiry of the period of 3 months.

CLAUSE 16

Action in case Work not done as per Schedule of Scope of Work

All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-In-charge, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either

himself be present to receive orders and instructions or have a 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. If it shall appear to the Engineer-in-charge, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months (six months in the case of work costing Rs. 10 Lac and below except road work) of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been 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 charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause 2 of the contract (for non-completion of the work in time) for this default.

In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the authority specified in schedule 'C' may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Competent Authority to be conveyed in writing in respect of the same will be final and binding on the contractor.

CLAUSE 17

Contractor Liable for Damages, defects during liability period

If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within 36 months after a certificate final or otherwise of its completion shall have been given by the Engineer in-Charge as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer-in-Charge cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of 36 months after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later.

After the notification of defect to the contractor by the Engineer-Incharge, the contractor shall attend the complaint/defect within 24hrs. of such notification and will rectify the same within the reasonable time limit. In case of non-rectification of defect by the contractor, the NABI shall get it rectified from some external agency at the risk and cost of the contractor.

The Defect liability period(DLP)/Warranty period of work done by the contractor is 36months from the date of completion of work as certified by the Engineer-In-Charge. During the DLP, the contractor shall be responsible for carrying out timely Preventive Maintenance of the UPS system as recommended by the Manufacturer.

CLAUSE 18

Contractor to Supply Tools, Tackles, ladders, Transport, Machinery etc.

The contractor shall provide at his own cost all materials (except such special materials, if any, as may in accordance with the contract be supplied from the Engineer-in-Charge's stores), machinery, tools & plants as specified in schedule C. In addition to this, appliances, Instruments, implements, other plants, ladders, cordage, tackle, scaffolding and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge 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 from 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 the measurement for 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 Engineer-in-Charge at the expense of the contractor and the expenses may be deducted, from any money due to the contractor, under this contract or otherwise and/or from his security deposit or the proceeds of sale thereof, or of a sufficient portions thereof.

CLAUSE 19

Labour Laws to be complied by the Contractor

The contractor shall obtain a valid license under the Contract Labour (R&A) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and continue to have a valid license until the completion of the work, if required as per labour law. The contractor shall also abide by the provisions of the Child Labour (Prohibition and Regulation) Act, 1986.

The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Workers Welfare Cess Act, 1996. Any failure to fulfil these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.

CLAUSE 19A

No labour below the age of fourteen years shall be employed on the work.

CLAUSE 19 B

Payment of wages:

(i) The contractor shall pay to labour employed by him either directly or through subcontractors, wages not less than fair wages as defined in the C.P.W.D Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.

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

(iii) In respect of all labour directly or indirectly employed in the works for performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with the Central Public Works Department contractor's Labour Regulations made by Government from time to time in regard to payment of wages, wage period, deductions from wages recovery of wages not paid and deductions unauthorized 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 the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.

(iv) (a) The Engineer-in-Charge 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 reason of non-fulfilment 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 the contract or non-observance of the Regulations.

(b) Under the provision of Minimum Wages (Central) Rules, 1950, the contractor is bound to allow to the labours directly or indirectly employed in the works one day rest for 6 days continuous work and pay wages at the same rate as for duty. In the event of default, the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the contractor by the Engineer-in-Charge concerned.

(v) The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contractor's Labour (Regulation and Abolition) Act 1970, or the modifications thereof or any other laws relating thereto and the rules made thereunder from time to time.

(vi) The contractor shall indemnify NABI against payments to be made under and for the observance of the laws aforesaid and any other law, Labour Regulations without prejudice to his right to claim indemnity from his sub-contractors.

(vii) The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.

(viii) Whatever is the minimum wage for the time being, or if the wage payable is higher than such wage, such wage shall be paid by the contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commission or otherwise.

(ix) The contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.

CLAUSE 19C

In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this contract, the contractor shall at his own expense arrange for the safety provisions as per C.P.W.D. Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the contractor fails to make arrangement and provide necessary facilities as aforesaid, he shall be liable to pay a penalty of Rs.200/- for each default and in addition, the Engineer -in- Charge shall be at liberty to make arrangement and provide facilities as aforesaid and recover the costs incurred in that behalf from the contractor.

CLAUSE 20

Minimum Wages Act to be complied with

The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, and Contract Labour (Regulation and Abolition) Act, 1970, amended from time to time and rules framed thereunder and other labour laws affecting contract labour that may be brought into force from time to time.

CLAUSE 21

Work not to be sublet. Action in case of insolvency

The contract shall not be assigned or sublet without the written approval of the Engineer- in - Charge. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan, 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 agent to any public officer or person in the employ of Government in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer in- Charge on behalf of the President of India shall have power to adopt the course specified in Clause 3 hereof in the interest of Government and in the event of such course being adopted, the consequences specified in the said Clause 3 shall ensue.

CLAUSE 22

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 Government without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

CLAUSE 23

Changes in firm's Constitution to be intimated

Where the contractor is a partnership firm, the previous approval in writing of the Engineer in- Charge shall be obtained before any change is made in the constitution of the firm. Where the contractor is an individual or a Hindu undivided family business concern, such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement where under the partnership firm would have the right to carry out the works hereby undertaken by the contractor. If previous approval as aforesaid is not obtained, the contract shall be deemed to have been assigned in contravention of Clause 21 hereof and the

same action may be taken, and the same consequences shall ensue as provided in the said Clause 21.

CLAUSE 24

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Engineer-in-Charge 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.

CLAUSE 25

Settlement of Disputes & Arbitration

Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:

- (i) If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the owner on any matter in connection with or arising out of the contract or carrying out of the work, to be unacceptable, the contractor may file for arbitration. The arbitrator shall be appointed by Competent Authority, NABI & arbitration shall take place at Mohali under arbitration act.
- ii) The arbitration shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 (26 of 1996) or any statutory modifications or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.
- iii) It is also a term of the contract that if any fees are payable to the arbitrator, these shall be paid equally by both the parties.

CLAUSE 26

Contractor to indemnify owner against Patent Rights

The contractor shall fully indemnify and keep indemnified the owner against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against owner in respect of any such matters as aforesaid, the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise therefrom, provided that the contractor shall not be liable to indemnify the owner if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Engineer-in-Charge in this behalf.

CLAUSE 27

Lump sum Provisions in Tender

When the estimate on which a tender is made includes lump sum in respect of parts of the work, the contractor shall be entitled to payment in respect of the items of work involved or the

part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-Charge payable of measurement, the Engineer-in-Charge may at his discretion pay the lump-sum amount entered in the estimate, and the certificate in writing of the Engineer-in-Charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provisions of the clause.

