



CSIR-NATIONAL METALLURGICAL LABORATORY
(Council of Scientific & Industrial Research)
JAMSHEDPUR-831007



CONTRACT DOCUMENTS
FOR THE WORK

Replacement of Existing (2Nos. 86TR Units) Inefficient Creep Central A.C Plant with Energy Efficient Central A.C Plant in CSIR-NML, Jamshedpur.

“Part –II, Financial / Price bid”

(Document to be submitted in Envelope-2)

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CSIR-NATIONAL METALLURGICAL LABORATORY

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JAMSHEDPUR-831007



WORKS & SERVICE MAINTENANCE DIVISION NOTICE INVITING TENDER

Ref. No. NML/WSM/NIT/03(22)/2016-2017

Date: 17.03.2017

Name of Work : Replacement of Existing (2Nos.86TR Units) Inefficient Creep Central A.C Plant with Energy Efficient Central A.C Plant in CSIR-NML, Jamshedpur.

Tender Paper Submitted by : _____

Estimated Cost : Rs. 22,436,509/-

Earnest Money : Rs. 4,48,750/-

Tender Amount : Rs.

Earnest Money : DD No. _____ Date: _____ Amount: Rs. _____

Please note that:

1. As per NIT, the documents required in envelope should be complete in all respect, failing which bid will be rejected.
2. Unsigned tender will be rejected. Signature should be at the required places as mentioned in the tender document.
3. Tender received after the due date and time will not be considered.
4. Tender will be submitted in sealed cover which shall contain two separate sealed envelopes marked as envelope-1 & envelope-2.
5. Earnest Money and Tender fee in the shape of Demand Draft payable to Director, CSIR-NML to be submitted in the envelope marked as envelope-1.
6. Particulars of tender to be filled-in & submitted with the tender in the envelope marked as envelope -2.
7. The rates are to be written both in figure and words.
8. Name of the work and the due date must always be written neatly on the cover otherwise the tender will be liable for rejection.
9. The general specification to be followed can be seen at the Works & Service Maintenance Office.

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COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

NOTICE INVITING TENDER

1. Sealed tenders are hereby invited in two envelop/bid system, for the below mentioned work from the Contractors working with CPWD, PWD, MES, Railways, Semi-Government Organization, Public Sector Undertakings, Tata group or those who have worked for CSIR or its laboratories/ Institutes and have successfully carried out minimum one/two/three similar works of amounting **80%/50%/40%** value of estimated cost i.e. for **Rs. 1,79,49,207.00/ Rs. 1,12,18,255.00/ Rs. 89,74,604.00** respectively or above in a single contract during last seven years. In addition, the contractor should have experience in Replacement/ Supply, Installation, Testing & Commissioning of minimum 2x100TR capacity central AC plant. The tenderers are required to produce proof of fulfilling the conditions TIN/VAT registration certificate, PAN card and Banker's Certificate issued within last 1year from NIT date, Valid electrical license (for electrical work) while making request for issue of Tender documents.
2. Estimated Cost is **Rs.2,24,36,509/- (Rupees Two Crore Twenty Four Lakhs Thirty Six Thousand Five Hundred Nine only)**.
3. Time for carrying out the work will be **Six Months** and the date of commencement shall be reckoned from the 10th day of issue LOI (Letter Of Intent).
4. Complete Contract documents to be complied with by the tenderer whose tender may be accepted can be seen at the office of Works & Service Maintenance Division at CSIR-NML, Jamshedpur.
5. The tender shall not be issued physically. The interested and eligible contractors are to download the complete tender/contract documents from CSIR-NML Website i.e **www.nmlindia.org**. Tenderers should submit Rs.1500/- (Rupees One Thousand Five Hundred Only) in DD in favour of Director, CSIR-NML (non-refundable) for tender cost.
6. Tenders should be submitted in double sealed covers super scribed with the name of the work, date and time of opening written on the inner and outer envelopes. This will be received upto 15:00Hrs. on **10.04.2017** and will be opened at 15:30PM on the same day in the office of Works & Service Maintenance Division at CSIR-NML, Jamshedpur. Tenders should be dropped in the tender box kept in the security office at the gate before the closing date and time indicated. In case these are sent by post these should be sent by Registered post/Speed post addressed to the **Director, CSIR-National Metallurgical Laboratory, Burmamines, Jamshedpur-831007**. Tenderers are to ensure that they post the tender well in advance so as to reach before the closing time and date indicated. This office will not be responsible for postal or any other delay. Tenders/offers sent by fax/e-mail will not be entertained and will be rejected.
7. The earnest money amounting to **Rs. 4,48,750/- (Rupees Four Lakhs Forty Eight Thousand Seven Hundred Fifty Only-)** as demand draft or pay order of a schedule Bank and drawn in

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favour of **Director, CSIR-NML**, Payable at Jamshedpur should accompany the tender. Tenders received without earnest money will be invalid.

8. The Employer does not bind himself to accept the lowest or any tender and 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 rates quoted.
9. Canvassing in connection with the tenders is prohibited and the tenders submitted by the contractor who resort to canvassing are liable for rejection.
10. The tenderer shall not be permitted to tender for works in the concerned unit of CSIR in which a relative is posted in the grade between Controller of Administration and Junior Engineer, (Both inclusive) He shall also intimate the names of persons who are working with him in any capacity or subsequently employed by him and whom relatives are as mentioned above.