CLAUSE 28

Action where no Specifications are specified

In the case of any class of work for which there is no such specifications, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications. In case there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturers' specifications, if not available then as per District Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

CLAUSE 29

Withholding and lien in respect of sum due from contractor

(i) Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, the Engineer-in-Charge or the owner 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 Engineer in- Charge or the owner shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalisation 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 Engineer-in-Charge or the owner shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Engineer-in-Charge of the owner or any contracting person through the Engineer-in- Charge pending finalization of adjudication of any such claim. It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or owner will be kept withheld or retained as such by the Engineer-in-Charge or owner till the claim arising out of or under the contract is determined by the arbitrator(if the contract

is governed by the arbitration clause) by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in-Charge or the owner shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company as the case may be, whether in his individual capacity or otherwise.

(ii) owner shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract, etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for owner to recover the same from him in the manner prescribed in sub-clause (i) of this clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by owner to the contractor, without any interest thereon whatsoever.

CLAUSE 34

Hire of Plant, Instruments & Machinery

The contractor shall arrange at his own expense all tools, plant, Instruments, ladders, machinery and equipment (hereinafter referred to as T&P) required for execution of the work.

CLAUSE 36

Employment of Technical Staff and employees

Contractors Superintendence, Supervision, Technical Staff & Employees

The contractor shall provide all necessary superintendence during execution of the work and all along thereafter as may be necessary for proper fulfilling of the obligations under the contract.

In case contractor fails to depute the technical representative at site rate of recovery shall be imposed as per provisions in CPWD manual 2014 as amended/revised by CPWD from time to time.

CLAUSE 39

Termination of Contract on death of contractor

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Engineer-Incharge on behalf of the Executive Director, NABI shall have the option of terminating the contract without compensation to the contractor.

CLAUSE 40

If relative working in department then the contractor not allowed to tender

The contractor shall not be permitted to tender for works if officials responsible for award and execution of contracts. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Officer in NABI. Any breach of this condition by the contractor would render him debarred from tendering .

NOTE: By the term "near relatives" is meant wife, husband, parents and grandparents, children and grandchildren, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.

CLAUSE 41

No Gazetted Engineer to work as Contractor within one year of retirement

No engineer of gazetted rank or other gazetted officer employed in NABI Engineering division or administrative duties shall work as a contractor or employee of a contractor for a period of one year after his retirement from NABI service without the previous permission of Competent Authority at NABI in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of Competent Authority at NABI as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

CLAUSE 44

Apprentices Act provisions to be complied with

The contractor shall comply with the provisions of the Apprentices Act, 1961 and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the owner may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

Applicable Law

The contract shall be governed by and interpreted in accordance with the laws of India for the time being in force.

SAFETY CODE

1. Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well suitable footholds and hand-hold shall be provided on the ladder and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to $1\frac{1}{4}$ horizontal and 1 vertical.)
2. Scaffolding of staging more than 3.6 m (12ft.) above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm. (3ft.) high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends there of 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. 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 than 3.6 m (12ft.) above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as described in (2) above.
4. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be 90 cm. (3ft.)
5. 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. (30ft.) in length while the width between side rails in rung ladder shall in no case be less than 29 cm. (11½") for ladder upto and including 3 m. (10 ft.) in length. For longer ladders, this width should be increased at least $\frac{1}{4}$ " for each additional 30 cm. (1 foot) of length. Uniform step spacing of not more than 30 cm shall be kept. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or 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 defence 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 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. All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
7. All necessary personal safety equipment as considered adequate by the Engineer-in-Charge should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned:- The following safety equipment shall invariably be provided.
 - (i) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
 - (ii) Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes, shall be provided with protective goggles.
 - (iii) Those engaged in welding works shall be provided with welder's protective eye shields.
 - (iv) Stone breaker shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - (v) 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 atleast 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 signals or boards to prevent

accident to 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 higher officer.
 - (b) At least 5 to 6 manholes upstream and downstream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manhole 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 off 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 flames shall be allowed near the blocked 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 be 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 metres 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 stop 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.
 - (vi) 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 precaution should be taken:-
 - (a) No paint containing lead or lead products shall be used except in the form of paste or readymade paint.
 - (b) 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.
 - (c) Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided to enable the working painters to wash during and on the cessation of work.
8. An additional clause (viii)(i) of Central Public Works Department Safety Code (iv) the Contractor shall not employ women and men below the age of 18 on the work of painting with product containing lead in any form, wherever men above the age of 18 are employed on the work of lead painting, the following principles must be observed for such use :
- (i) White lead, sulphate of lead or product containing these pigment, shall not be used in painting operation except in the form of pastes or paint ready for use.

- (ii) Measures shall be taken, wherever required in order to prevent danger arising from the application of a paint in the form of spray.
- (iii) Measures shall be taken, wherever practicable, to prevent danger arising out of from dust caused by dry rubbing down and scraping.
- (iv) Adequate facilities shall be provided to enable working painters to wash during and on cessation of work.
- (v) Overall shall be worn by working painters during the whole of working period.
- (vi) Suitable arrangement shall be made to prevent clothing put off during working hours being spoiled by painting materials.
- (vii) Cases of lead poisoning and suspected lead poisoning shall be notified and shall be subsequently verified by medical officer.
- (viii) Medical examination may be done further in such cases.
- (ix) Instructions with regard to special hygienic precautions to be taken in the painting trade shall be distributed to working painters.

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

10. Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following standards or conditions:-

- (a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept repaired and 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.
- (c) 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 winch or give signals to operator.
- (d) 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 condition 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.
- (e) In case of departmental machines, the safe working load shall be notified by the Electrical Engineer in- Charge. As regards contractor's machines the contractors 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 it verified by the Electrical Engineer concerned.

10. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. 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 to 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 should be provided. The worker should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

11. All scaffolds, 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.

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

13. 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 Labour Officer or Engineer-in-Charge of the department or their representatives.

14. Contractor shall indemnify NABI from the disputes arising out of loss of life to its workers, material during the whole duration of contract agreement including defect liability period.

15. Notwithstanding the above clauses from (1) to (16), there is nothing in these to exempt the contractor from the operations of any other Act or Rule in force in the Republic of India.

Note: - The above safety precautions/provisions along with any other as may be required to execute the work shall be provided by contractor free of cost.