NOTE: A person shall be deemed to be a relative of another if, and only if, (a) they are members of a Hindu undivided family; or (b) they are husband and wife; or (c) the one is related to the other in the following manner: Father, Mother (including step mother), Son (including step son), Son's wife, Daughter (including step daughter), Father's father, Son's son, Son's son's wife, Son's daughter, Son's daughter's husband, Daughter's husband, Daughter's son, Daughter's son's wife, Daughter's daughter, Daughter's daughter's husband, Brother including step brother), Brother's wife, Sister (including step sister), Sister's husband.

11. Tender submitted shall remain valid for 90 days from the date of opening for the purpose of acceptance and award of work, validity beyond 90 days from the date of opening shall be by mutual consent.
12. The tenderer shall quote rates both in figures and words. He shall also work out the amount for each item of work and writes in both figures and words. On check if there are differences between the rates quoted by the tenderer in words and in figures or in the amount worked out by him, the following procedure shall be followed:
 - i) When there is a difference between the rates in figures and in words, the rates, which correspond to the amounts worked out by the tenderer shall be taken as correct.
 - ii) When the tenderer does not work out the amount of an item or it does not correspond with the rate written either in figures or in words, the rate quoted by the tenderer in words shall be taken as correct.
 - iii) When the rate quoted by the tenderer in figures and in words tallies but the amount is not worked out correctly the rate quoted by the tenderer shall be taken as correct and not the amount
13. The tenderer should see drawings and in case of doubt obtain required particulars, which may in any way influence his tender from the Engineer as no Claim whatsoever will be entertained for any alleged ignorance thereof.
14. Before tendering, the tenderer shall inspect the site to fully acquaint himself about the condition in regard to accessibility of site, nature and extent of ground, working condition of site and locality including stacking of materials, installations of tools and plants (T&P) etc., conditions affecting accommodations and movement of labour etc. required for the satisfactory execution of the work contract. No claim whatsoever on such account shall be entertained by the employer in any circumstances.
15. Earnest money will be fully forfeited if the contractor fails to commence the work as per letter of award.

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- 16. Except writing rates and amount, the tenderer should not write any conditions or make any changes, additions, alterations and modifications in the printed form of tenders. Tenderers who are desirous to offer rebate the same should be brought out separately in the covering letter and submitted along with the tender.
- 17. Some of the provisions of General Conditions of Contract are given below. Interpretation however shall be as given in the General Conditions of Contract.
 - (a) **DEFECT LIABILITY PERIOD (DLP):** 12 months (One year) from the date of completion as certified by the Employer.
 - (b) **MINIMUM VALUE OF WORK FOR THE INTERMEDIATE CERTIFICATE:**
Rs.37,39,420/-(Rupees Thirty Seven Lakhs Thirty Nine Thousand Four Hundred Twenty only). Intermediate certificate for a lesser amount can be admitted for payment at the discretion of the Engineer.
 - (c) **SECURITY DEPOSITS:** A sum @10% of the bill shall be deducted from each running bill of the contractor till the sum along with the sum already deposited as earnest money, will amount to security deposit of 5% of the tender value of the work. In addition, the contractor shall be required to deposit an amount equal to 5% of the tendered value of the contract as Performance Security (or Performance Guarantee) within the period prescribed for commencement of work in the letter of award issued to him.
 - (d) **COMPENSATION:** Contractor shall pay as compensation an amount equal to one percent or such smaller amount as the Employer (whose decision in writing shall be final) may decide on the cost of the whole work as shown in the agreement, for every week that the work remains un-commenced or unfinished or due quantity of work remains incomplete after the proper dates. Compensation to be paid shall not exceed ten percent of the estimated cost of the work as shown in the agreement.
- 18. Schedule showing approximate quantity of materials to be supplied by the Employer under Clause: 6 of the General Condition of Contract for work contracted to be executed and the rates at which they are to be charged for.

Particulars of Materials	Approximate Qty.	Rates at which the material will be charged to the contractor			Place of Delivery
		Unit	Rs.(Figures)	Rupees(Words)	

- 19. No material will be issued by the department for this work, however, power and water supply shall be provided by department free of cost for execution of the work.
- 20. Clauses No. 28 of conditions of contract i.e. "ESCALATION" will not be applicable in this contract since the duration of contract is less than 18 months.
- 21. The contractor shall have to dispose off all the building rubbish (malba) accumulated during execution suitably outside the campus of CSIR-NML as directed by Engineer-in charge.

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ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT MADE AT _____ this _____ day of _____
BETWEEN National Metallurgical Laboratory, Jamshedpur a constitution of Council of Scientific and
Industrial Research, New Delhi, a Society registered under the Societies Registration Act 1860 (Hereinafter
referred to as the Employer, which expression shall include its successors and assignees and authorised
officers of the Society) of the one part and _____ trading in the name and style of
_____. (herein after referred to as the Contractor(s) which expression shall include
his/her respective heirs, executors, administrators and permitted assignees) of the other part.

WHEREAS the Employer is desirous of getting the work of _____ done and has caused
drawings, schedule of Quantities and Specifications describing the work to be prepared.

AND Whereas the said specifications and the schedule of quantities and other documents have been signed by
on behalf of the parties.

NOW IT IS HEREBY AGREED AND DECLARED BY AND BETWEEN THE PARTIES HERETO AS
FOLLOWS:

1. In consideration of the payments to be made to them as hereinafter provided the Contractor shall upon and
subject to the conditions hereinafter contained execute and complete, the work at the rates specified in the
attached schedule of quantities and with such materials as are provided for and in accordance in all respect
with specifications, designs, drawings and instructions in writing. Time for carrying out the work will be
_____ and the date of commencement shall be reckoned from the tenth day of issue of award
letter.
2. The Employer shall pay to the Contractors such sums as shall become payable hereunder at the times and
in the manner specified in the said conditions.
3. This agreement contains the following documents in addition to pages of Articles of Agreement.
 - (i) General Conditions of Contract Page No _____ to _____
 - (ii) Special Conditions Page No. _____
 - (iii) Additional Conditions Page No. _____
 - (iv) Indenture for Secured Advance Page No _____ to _____
 - (v) Original tender documents along with the covering letter of the firm dated _____ Page No:1 to ____
 - (vi) _____
 - (vii) _____
 - (viii) _____

In witness whereof the parties hereto have set their respective hands the day and year herein above written.

Signed by, for and on behalf of Employer _____

In the presence of

(1) _____ (2) _____

Signed by the said contractor

In the presence of

(1) _____ (2) _____

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ANNEXURE-"I"

GENERAL CONDITIONS OF CONTRACT

1. INTERPRETATION

- a) In construing these conditions, the specifications, the schedule of quantities, tender, special conditions and agreement, the following words shall have the meanings herein assigned to them except where the subject or context otherwise requires.
- b) This contract shall comprise of the Articles of Agreement, General Conditions of Contract, Special Conditions, Additional Special Conditions, the Schedule of Quantities, Specifications, Letter of Acceptance of Tender and other documents mentioned in the contents sheet attached hereto and including those to which only reference is made herein.

WORK OR WORKS: shall mean all work or works defined in schedule of quantities, specifications and such other work or works as the contractor may be entrusted with for carrying out under this contract.

EMPLOYER: shall mean Director-General, CSIR or any officer authorized by Director-General for the purpose. (Modified vide Ref: CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)

ENGINEER: shall mean the Engineer designated by the Employer to superintend and perform other duties as indicated in the contract.

CONTRACTOR : shall mean the individual or Firm or Company, whether incorporated or not undertaking the work and shall include the legal personal representative or such individual or the persons composing such Firm or Company or the successor of such Firm or Company and the permitted assignees of such individual or Firm or Firms or Company.

SITE: shall mean the site of the contract works including any buildings and erections thereon and any other land adjoining thereto (inclusive) as aforesaid allotted by the Employer or the Engineer for the contractors use.

COMPENSATION: shall mean all sums payable by way of compensation under any of the conditions shall be considered as reasonable compensation without reference to the actual loss or damage sustained and whether or not any damage sustained, and whether or not any damage shall have been sustained.

Words imputing persons include Firms and Corporations; words imputing the singular only also include the plural and vice versa where the context so required.

The headings are given to the clauses for convenience and they will not limit the meaning or scope of the clauses in any way.

2. DRAWINGS AND SPECIFICATIONS:

The contractor shall execute whole and every part of the work in the most substantial and workmanlike manner both as regards material and otherwise in every respect in accordance with the specifications. The contractor shall also conform exactly and faithfully to the design, drawings and instructions given in the respect of the work by the Engineer. The contractor shall be furnished free of charge one copy of such specification and all such designs, drawings and instructions as are not included in the printed publications.

3. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY :

- a) The contractor shall provide at his own cost all materials (except such materials, if any as may in accordance with the contract be supplied by the Employer), plants, tools, appliances, implements, ladders, scaffolding, temporary works, etc. requisite or proper for the execution of the work whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or which may be necessary for the purpose of satisfying or complying to the requirements of Engineer as to any manner as to which under these conditions he is entitled to be satisfied together with carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work

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- of materials. Failing his so doing, the same may be provided by the Engineer at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract and/or from his Security Deposit.
- b) The contractor shall provide himself with requisite quantity and quality of water for carrying out the works at his own cost. If, however, piped water is supplied by the Employer, the contractor shall pay for the water at one percent of the total cost of the work done except on electrical work, air-conditioning work and furniture work. The contractor shall make his own arrangement for water connection and laying of further pipelines from the source of supply of the Employer. It should be clearly understood that the Employer does not guarantee to maintain un-interrupted supply of water and it will be incumbent on the part of the contractor to make alternative arrangement for water at his own cost in the event of any temporary break down in the water mains so that the progress of work is not held up for want of water. No claim as damages or refund of water charges will be entertained on account of such break-downs. However, if the contractor is permitted to make his own arrangement to draw water from a well, hand pump, or natural river or pond of the Employer, no charges will be made for the water drawn from the same, but the contractor will make good any damage done to the installations and ensure that the quality of water used in the work is conforming to BIS codes and provide for any treatment at his own cost.
 - c) The contractor shall be allowed to construct temporary wells in Employers' land for taking water for constructions purpose only after he has permission of the Employer in writing. No charges shall be recovered from the contractor on this account but the contractor shall be required to provide necessary safety arrangement to avoid any accident or damage to adjacent buildings, roads and service lines. He shall be responsible for any accident or damage caused due to construction and subsequent maintenance of the wells and shall restore the ground to its original condition after the wells are dismantled on completion of the work.
 - d) The Employer on no account shall be responsible for the expenses incurred by the contractor for hired ground or water obtained from elsewhere.
 - e) Subject to availability the Employer may supply power at only one point from where the contractor shall make his own arrangement for distribution including provision of electric meters, switches, fuses etc. at his own cost. These shall be in the custody of the Employer. If there is any hindrance caused to other works the contractor shall reroute or remove such temporary lines without any extra cost. Such temporary lines shall be removed after the completion of work. The cost of power consumed by the contractor shall be payable to the Employer at rates fixed by the Employer, which would be deducted from the running account bills. However the Employer does not guarantee the supply of power and no compensation for any failure or short supply of power shall be entertained.