SCHEDULE-A

SCOPE OF WORK

ABOUT THE WORK/PROJECT:

National Agri-Food Biotechnology Institute (NABI) is a Central Autonomous Institute under Department of Biotechnology, Ministry of Science and Technology, Govt. of India. The Institute has developed its new campus in 35 acres in Knowledge City, sec-81, Mohali. The NABI intends to install and commission the 200kVA/KW Modular UPS system for its Central Instrumentation Facility (used for Research Purpose only), LAB Bldg., NABI campus as per the Schedule-D of Items specified in this Tender Document (Volume-1). The contractor shall strictly comply to the approved technical specifications and approved makes list as specified below:

All the Electrical Works shall be executed in accordance with **CPWD General Specifications for Electrical Works Part I Internal – 2013 & CPWD General Specifications for Electrical Works Part IV Sub Station – 2013** with upto date amendments as notified by CPWD from time to time.

TECHNICAL SPECIFICATIONS OF 200kVA/KW MODULAR UPS SYSTEM REQUIRED AT NABI

1. GENERAL

1.1 SUMMARY OF SCOPE OF WORK

The scope of work shall include, but shall not be limited to, Design and Engineering, Manufacturing, Supply, Installation, testing and commissioning of a static Uninterruptible Power Supply(UPS) together with all accessories and auxiliaries as per specifications for the complete performance of the work as herein specified and as per the site requirement. The system shall be fully operational and shall comply with the relevant codes and standards.

The contractor shall be fully responsible for providing all material, transportation, freight, loading/unloading of equipment at site and engineering services specified or which are required to fulfill the intent of ensuring reliability of the total work covered under these specifications within his quoted price.

This specification describes a continuous duty, three-phase, solid state, on-line double conversion static, Uninterruptible Power Supply system as specified herein and hereafter referred to as the "UPS", to provide continuous, regulated AC power to critical loads under normal and abnormal conditions, including loss of the utility AC power. The UPS system shall consist of, as required by the project, the UPS modules, battery cabinet(s), maintenance bypass, and other required features as described in this specification.

The UPS and associated equipment shall operate in conjunction with a primary power supply and an output distribution system to provide quality uninterrupted power for mission critical, equipment load.

The UPS shall utilize a rack-mounted N+1 redundant, scalable array architecture. The system shall be comprised of 25 kVA/25 kW or better rating power modules configured for the rated system load.

In parallel systems operating at a load where the system has N+1 system-level redundancy or greater, the parallel configuration shall facilitate the replacement of individual UPSs while the system remains in normal operation, without the requirement to transfer to bypass.

Each swappable/trained-user replaceable 25 kVA/25 kW or better rating power module shall contain a fully rated, power factor corrected input rectifier/boost converter hereafter referred to as the PFC input stage, a fully rated output inverter, battery charging circuit and field replaceable fans. Power module fans shall be variable speed controlled and capable of maintaining the system in the event of a single fan failure. The system shall also be comprised of a swappable continuous duty bypass static switch module, redundant control modules, redundant logic power supplies, and touch screen user interface/display.

All programming and miscellaneous components for a fully operational system as described in this Section shall be available as part of the UPS.

1.2 UPS Modes of Operation: Each UPS shall operate as an on-line, fully automatic system in the following modes:

1. **Normal:** Utilizing commercial AC power, the critical load shall be continuously supplied by the Inverter. The Inverter shall power the load while regulating both voltage and frequency. The Rectifier shall derive power from the commercial AC source and shall supply DC power to the Inverter. Simultaneously, the Battery Charger shall charge the battery.
2. **Battery:** Upon failure of the commercial AC power, the critical load shall continue to be supplied by the Inverter, which shall obtain power from the batteries without any operator intervention. There shall be no interruption to the critical load upon failure or restoration of the commercial AC source.
3. **Recharge:** Upon restoration of the AC source, the Charger shall recharge the batteries and simultaneously the Rectifier shall provide power to the Inverter. This shall be an automatic function and shall cause no interruption to the critical load.
4. **Static Bypass:** If the UPS must be taken out of the Normal mode for overload, load fault, or internal failures, the static bypass switch shall automatically transfer the critical load to the commercial AC power. Return from Bypass mode to Normal mode of operation shall be automatic. No-break transfer to and from Bypass mode shall be capable of being initiated manually from the front panel. Manual transfer to static bypass (called "requested bypass") shall be available in order to facilitate a controlled transfer to maintenance bypass.
5. **Maintenance Bypass:** The system shall be equipped with an maintenance bypass to electrically isolate the UPS during routine maintenance and service of the UPS. The maintenance bypass shall allow for the completely electrical isolation of the UPS.
6. **Parallel Operation:** The system shall have the option to install up to two (2) UPSs in parallel configuration for redundancy or capacity. The parallel UPS system shall be of the same design, voltage, and frequency. UPS modules of different size ratings shall be permitted to be paralleled together for purposes of increased capacity or UPS module redundancy. The UPSs in the parallel configuration shall not be required to have the same load capacity rating.
7. **Eco Mode:** In bypass operation, an even higher operating efficiency may be achieved without sacrificing protection when there are good power conditions. Depending on configuration, efficiency can exceed 98%.The load remains in bypass mode until the input voltage exceeds tolerance levels, and then enters full protection mode.

1.3 STANDARDS

The UPS Manufacturer shall comply the following standards:

1. EN 62040-1 - Uninterruptible Power Systems (UPS) Part 1: General and safety requirements for UPS,
2. EN 62040-2 - Static uninterruptible power systems (UPS) Part 2: Electromagnetic compatibility (EMC) requirements,
3. EN 62040-3 - Static uninterruptible power systems (UPS) - Methods of specifying the performance and test requirements,
4. EN 62040-4 - Environmental aspects - Requirements and reporting,
5. IEC 61000-4 - Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques,

1.4 QUALITY ASSURANCE

I. Qualifications

The UPS manufacturer shall be ISO 9001 and ISO 14001 certified.

II. Regulatory Requirements

The Manufacturer and the Installer or Contractor shall comply with applicable requirements of the laws, codes, ordinances, regulations and local authorities having jurisdiction.

1.5 SUBMITTALS

The contractor shall submit data and documents specified in the following paragraphs.

- A. **Product Data:** Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Product data shall include, but shall not be limited to, the following:
 1. As bid system bill of materials.
 2. Product catalog sheets or equipment brochures.
 3. Product guide specifications.
- B. **Shop Drawings:** Submit shop drawings for each product and accessory required. Include information not fully detailed in manufacturer's standard product data, including, but not limited to, the following:
 1. Installation information, including, but not limited to, weights and dimensions.
 2. Information about terminal locations for power and control connections.
- C. **Wiring Diagrams:** Submit wiring diagrams detailing power, signal, and control systems, clearly differentiating between manufacturer installed wiring and field-installed wiring, and between components provided by the manufacturer and those provided by others.
 1. Submit system single line operation diagram.
- D. **Operation and Maintenance Data:** Submit operation and maintenance data to include in operation and maintenance manuals, including, but not limited to, safe and correct operation of UPS functions.

1. Submit an installation manual, which shall include, but shall not be limited to, instructions for storage, handling, examination, preparation, installation, and start-up of UPS.
2. Submit an operation and maintenance manual, which shall include, but shall not be limited to, operating instructions.

NOTE: All the material as per the scope of work shall be got approved as sample/drawings/data sheets/technical details from the Engineer-Incharge before procurement at site by the contractor.

2. PRODUCT

2.1 GENERAL CHARACTERISTICS

I. System Power Capacity and Autonomy

1. The UPS shall be sized for 175 kW or better rating in N+1 configuration i.e., 175 kW + 25 kW or better rating configuration.
2. The UPS capacity shall be achieved by providing required no's of modules.
3. The UPS battery bank shall be sized at unity load power factor for 15 minutes backup for an expected design life of 4 to 5 years with 12V lead acid SMF VRLA batteries and as per approved make given in tender.
4. The UPS battery bank shall be comprised of 2(two) or more redundant battery strings with individual DC Breaker.

II. Scalability

Capacity increasing shall be done without switching the system to bypass, using hot plug-in power modules, to avoid any risk of load cut. The setting of the system parameters to accomplish the increased power capacity shall be automatic, without any human intervention, to avoid any possibility of wrong configuration.

III. Structure

The UPS frame shall be "electronics-free" to allow fast, easy and risk-free scalability or maintenance, all the electronic parts (power modules, bypass module, mimic panel, communication boards, and options) shall be plug-in. The UPS system shall have no single dedicated control system designed to control the operation of the parallel Power Modules.

IV. Hot-swap capability of the modules

Power modules shall be:

- a) hot-swappable;
- b) pluggable or removable with the system working in double conversion (on line mode) without switching to bypass;
- c) pluggable or removable without any action other than pulling out or pushing in the module into its slot in order to prevent human errors, in particular the need to press any switch or key, or to change the system setting;
- d) capable to detect automatically the variation of configuration (removal or insertion of modules) to share equally the load power according to the new condition (self-setting);
- e) static bypass module shall be hot-swappable, even with the system in double conversion (on line mode) without switching to manual bypass or any need of load shut down;

V. Maintenance Bypass

The system shall be equipped with an maintenance bypass to electrically isolate the UPS during routine maintenance and service of the UPS. The maintenance bypass shall allow for the completely electrical isolation of the UPS.

VI. Input voltage and tolerance

1. AC Input Nominal Voltage:

380 / 400 / 415 V selectable from mimic panel,
3ph + N + PE,

2. AC Input Voltage Tolerance: -10/+10 % @ Rated Voltage

VII. Input frequency and tolerance

Mains Frequency Range: 50Hz +/- 10 % of nominal frequency,

VIII. Input power factor

The following performance should be complied and shall be tested and verified at site:
Equal to or Greater than 0.99 with load at 100 %.

IX. Input current distortion without additional filters

The following performance should be complied and shall be tested and verified at site
Less than 5 % (@: Nominal Power, Resistive load).

X. Input phase sequence protection

During input phase reversal conditions UPS should not trip and should be able to provide alarm signal.

XI. Soft Start

Shall be linear from 0 percent to 100 percent input current and shall not exhibit inrush.

XI. Output power

The following performance should be complied and shall be tested and verified at site. The system shall be rated to cater unity output power factor load (KVA = KW) at ambient temperature $\leq 35^{\circ}\text{C}$. In case individual UPS cannot cater $\text{kVA} = \text{kW}$ at 35°C , then the UPS vendor shall provide the next higher rating available to meet the requirement.

XII. Output voltage and regulation

380 / 400 / 415 V selectable from mimic panel,

XIII. Output voltage distortion

Less than 2 % on 100 % linear load,
Less than 5 % on 100% non-linear load.

XIV. Output frequency and tolerance

50 Hz +/-0.1 %.

XV. Output power factor: 1

Rated for unity output power factor load i.e., $\text{KVA} = \text{KW}$

XVI. Classification (IEC-EN 62040-3)

VFI – SS – 111 or better

XVII. Overload Rating

1. Inverter:

Not less than 110 % for 10 minutes before transferring to bypass,
Not less than 125 % for 1 minute before transferring to bypass.

2. Bypass Operation:

Less than 125% for continuous or better

1000% for 20msec or better

XVIII. Total efficiency AC/AC

- AC/AC efficiency in double conversion mode $\geq 95.5\%$ at 50% to 100% load
- AC/AC efficiency in Energy Saver System mode $\geq 98\%$

The above mentioned levels of performance should be complied and shall be tested and verified at site.

XIX. Safety

The following performance shall be certified by an independent, accredited body: According to EN62040-1.

XX. Color of Metal enclosure

As approved by Engineer-Incharge.

2.2 AMBIENT WORKING CONDITIONS

I. Temperature range

Ambient Storage Temperature: -15°C to 40°C or better,
Ambient Operating Temperature: 0°C to 40°C or better,
Ideal Ambient Operating Temperature (for most battery types): 15°C to 25°C .

II. Maximum relative humidity

0 to 95 % at ambient temperature, without condensation

III Audible Noise(at 1mtr measured from surface)

Less than 70dBA in Double conversion mode
Less than 55dBA in ESS Mode

2.3 UPS STANDARD FEATURES

The UPS shall consist of the following standard components and features:

- A. One or more UPS's, each consisting of:
 1. **Rectifier/Charger:** Each rectifier/charger shall convert incoming AC power to regulated DC output for supplying the inverter and for charging the battery. The rectifier/charger shall be a high-frequency PWM design, using Insulated Gate Bi-polar Transistors (IGBTs). The modular design of the UPS shall permit safe and fast removal and replacement of the rectifier/charger module. Mean time to repair (MTTR) for the module shall be no more than 30 minutes in order to return UPS to normal mode. The rectifier/charger module shall also provide the following:
 - a) The rectifier shall be capable of drawing power from the utility with a power factor of 0.99 under nominal conditions.
 - b) The rectifier shall feature protection circuitry that prevents the IGBTs from sourcing current in excess of their published ratings.
 2. **Inverter:** Each inverter shall feature an IGBT pulse-width-modulation (PWM) design with high speed switching. The inverter shall also have the following features:
 - a) The inverter shall be capable of providing the specified quality output power while operating from any DC source voltage (rectifier or battery) within the specified DC operating range.