3A. SUFFICIENCY OF TENDER

The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of the tender for the works and the rates and the prices quoted in the schedule of items, which rates and the 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.

(Modified as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)

4. AUTHORITIES, NOTICES AND PATENTS

- a) The contractor shall conform to any regulations and bye-laws of any corporation and of any electricity supply company and authorities with whose systems the structure is proposed to be connected, and shall before making any variations from the drawing and specifications that may be necessitated for so conforming by giving written notice to the Engineer specifying the variations proposed to be made, the reasons for making it and apply for instructions thereon. If the compliance with this clause involves any extra work not included in this contract, he shall specify these items of work and the allowance of extra payment required on their account.
- b) The contractor shall give all notices required by the said regulations or bye-laws to be given to any Authority and pay to such Authority or to any public office all fees that may be chargeable in respect of the works and lodge the receipts with the bill to the Engineer for reimbursement.

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5. RATES TO INCLUDE ALL TAXES

- a) Rates quoted by the contractor shall include sales tax / VAT (except service tax), purchase tax, turnover tax, duties, octroi, toll tax, royalties and all other taxes in respect of this contract. The Employer shall not entertain any claim whatsoever in this respect. **However, in respect of service tax, same shall be paid by the contractor to the concerned department on demand and it will be reimbursed to him by the Department after satisfying that it has been actually and genuinely paid by the contractor. The applicable and eligible service tax shall be reimbursed preferable within 7 days but not later than 30 days of submission of documentary proof of payment provided same are in order.** Tendered rates are inclusive of all taxes and levies payable under the respective statutes. However pursuant to the Constitution (Forty Sixth Amendment) Act, 1982 if any further tax or levy is imposed by statutes, after the date of receipt of tenders and the contractor thereupon necessarily and properly pays such taxes/ levies the contractor shall be reimbursed the amount as per the rules on producing proof of payment so made provided such payments, if any, is not in the opinion of the Employer (whose decision shall be final and binding) attributable to delay in executing of work within the control of the contractor.
- b) The contractor shall keep necessary books of accounts and other documents for the purpose of this conditions as may be necessary and shall allow inspection of the same by a duly authorised representative of the Employer and further shall furnish such other information and documents as the Employer may require.
- c) The contractor shall within a period of thirty days of imposition of any further tax or levy pursuant to the Constitution (Forty Sixth Amendment) Act, 1982 give a written notice thereof to the Employer that the same is given pursuant to this condition together with all necessary information relating thereto.
(Modified as per CSIR File No- 11-25(2)/2013– Engg. Dated:- 08.06.2016)

6. MATERIALS

- a) If the specification of schedule of items provide for the use of any material to be supplied by the Employer's stores or if it is required that the contractor shall use certain stores to be provided by the Employer as shown in the schedule of materials hereto annexed the contractor shall be bound to procure and shall be supplied such materials and stores as are from time to time required to be used by him for the purpose of the contract only and value of the materials so supplied at the rates specified in the said schedule of materials and of the quantities incorporated in the work may be set off or deducted from any sums then due, or thereafter to become due to the contractor under the contract or otherwise or against or from the Security deposit. All materials so supplied to the contractor by the Employer shall remain the absolute property of the Employer and the contractor shall be trustee of the materials so supplied/procured and the said materials shall not be removed/disposed of from the site of the work on any account and shall be at all times open for inspection by the Engineer or Employer. The contractor shall bear all incidental charges for cartage, storage and safe custody of all materials and against damage due to dampness, rain, sun, fire and theft and be fully responsible for their storage and maintenance. Any such material used and in perfectly good condition in the opinion of the Employer at the time of the completion of work or termination of the contract or earlier shall be returned to the Employer at a place directed by the Engineer at contractor's cost and at rates stipulated in the said schedule but in case the Employer decides not to take back materials the contractor shall have no claim for compensation on account of any such materials supplied to him as aforesaid being unused by him or for any wastage or damage to any such materials.
- b) If for any reason there is delay of non-supply of material as shown in the schedule, the contractor shall procure the same and complete the work in time after due intimation and approval of the Employer. The difference in price (between his procurement price and price shown in the schedule) shall be paid to the contractor. However in case approval of the Employer is not given, only suitable extension of time would be considered and no other claim of compensation/damages shall be payable by the Employer.
- c) After completion of the work or on determination/ termination of the contract, the theoretical quantity of cement to be used in work shall be calculated on the basis of statement showing quantity of cement to be used in different items of work provided in current Schedule for the purpose printed by CPWD. In case any item is executed for which the standard constants for the consumption of cement are not available in the above mentioned statement or cannot be derived from this statement the same shall be calculated on

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the basis of standard formula to be laid down by the Engineer. Over this theoretical quantity of cement, shall be allowed a variation upto 3% plus/minus for works estimated cost of which as put to tender is not more than Rs. 10 lakhs and upto 2% plus/minus for works estimated cost of which as put to tender is more than Rs. 10 lakhs. The difference in the quantity actually issued to the contractor and the theoretical quantity including authorised variation, if not returned by the contractor, shall be recovered at twice the issue rate, without prejudice to the provision of other conditions regarding return of materials governing the contract. In the event of its being discovered that the quantity of cement which is less than the quantity ascertained as herein before provided (allowing variation on minus side as stipulated above) the cost of quantity of cement not so used, shall be recovered from the contractor on the basis of stipulated issue rates and cartage to site.