- b) The modular design of the UPS shall permit safe and fast removal and replacement of the inverter module. Mean time to repair (MTTR) for the module shall be no more than 30 minutes in order to return UPS to normal mode.
- c) The inverter shall feature protection circuitry that prevents the IGBTs from sourcing current in excess of their published ratings.

B. **Static Bypass:** The bypass shall serve as an alternative source of power for the critical load when an abnormal condition prevents operation in normal mode. The bypass shall consist of a fully rated, continuous duty, naturally commutated static switch for high-speed transfers. The bypass shall feature the following transfer and operational characteristics.

1. Transfers to bypass shall be automatically initiated for the following conditions:
 - a) Output overload period expired.
 - b) Critical bus voltage out of limits.
 - c) Internal over temperature period expired.
 - d) Total battery discharge.
 - e) UPS failure.
2. Uninterrupted automatic re-transfer shall take place whenever the inverter is capable of assuming the critical load.
3. Uninterrupted automatic re-transfers shall be inhibited for the following conditions:
 - a) When transfer to bypass is activated manually or remotely.
 - b) UPS failure.
4. Uninterrupted manual transfers shall be initiated from the control panel. Uninterrupted manual transfers to bypass and from bypass shall be possible with the inverter logic. During manual transfers to bypass mode, the inverter must verify proper bypass operations before transferring the critical load to the bypass.
5. All transfers to bypass shall be inhibited for the following conditions:
 - a) Bypass voltage out of limits (+/- 10% of nominal)
 - b) Bypass frequency out of limits (+/- 3 Hz, adjustable, factory set)
 - c) Bypass out of synchronization
 - d) Bypass phase rotation / installation error
6. Static transfer time: No break, complete in less than 2ms.
7. The bypass shall be manually energized using the control panel or remotely through a building alarm input.

C. **Monitoring and control components:** The following components shall provide monitor and control capability:

1. Control panel with status indicators.
2. Alarm and metering display.
3. Building alarm monitoring.
4. Communication ports.

- D. **Battery management system:** The UPS shall contain a battery management system which has the following features:
1. The battery management system shall provide battery time remaining while operating in normal mode and battery mode. Battery time available information shall be displayed real-time, even under changing load conditions. Upon commissioning, battery runtime information shall be available.
 2. The battery management system shall automatically test the battery string(s) to ensure that the battery is capable of providing greater than 80% of its rated capacity. Testing the batteries shall not jeopardize the operation of the critical load. Upon detection of the battery string(s) not capable of providing 80%, the UPS system will alarm that the battery needs attention/replacement. The battery test shall be able to detect the following:
 - Open battery string
 - Shorted battery string
 - Battery capacity (runtime) less than 80% of “new” battery capacity
 3. An optional temperature sensor shall be available to monitor the ambient temperature internal to the battery cabinet. If the ambient temperature increases, the UPS system charger shall automatically reduce the charging voltage to a level recommended by the battery manufacturer. If the ambient temperature is decreased the UPS shall automatically increase the battery charge voltage to that recommended by the battery manufacturer.
 4. The system shall be capable for Individual battery strings current/voltage monitoring with alarm and indication for any inter-string battery health differential/failure.
- E. **Wiring Terminals:** The UPS module shall contain mechanical compression terminals (adequately sized to accommodate 90°C wiring) for securing user wiring to the following locations:
1. Rectifier/charger input connections (3/4-wire plus ground)
 2. Bypass input connections (3-wire plus ground for 3-wire plus ground output configuration (400Vac), or 4-wire plus ground for 4-wire plus ground output configuration)
 3. DC link connections for battery cabinets (positive and negative).
 4. AC output connections (3 or 4 wires plus ground)
- F. As a requirement of UL 1778, the backfeed protection in the UPS system shall be provided by the UPS Manufacturer.

2.4. UPS Frame

I. Enclosure

Structure

The UPS enclosure shall be sized to hold modules of UPS and shall be made by a structure able to support weight and mechanical stress during transport.

The enclosure resistance (in the fully equipped configuration) shall be tested and verified for Repetitive Shock Test, Impact Test and Rolling Falls.

It shall be rated at least IP20 (if it has a door, it shall be rated IP20 even with the door open).

Slots for plug-in electronics

The UPS enclosure shall be designed with slots capable to host plug-in electronics, namely power modules, bypass module, mimic panel, communication boards, options.

The UPS Enclosure shall have at least eight slots each of them capable to host both hot-swap Power Modules.

The UPS Enclosure shall have at least one slot dedicated for hot-swap Bypass Module.

II. Maintenance Bypass

The Maintenance Bypass shall:

- a) be provided as standard with the UPS system;
- b) provide power to the critical load from the bypass source, during times of UPS maintenance or service operations,
- c) provide a mechanical means of complete isolation of the UPS from the electrical distribution;
- d) have the possibility to be locked in case of "UPS System" (UPS frames in parallel) configuration.
- e) be provided with Manual operation provision also.

Plug-in Power Modules

Structure

Each Power Module shall comprise an independent enclosure: Rectifier, Inverter, Regulation, Power Supply, Battery Charger, and Signalization, to assure complete module self-sufficiency.

1. The Rectifier shall be made with IGBT technology throughout with DSP (Digital Signal Processor) control with Power Factor Correction capability.
2. The input rectifier shall be provided with an internal mechanical contactor for galvanic disconnection to insulate the rectifier from the mains bus in case of failure.
3. The inverter will be made with an IGBT switching circuit (PWM type) and will be digitally controlled via DSP
4. The inverter is equipped with its own output current-limiting logic, so that components are not damaged in the event of a short-circuit.
5. The output inverter shall be provided with an internal mechanical contactor for galvanic disconnection to insulate the inverter from the output critical bus in case of failure.
6. The Rectifier and Inverter topology should be "3-Level" or higher to assure high efficiency in real double conversion mode.