- d) The provision of foregoing sub-clause shall apply Mutatis-Mutandis in the case of steel reinforcement or structural steel sections (each diameter/section or category shall be considered separately) except that the theoretical quantity of the steel shall be taken as the quantity required as per design or as authorised by the Engineer, including lappages, plus 3% wastage due in cutting into pieces. Over this theoretical quantity 2% plus/minus shall be allowed as variation due to wastage.
- e) The provision of foregoing sub-clause shall apply Mutatis-Mutandis in the case of cables (other than under-ground cables), wires, conduits/GI pipes, GI/MS sheets used in the various items of work shall be calculated on the basis of measurements recorded in the measurement books for the purpose of payment and for assessing the consumption of materials used in the works. Over this quantity a variation of 5% shall be allowed for wastage of materials during execution in case of cables (other than under-ground cables), wires, conduits/GI pipes, and 10% plus in case of GI/MS sheets.
- f) The provisions made above are without prejudice to the right of the Employer to take action against the contractor under the conditions of the contract for not doing the work according to the prescribed specifications.
- g) In case of easy availability of approved quality of cement and steel in the open market it will be Employer's discretion to make these items as contractor's supply (**Modified as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997**).

7. TESTING OF MATERIALS

The contractor shall provide assistance, instruments, materials, labour and any other arrangement normally required for testing, checking of materials and workmanship as stipulated in the specifications and by statutory authority at his own cost. The Employer has the right to appoint the testing authorities. The contractor shall pay for the cost of test samples, its packing, transportation including testing fees. Failing his so doing, the same shall be provided by the Engineer at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract and/or from the Security deposit or proceeds thereof or of a sufficient portion thereof.

8. CONTRACTOR'S ENGINEERS/FOREMAN AND WORKMEN

- (a) Annexure refers the contractor shall give all necessary personal superintendence during the execution of the work and as long thereafter as the Engineer may consider necessary until the expiration of defects liability period. The contractor shall employ competent Site-Engineer/Foreman as per CPWD norms and as approved by the Engineer whose qualification must conform to the requirement specified by the Engineer who shall be constantly in attendance of the work while the men are at work. Any direction, explanations, instructions or notices given by the Engineer to such Site-Engineer or Foreman or any other authorised agent shall be held to be given to the contractor. (**Modified as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997**)
- (b) The contractor shall on the request of the Engineer immediately dismiss from the works any person employed thereon who may in the opinion of the Engineer be unsuitable or incompetent or who may in the opinion of the Employer misconduct himself.

9. ACCESS

- a) The Engineer and the Employer or its representative shall at all reasonable time have free access to the works and/or workshops, factories or other places the materials are being prepared or constructed for the

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contract and also to any place where the materials are lying or from which they are being obtained and the contractor shall give every facility to them for inspection. Except the representatives of statutory authorities and those mentioned above no other person shall be allowed on the works at any time without the permission of the Engineer.

- b) If any work is to be done at a place other than the site of works, contractor shall obtain written permission of the Engineer.

10. VARIATION AND PRICE FOR VARIATION

- a) The Engineer with the approval of the Employer shall have power to make any alterations/omissions/additions and/or substitutions from the original specifications, drawings, designs and written instructions and such alterations, omissions, additions, substitutions shall not invalidate the contract and any altered, additional, or substituted work which the contractor may be directed to do in the manner specified above as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work. The rates for such altered, additional or substituted work under this clause shall be worked out in accordance with the following provisions in their respective order.
- b) If the rates for the altered, additional or substituted work are specified in the contract for the work, the contractor is bound to carry out the altered, additional, or substituted work at the same rates as are specified in the contract for the work.
- c) If the rates for the altered, additional, or substituted work are not specifically provided in the contract for the work, the rates will be derived from the rates for a similar class of work as are specified in the contract for the work.
- d) If the rates for the altered, additional or substituted work can not be determined in the manner specified in the sub-clause (b) & (c) above, then the contractor shall, within ten working days from the date of receipt of the order to carry out the work through notice in writing, inform the Engineer of the rate which it is his intention to charge for such class of work, supported by analysis of the rate claimed which shall be based on actual cost of work plus 10% as contractor's profit and over-heads except in case of departmental materials for which contractor's profit and over-heads shall be 2.5%. When such notice has been given, the Engineer with the consent of the Employer may agree to such a rate but if the Engineer does not agree to the contractors' rate the Engineer may cancel his order to carry out such class of work and arrange to carry out in such a manner as he may consider advisable.
- e) Under no circumstances, the contractor shall suspend the work on the plea of non-settlement of rates of items falling under the clause.
- f) Deviation Limits :

Building works	-	30%
Maintenance/ Emergency works	-	50%
Foundation works	-	100%
Services works	-	30%

(Added as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)

11. FAULTY MATERIALS, WORKMANSHIP AND DEFECTS AFTER COMPLETION

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

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- b) If it shall appear to the Engineer or to the Employer based on audit/technical examination that any work has been executed with unsound, imperfect, or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to the contracted for or otherwise not in accordance with the contract, any defects shrinkage or other faults which may appear within the defects liability period of six months from the date of completion arising in the opinion of the Engineer, the contractor shall on demand in writing which shall be made within six months of the completion of the work from the Engineer specifying the work, materials, articles defects or other faults 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 cost. In case of any such failure, the Engineer may rectify or remove or re-execute the work or remove and replace with others, the material or articles complained of as the case may be at the risk and cost in all respects of the contractor. **(Modified vide Ref: CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)**
- c) In lieu of rectifying the work not done in accordance with the contract, the Employer may, allow such work to remain, and in that case make allowance for the difference in value, together with such further reduction as in his opinion may be reasonable.
- d) Provided always that nothing in this clause shall relieve the contractor from his liability to execute the works in all respects in accordance with the terms and conditions of this contract, or from his liability to make good all defects.

12. WORKS TO BE OPEN FOR INSPECTION

- a) All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Engineer and the contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer to visit the works shall have been given to the contractor either himself be present to receive order and instruction or have a responsible agent duly accredited in writing present for that purpose.
- b) The contractor shall give not less than seven days notice in writing to the Engineer before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimension thereof be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up and place beyond the reach of measurement, any work without the consent in writing of the Engineer and the Engineer 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 measurement without such notice having been given or the Engineer's consent obtained the same shall be uncovered at the contractors expense or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

13. ASSIGNMENT OR SUB-LETTING

- a) The contract shall not be assigned or sublet without the written approval of the Employer and if the contractor shall assign or sub-let 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 or 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 agents to any person in the employment of the Employer in any way relating to his office or employment, or if any such employee or person shall become in any way directly or indirectly interested in the contract, the Employer shall have the power to adopt any of the courses specified under clause – 23 as may be best suited to the interest of the Employer and in the event of any of the courses being adopted the consequences specified in the said clause shall ensure.
- b) Where the contractor is a partnership firm, the approval in writing of the Employer shall be obtained before any changes 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

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into any partnership agreement hereunder the partnership firm would have the right to carry out the work hereby undertaken by the contractor. If previous approval as aforesaid is not obtained, the contract shall be deemed to have been assigned or sub-let in contravention of clause 13(a) and the same action may be taken and the same consequences shall ensue as provided in the said clause 13(a).

14. INDEMNIFYING AGAINST DAMAGES TO PERSONS, PROPERTY AND STATUTES

The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused due to negligence on his part. No hindrance shall be caused to traffic during the execution of work.

- a) The contractor shall be responsible for all injury to persons, animals or things, and for all damage, whether such injury or damage arises from carelessness or accident in any way connected therewith. This clause shall be held to include inter alia any damage due to causes as aforesaid to work, building (whether immediately adjacent or otherwise) and to roads, streets, footpaths, bridges or ways as well as all damage caused to the buildings and works forming the subject of this contract by inclemency of weather. The contractor indemnifies the Employer and holds him harmless in respect of all expenses arising from such injury or damages as aforesaid and also in respect of any award of compensation or damage consequent upon such claim including legal costs.
- b) The contractor shall reinstate all damage of every sort mentioned in this clause, so as to deliver the whole of the contracted works complete and perfect in every respect so as to make good and otherwise satisfy all claims for damage as aforesaid to the property of third parties.
- c) The contractor also indemnifies the Employer against all claim which may be made upon the Employer for acts during the currency of this contract by any employee or representative of an employee of the contractor or any sub-contractors, employed by him, for any injury to or loss of life of such employees, or for compensation payable under any law for the time being in force to any workmen or to the representative of any deceased or incapacitated workmen.
- d) The contractor also indemnifies the Employer against all claim which may be made upon the Employer for acts during the currency of this contract by the Central/State Government or local Municipal authorities for the non-compliance of any laws, regulations, rules pertaining to wages act, safety act in force and any amendments thereof in respect of all labour and apprentices directly or indirectly employed in the work under this contract.
- e) The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensation costs, charges and/or expenses arising or accruing from or in respect of any such claim and/or damages as aforesaid from any sum or sums due or to become due to the contractor or security deposit.
- f) The contractor shall indemnify the Employer against any action, claim or proceedings 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 the Employer 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 there from. Provided that the contractor shall not be liable to indemnify the Employer 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 said Employer or his authorised representative.

15. LIEN IN RESPECT OF CLAIM IN OTHER CONTRACTS

- a) Any sum of money due and payable to the contractor including the security deposit under the contract may be withheld or retained by way of lien by the Employer or Government or any other contracting person or persons against any claim of the Employer or Government or such other persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Employer or Government or with such other persons.