Plug-in and Hot-swap

Power Modules should be swappable with the system in normal (double conversion) mode without switching to bypass mode.

Power Modules shall be pluggable or removable without any other action than pulling out or pushing in the module into its slot to prevent human errors. In particular there shall be no need to press any switch or key, or to change the system setting.

Self-setting

Each power module shall be capable to detect automatically the variation of configuration (removal or insertion of modules) to share equally the load power according to the new condition (self-setting).

Sleep Mode

The Power Modules shall go into sleep mode when not on load as per the actual loading conditions of the UPS.

Cooling

Power module fans shall be variable speed controlled and with continuous check of their correct operation.

III. Plug-in Automatic Static Bypass Module

General

A static bypass shall be installed in parallel with the power modules to provide:

1. automatic load transfer without interruption to the standby power supply in case of:
 - a) overload;
 - b) out of tolerance inverter input DC voltage;
 - c) over-temperature;
 - d) inverter fault;
2. automatic transfer from standby circuit to inverter when normal conditions are restored, and verification of the inverter parameters;
3. Transfer time with inverter synchronous with bypass: No interruption.

The Static Bypass shall be provided in an independent enclosure.

The Static Bypass module shall have a signalization to indicate the state of the bypass and the possible alarms.

Plug-in and Hot-swap capability

The Static Bypass shall be provided in an independent enclosure, completely segregated from the rest of the UPS frame, in order to avoid failure propagation.

The Static Bypass should be a module pluggable or removable with the system working in double conversion (on line mode) without switching to manual bypass or switching off the UPS.

The Static Bypass shall comprise an automatic system to avoid any current flow in the plug-in connectors during the hotswap process.

Cooling

Static Bypass fans shall be variable speed controlled and with continuous check of their correct operation.

Redundant fans shall be available at least as an option.

IV. Graphical User Interface (GUI)

General

Each UPS system shall have a multi-colour LCD graphical screen user interface.

It shall be capable of showing the quantity of Power Modules connected to the critical bus, as well as the general status and measurements, events and alarms of each Power Module.

Any display shall also support the configuration of the entire system and shall provide measurements, events and alarms data for the entire system.

Plug-in capability

The GUI shall be pluggable or removable with the system working in double conversion (on line mode) without switching to bypass.

2.5 UPS System

I. UPS Frame

Parallel

“UPS Frames” should be able to be connected in parallel working mode, to reach a maximum parallel system capacity of at least 600 kVA/kW or better. The contractor shall provide MS Powder coated base frame for UPS if required at site as per the instructions of Engineer-Incharge.

The Number of UPS frames, to be supplied by UPS Manufacturer to meet the desired 200kVA/200kW Power rating can be one(1) or more than one(1) but not more than two (2).

To avoid any single points of failure, the “UPS Horizontal Parallel System” shall have no single dedicated control system designed to control the operation of the parallel “UPS Systems”.

II. Battery Frame

Both the multiple string hot swappable modular battery frame and standard battery string should be available to be chosen according to the autonomy required.

3. BATTERY MANAGEMENT

I. Charging Method

Depending on the temperature, the battery charger shall be able to select the most suitable recharge method automatically, without operator intervention, alternating float mode in combination with “intermittent” charge in such a way as to limit the effects of corrosion (plate sulphatisation) and significantly prolong battery life.

The maintenance charge voltage shall be automatically regulated in relation to the temperature of the battery compartment equipped with a temperature sensor for this purpose.

II. Adjustable and configurable parameters

The following parameters shall be adjustable and configurable:

- maximum recharge current limit,
- constant floating mode (current and voltage).

4. USER INTERFACE, CONTROLS AND ALERTS

I. Graphical User Interface (GUI)

The user interface on the UPS shall be composed of a colour graphic display and shall provide the following controls/alerts:

Display of the following parameters:

- a) input and output voltages, currents and frequencies;
- b) battery voltage;
- c) battery charge / discharge current;
- d) apparent and active power;
- e) output load.

II. Remote Communications

The following communication protocols shall be supported:

- SNMP v1 / v3,
- MODBUS over TCP-IDA,
- HTTP,
- SMTP,
- PROFIBUS,
- PROFINET.

5. EXECUTION

A. TESTS AND SERVICE TRIALS

The Client/Engineer-Incharge reserves the right to run service trials/Performance testing of the UPS to be supplied, in the manufacturing plant/Testing facility of the UPS manufacturer, in accordance with the methods listed in EN 62040-3 at their expense, before dispatch of the UPS. In addition to this, the site testing of the UPS shall also be arranged by the contractor after installation of the system.

The Client shall be informed of the date of the trials at least thirty days in advance. All tests shall be conducted with appropriate instrumentation with valid calibration certificates.

B. DELIVERY, STORAGE AND HANDLING

I. Delivery

All the materials shall be delivered to the project site in suppliers or manufacturers original wrappings and containers.

II. Storage and Handling

All the materials shall be stored in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures and humidity.

- i. Ambient Storage Temperature: -15 °C to 40 °C or better
- ii. Ambient Storage Temperature without batteries: -30 °C to 70 °C or better

C. INSTALLATION

I. General

Following supply and installation of the equipment, commissioning shall be carried out by technicians in the employ of the UPS manufacturer who shall perform the following checks.

1. Installation Environment Inspection:
 - a) verify environment compliancy with manufacturer operative and installation manual,
 - b) verify positioning and accessibility of UPS,
 - c) check availability of all necessary documentation.
2. Mechanical and Visual Inspections:
 - a) Visual inspection of the system for any sign of possible transport damage,

- b) system connections check,
 - c) protection equipment check,
 - d) Inspect battery module unit.
3. Electrical Functional Check:
- a) verify correct input and bypass voltage,
 - b) Verify correct phase rotation,
 - c) validation of measurements taken during tests on the manufacturer's premises,
 - d) Ventilation check,
 - e) Alarms and security parameters check:
4. System Working Mode Test,
- a) Verify on-line operation,
 - b) Verify on battery operation,
 - c) Verify bypass switch operation.
5. Battery Test:
- a) Autonomy test with effective load,
 - b) Voltage check on battery blocks, if accessible,
 - c) Battery room temperature check.

Result

The technician from the UPS Manufacturer shall submit a full report and installation certificate on completion of commissioning.

II. Training

As part of the commissioning procedures, the manufacturer shall train the owner's representatives in the operation of the system with regard to:

- a) principles of UPS operation and technology,
- b) user interface for entering commands,
- c) start, power-up, shutdown, bypass and diagnostic procedures,
- d) use of alarm warnings and messages,
- e) battery maintenance.