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- b) It is agreed term of the contract that the sum of money so withheld or retained under this clause by the Employer will be kept withheld or retained as such by the Employer or till his claim arising out of in the same contract or any other contract is either mutually settled or determined by the Arbitrator if the contract is governed by arbitration clause or by the competent court as the case may be and that the contractor shall have no claim for interest or damages whatsoever on this account or any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

16. WITHHOLDING & LIEN IN RESPECT OF SUMS CLAIMED

- a) Whenever any claim or claims for payment of a sum of money arises out of or under the contract against the contractor, the Employer shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security deposit, if any deposited by the contractor and for the purpose aforesaid the Employer 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 deposit being insufficient to cover the claimed amount or amounts or if no security deposit has been taken from the contractor, the Employer 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 at any time thereafter may become payable to the contractor under the same or any other contract, with the Employer or any contracting person pending finalisation or adjudication of any such claim.

It is an agreed term of the contract that the sum of money so withheld or retained under the lien referred above by the Employer will be kept withheld or retained as such by the Employer till the claim arising out of or under the contract is determined by the Arbitrator (if the contract is governed by the arbitration clause) or 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 Employer 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 payable in any Partner/Limited company as the case may be whether in his individual capacity or otherwise.

- b) The Employer 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 over paid in respect of any work done by the contractor under the contract or any work claimed by him 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 the Employer to recover the same from him in the manner prescribed in sub-clause (a) 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 the Employer to the contractor.

Provided that the Employer shall not be entitled to recover any sum over-paid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Employer on the one hand and the contractor on the other hand, under any term of contract permitting payment for work after assessment by the Employer.

17. IN-CASE OF DEATH OF CONTRACTOR

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Employer shall have the option of terminating the contract without compensation to the contractor.

18. SUB-CONTRACTORS

The Employer reserves the right to use the premises and any portion of the site for the execution of any work not included in the contract. The contractor is to afford all reasonable facilities to all sub-contractors, specialists, merchants, tradesmen and others who may at any time be appointed by the Employer for executing any work or supplying any goods relating to the constructions, servicing, equipping or furnishing of the work under this contract.

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19. COMPLIANCE TO LABOUR LAWS AND APPRENTICE ACT

The contractor shall comply with all the provisions of the minimum wages Act, 1948, contract labour (regulation and abolition) Act, 1970, and rules and orders framed there under and other labour laws affecting contract labour and Apprentice Act, 1961 and the rules and orders framed there under that may be in force or brought into force from time to time.

Contractor shall obtain a valid licence under contract labour (R&A) Act 1970 and contract labour (R&A) Central rules 1971 before commencing work and which should be valid till the completion. **(Added as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)**

20. COMPENSATION FOR DELAY

- a) The time for carrying out the work as entered in the tender shall be strictly observed by the contractor and shall be deemed to be the essence of the contract on the part of the contractor. The work shall through out the stipulated period of the contract be proceeded with all due diligence and the contractor shall pay as compensation an amount equal to 1% or such smaller amount as the Employer (whose decision in writing shall be final) may decide on the amount of the whole work as shown in the agreement, for every week that the work remains uncommenced or unfinished after the proper dates.
- b) And further to ensure good progress during the execution of the work, the contractor shall be bound in all cases in which the time allowed for any work exceeds one month (save for special jobs) to complete one-eighth of the whole of the work before one-fourth of the whole time allowed under the contract as elapsed; three-eighth of the work before one-half of such time has elapsed, and three-fourth of the work before three-fourth of such time has elapsed. However for special jobs if a time schedule has been submitted by the contractor and the same has been accepted by the Employer, the contractor shall comply with the said time schedule. In the event of the contractor failing to comply with this condition, he shall be liable to pay as compensation an amount equal to one percent or such smaller amount as the Employer (whose decision in writing shall be final) may decide on the said caused of the work for every week that the due quantity of work remains in complete. Provided that the entire compensation to be paid under the provisions of this clause shall not exceeds ten percent on the cost of the work as shown in the agreement.

21. DAMAGED TO WORKS IN CONSEQUENCE OF HOSTILITIES OR WAR-LIKE OPERATIONS

- a) The work (whether fully constructed or not) and all materials, machines, tools and plants, scaffolding, temporary buildings and other things connected therewith shall be at the risk of the contractor until the work has been delivered to the employer and a certificate from him to that a effect obtained. In the event of the work or any materials properly brought to the site for incorporation in the work being damaged or destroyed in consequence of hostilities or war-like operations the contractor shall, when ordered in writing by the Employer, remove any debris from the site, collect and properly stack or remove in store all serviceable materials salvaged from damaged work and shall be paid at the contract rates in accordance with the provision of this agreement for the work of clearing the site of debris, stacking, removal of serviceable materials and for the reconstruction of all works ordered by the Employer such payment being in addition to compensation up to the value of the work originally executed before being damaged or destroyed and not paid for. In case of works damaged or destroyed but not already measured and paid for the compensation shall be assessed by the Employer. The contractor shall be paid for the damaged/ destruction suffered and for restoring the material at the rates based on the analysis of rates tendered for in accordance with the provision of this agreement. The certificate of all the Employer regarding the quality and the quantity of materials and the purpose for which they were collected shall be final and binding on the contractor.
- b) Provided always that no compensation shall be payable for any loss in consequence of hostilities or war-like operations (i) unless the contractor had taken all such precautions against Air Raid as are deemed necessary by the A.R.P. Officers or the Employer, (ii) for any materials etc, not on the site of the work or for any tools and plant, machinery, scaffolding, temporary buildings and other things not intended for the work.

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- c) In the event of the contractor having to carry out reconstruction as aforesaid, he shall be allowed such extension of time for its completion as is considered reasonable by the Employer.