APPROVED MAKES LIST

S.No	Item	Approved Makes
1	200kVA/KW Modular UPS system	APC (SCHNEIDER ELECTRIC) /VERTIV/EATON/SOCOMEK
2	SMF VRLA Batteries	AMARA RAJA/ EXIDE/ROCKET/QUANTA
3	MCCB/MCB	SCHNEIDER ELECTRIC /ABB/L&T/EATON
4	Current Transformer(CT)	KAPPA / MATRIX / AUTOMATIC ELECTRIC / GILBERT & MAXWELL
5	LT cables/wires	POLYCAB/HAVELLS/FINOLEX/KEI
6	Cable Lugs	COMET/3D/DOWELL'S
7	Cable Glands	COMET/COSMOS/3D

NOTE: The make of any other Item if not specified in the tender document shall be got approved from Engineer-Incharge before procurement at site by the contractor.

SCHEDULE-B

Reference to Conditions of Contract

Name of Work: Supply, Installation, Testing & Commissioning of 200kVA/KW Modular Uninterruptible Power Supply (UPS) system for Central Instrumentation Facility, LAB Bldg., National Agri-Food Biotechnology Institute (NABI) Campus, Knowledge City, sector-81, Mohali-Punjab, India

- 1) Estimated cost of work : Rs.39,96,650/- only
- 2) Earnest Money Deposit : Rs.80,000/-
- 3) Performance Guarantee : 5% of tendered value
- 4) Security Deposit: : 2.5% of tendered value

SCHEDULE -C

GENERAL RULES & DIRECTIONS

Officer inviting Tender: **Manager- Admin**

Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3. See below

Definitions:

- | | |
|------------------------------|--|
| 1. Engineer-in-Charge | Assistant Engineer – Electrical |
| 2. Accepting Authority | Executive Director, NABI |
| 3. Department..... | NABI, Mohali |

Clause 1

(i) Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance/award**15days**

(ii) Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above**05 days***

Clause 2

Authority for fixing compensation under clause 2.**Executive Director, NABI**

Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start of work – **07 days**

Time allowed for execution of work. **15 weeks after reckoning date of start of work**

Authority to decide:

(i) Extension of time

.....

Executive Director, NABI

(ii) Rescheduling of mile stones

.....

Executive Director, NABI

(iii) Shifting of date of start in case of delay in handing over of site.....**Executive Director, NABI .**

Clause 12

Type of work * : **Supply, Installation, Testing & Commissioning of 200kVA/KW Modular Uninterruptible Power Supply (UPS) system for Central Instrumentation Facility, LAB Bldg., National Agri-Food Biotechnology Institute (NABI) Campus, Knowledge City, sector-81, Mohali-Punjab, India**

12.2 & 12.3 Deviation Limit beyond which clauses

12.2 & 12.3 shall apply for building work**as per CPWD Works Manual 2014 with upto date amendments**

12.5 (i) Deviation Limit beyond which clauses

12.2 & 12.3 shall apply for foundation work (except items mentioned in earth work subhead in DSR and related items)

.....

as per CPWD Works Manual 2014 with upto date Amendments

(ii) Deviation Limit for items mentioned in earth

work subhead of DSR and related items

as per CPWD Works Manual 2014 with upto date amendments

Clause 16

Competent Authority for deciding reduced rates.

.....

Executive Director, NABI

Clause 18

Any machinery, Instruments, tools & plant, ladder etc. required during execution of allotted work shall be provided by contractor. No extra payment shall be paid to contractor for any machinery, Instruments, tool & plants etc.

Clause 36 (i)

Requirement of Technical Representative(s) and recovery Rate----- **As per requirements laid down in tender and as per CPWD Works MANUAL 2014 Or as amended from time to time by CPWD**

SCHEDULE-D
ITEMS FOR EXECUTION

Item No.	Item description	Unit	Qty.
1	Supply, Installation, Testing & Commissioning of Double Conversion True Online VFI class, 200KVA / 200kW, Modular UPS System 400V, 50 Hz, Input 3 Phase, Output 3 Phase, IGBT based rectifier and inverter based design complete as per the approved technical specifications (in Schedule-A of tender document) and as per the site requirement	set	1
2	Supply, Installation, Testing & Commissioning of Sealed Maintenance free(SMF) Valve Regulated Lead Acid (VRLA) 12V batteries for providing minimum 15min backup time , separate Battery Circuit Breakers with enclosures for each battery bank/string(having automatic undervoltage trip mechanism) , Uninyvin cabling from UPS to Battery bank, Battery Interconnecting Links, MS Powder coated battery cabinets, Battery terminal caps. etc. complete as per approved technical specifications (in Schedule-A of tender document) and as per the site requirement. The contractor shall provide battery bank of minimum of 144000VAh total capacity divided in two strings.	set	1
3	Supply, Installation, Testing & Commissioning of LT panel for UPS Power distribution made with 1.6mm thick CRCA sheet, powder coated in Siemens Grey Color with the following configuration and as per the approved technical specifications (in Schedule-A of tender document) and as per the site requirement :	set	1
	01Nos.x 400A, 4Pole, 36kA rating MCCB as Incomer with Overload, Short circuit and earth fault protection, spreaders and extended rotary handles		
	02Nos.x160A, 4pole, 36kA rating MCCB as outgoing with spreaders and extended rotary handles		
	01Nos.x100A, 4pole, 36kA rating MCCB as outgoing with spreaders and extended rotary handles		
	400A rating, 1.1kV voltage grade Copper busbar		
	03Nos.x 400/5A Metering CTs (Class 1), CT shorting terminals		

	R,Y,B LED type phase indication lamps with 2A rating, SP control MCBs		
	01Nos. Existing Digital Energy Meter		
4	Supply, Installation, Testing & Commissioning of existing 01Nos.x 400A, 4pole, 36kA rating MCCB in new MS Powder coated box type enclosure complete as per the approved technical specifications (in Schedule-A of tender document) and as per the site requirement	Set	1
5	Supply, Laying and fixing of one number XLPE insulated and PVC sheathed, Aluminium conductor, strip armoured power cable of 1.1 KV grade of following size on wall surface as per the approved technical specifications (in Schedule-A of tender document) and as per the site requirement		
5.1	3.5core x 240 sq. mm (clamped with 40 x 3 mm MS flat clamp)	mtr.	60
6	Supply, Laying and fixing of one number PVC insulated, Copper conductor, Flexible power cable of 1.1 KV grade of following size on existing cable tray as per the approved technical specifications (in Schedule-A of tender document) and as per the site requirement		
6.1	1core x 185sq.mm (fixed with PVC cable tie)	mtr.	65
7	Supplying and making end termination with brass compression gland and aluminium lugs for following size of XLPE insulated and PVC sheathed armoured, aluminium conductor cable of 1.1 KV grade as required.		
7.1	3.5core x 240 sq. mm (62mm)	Each	2
8	Supplying and making end termination with PVC gland and copper lugs for following size of PVC insulated, copper conductor flexible cable of 1.1 KV grade as required.		
8.1	1core x 185sq.mm	Each	16
9	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	set	4

10	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	mtr.	40
11	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	mtr.	80
12	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors fixed on wall or on floor surface including bolts & nuts, painting, brackets etc. as required		
12.1	225 mm width X 50 mm depth X 1.6 mm thickness	mtr.	20
12.2	150 mm width X 50 mm depth X 1.6 mm thickness	mtr.	20

FORM OF PERFORMANCE BANK GUARANTEE

In consideration of the Executive Director, NABI (hereinafter called "The Institute") having offered to accept the terms and conditions of the proposed agreement between.....and.....(hereinafter called "the said Contractor(s)") for the work..... (hereinafter called "the said agreement") having agreed to production of an irrevocable Bank Guarantee for Rs.(Rupees only) as a security/guarantee from the Contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We, (hereinafter referred to as "the Bank") hereby undertake to pay to the Institute an amount not exceeding Rs. (Rupees..... Only) on demand by the Institute.
2. We,(indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Institute stating that the amount claimed as required to meet the recoveries due or likely to be due from the said Contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. (Rupeesonly)
3. We, the said bank further undertake to pay the Institute any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.
4. We, (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Institute under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer-in-Charge on behalf of the Institute certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

We, (indicate the name of the Bank) further agree with the Institute that the Institute shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Institute against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the Institute or any indulgence by the Institute to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).
7. We, (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the Institute in writing.

8. This guarantee shall be valid up to satisfactory completion of work at site and as per successful completion of time schedule period given in tender document.....unless extended on demand by the Institute. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs..... (Rupees) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated theday offor.....(indicate the name of the Bank)

ANNEXURE-1

Proforma for Authorization certificate from OEM/UPS Manufacturer

REF.No. _____

Dated _____

To,
The Executive Director,
National Agri-Food Biotechnology Institute
Knowledge City, sector-81, Mohali, Punjab

Dear Sir,

We _____ who are established and reputable manufacturers of _____ having factory/ factories at _____ (*address of factory*) do hereby authorize M/s _____ (*Name and address of bidder*) to submit a bid, negotiate and receive the order from you against your Tender enquiry no. NABI/7(171)/2019-Works for the

Supply, Installation, Testing & Commissioning of 200kVA/KW Modular Uninterruptible Power Supply (UPS) system for Central Instrumentation Facility, LAB Bldg., National Agri-Food Biotechnology Institute (NABI) Campus, Knowledge City, sector-81, Mohali-Punjab, India

We ensure that we would also support/ facilitate the M/s _____ on regular basis with technology / product updates for up-gradation / maintains / repairing / servicing of the supplied goods manufactured by us, during the Defect Liability period.

We hereby extend our full guarantee for the services offered by the above firm.

Yours
faithfully,

(Name of
authorised signatory with signature)

(Name of
manufacturer with stamp)

Note: This letter of authority should be on the **letter-head of the manufacturer** and should be signed by an authorised person. It should be enclosed by the Bidder with the tender documents.

ANNEXURE-2

INDEMNITY BOND (VIOLATION OF LAWS, NORMS, ACCIDENTS, DAMAGES ETC)

(To be submitted by bidder on Non-Judicial Stamp Paper of appropriate value)

Name of the work- Supply, Installation, Testing & Commissioning of 200kVA/KW Modular Uninterruptible Power Supply (UPS) system for Central Instrumentation Facility, LAB Bldg., National Agri-Food Biotechnology Institute (NABI) Campus, Knowledge City, sector-81, Mohali-Punjab, India

KNOW all men by these presents that I/We _____ (Name of Contractor with address) do hereby execute Indemnity Bond in favour of National Agri- Food Biotechnology Institute having their office at Knowledge City, Sector-81, Mohali and for the project Sector-81, Mohali under consideration.

On this day of2018

THIS DEED WITNESSETH AS FOLLOWS:

I/We, (Name of Contractor) hereby do indemnify and save harmless NABI having their office at Knowledge City, Sector-81, Mohali from the following:-

1. Any third party claims, civil or criminal complaints/liabilities/material/life loss during site mishaps and other accidents such as snake bites etc or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty execution/construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed allotted works by me/us.
2. Any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of me/us or any sub-Contractor/s if any, servants or agents.
3. Any claims by an employee of mine/ours or of sub-Contractors if any, under the workman compensation act and employers' Liability act, 1939 or any other law rules and regulations in force for the time being and any acts replacing and/or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of execution of the Contract work and/or arising out of and in the course of employment of any workman/employee.
4. Any act or omission of mine/ours or sub-Contractor/s if any, our/their servants or agent which may involve any loss, damage, liability, civil or criminal action.

IN WITNESS WHEREOF THE HAS SET HIS/THEIR HANDS ON THIS DAY OF

SIGNED AND DELIVERED BY THE AFORESAID

IN THE PRESENCE OF WITNESSES:

- 1.
- 2.

ANNEXURE-3

PRICE REASONABILITY CERTIFICATE

Ref No.

Date:

This is to certify that we have offered the maximum possible discount to you in our Price Bid dated _____ for (Currency/Value)_____ regarding **Supply, Installation, Testing & Commissioning of 200kVA/KW Modular Uninterruptible Power Supply (UPS) system for Central Instrumentation Facility, LAB Bldg., National Agri-Food Biotechnology Institute (NABI) Campus, Knowledge City, sector-81, Mohali-Punjab, India**

We would like to certify that the quoted price are the minimum and we have not quoted the same item on lesser rates than those being offered to NABI to any other customer nor they will do so till the validity of offer or execution of purchase order, whichever is later.

Seal and Signature of the bidder

Note: This certificate should be on the letter-head of the bidder and should be signed by an authorised person. It should be enclosed by the Bidder with the technical bid documents.