22. EXTENSION OF TIME

- a) If the contractor shall desire an extension of time for the completion of the work on the grounds of his having been unavoidably hindered in its execution or any other ground, he shall apply in writing to the Employer within thirty days of the date of hindrance on account of which he desires extension as aforesaid, and the Employer shall, in his opinion (which shall be final) reasonable grounds shown therefore, authorise such extension of time if any, which may in his opinion be necessary or proper.
- b) In the event the value of work exceeds the value of the bill of quantities owing to variations the contractor shall be entitled to ask for extension of time in proportion to the increase value of the work.

23. SUSPENSION OF WORK BY CONTRACTOR

- a) The Employer may without prejudice to his right against the contractor in respect of any delay or inferior workmanship or otherwise or to any claims for damages in respect of any breaches of the contract and without prejudice to any rights or remedies under any of the provisions of the contract or otherwise and whether the date for completion has or has not elapsed by notice absolutely determine the contract in any of the following cases :
- (i) If the contractor having been given by the Engineer a notice to rectify, reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improper or unworkman-like manner shall omit to comply with the requirements of such notice for a period of seven days thereafter or if the contractor shall delay or suspend the execution of the work so that in the judgement of the Employer (which shall be final and binding) he will be unable to ensure completion of the work by the date for completion or he has already failed to complete the work by that date.
 - (ii) If the contractor being a company shall pass a resolution or the court shall make in 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 of creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
 - (iii) If the contractor commits breach of any of the terms and conditions of this contract.
 - (iv) If the contractor commits any acts mentioned in Clause 13 hereof.
- b) When the contractor has made himself liable for action under any of the cases aforesaid the Employer shall have the following powers:
- i) To determine or rescind the contract as aforesaid (of which termination or rescission notice in writing to the contractor under the hand of the Employer shall be conclusive evidence). Upon such determination or rescission the security deposit of the contractor shall be liable to be forfeited and shall be absolutely at the disposal of the Employer.
 - ii) The Engineer may employ labour paid by the Employer and to supply materials to carry out the work or any part of the work debiting the contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer shall be final and conclusive against the contractor and crediting him with the value of the work done in all respects in the same manner and at the same rates as if it had been carried out by the contractor under the terms of his contract. The certificate of the Engineer as to the value of work done shall be final and conclusive against the contractor, provided always that action under the sub-clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the Employer are less than amount payable to the contractor at this agreement rate the difference should not be paid to the contractor.
 - ii) After giving notice to the contractor to measure up the work of the contractor and to take such parts thereof as shall be unexecuted out of his hands and to give it to another contractor to complete in which case in any expenses which may be incurred in excess of the sum which would have been paid to the original contractor if the whole work had been executed by him (of the amount of which exceed the certificate in writing of the Engineer shall be final and conclusive) shall be borne and paid

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- by the original contractor and may be deducted from any money due to him by the Employer under this contract or any other account whatsoever or from his security deposit.
- iii) In the event any one or more of the above courses being adopted by the Employer 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 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 provisions 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 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.

24. SECURED ADVANCE:

The contractor on signing an indenture in the form specified by the Employer during the progress of the execution of the work may be paid if agreed by the Employer upto 75% of the estimated value which shall take into account the market value and contractors tendered rates for the finished items of any material which in the opinion of the Engineer is likely to be incorporated in the work within next three months, are non perishable and are in accordance with the contract and which have been brought on the site in connection therewith and are adequately stored and protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has been made under this clause are incorporated in the work the amount of such advance shall be deducted from the next payment made under any of the clause or clauses of this contract.

25. CERTIFICATES AND PAYMENTS

- a) No payments shall be made for a work estimated to cost rupees ten thousand or less till the whole of the work shall have been completed and certificate of completion given. But in the case of a work estimated to cost more than rupees ten thousand, the contractor shall, on submitting the bill be entitled to receive a monthly payment proportionate to the part of the work executed, and to the satisfaction of the Engineer, whose certificate of the sum so payable shall be final and conclusive against the contractor, provided the amount of work done is as per the value of intermediate certificate or for a lesser amount as the discretion of the Engineer as mentioned in the NIT. All such intermediate payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound, imperfect or unskilled work to be removed and taken away and reconstructed or reerected or be considered as an admission of the due performance of the contract, of any part thereof in any respect or the accruing of any claim not shall it conclude. Determine or effect in any way the powers of the Employer under these conditions or any of them as to the final settlement and adjustment of the accounts or in any other way vary or affect the contract. The final bill shall be submitted by the contractor within two months of the date fixed for the completion of work or of the date of the certificate of completion furnished by the Employer and payment shall be made within three months if the value of the completed works is up to Rs. Two lakhs and in six months if the same exceeds Rs. Two lakhs of the submission of such bill. If there shall be any dispute about any item or items of the works then the undisputed item or items only shall be paid within the said period of three months or six months as the case may be.
- b) Whenever there is likely to be delay in recording detailed measurement for making a running payment, advance payment without detailed measurements for work done worked out at 75 per cent of the tendered rates for assessed quantities may be made in running account bills by the Employer on the basis of a certificate from the Engineer. The advance payments so allowed shall be adjusted in the subsequent running bills by taking detailed measurements thereof. Final payments shall be made only on the basis of detailed measurements.
- c) A bill shall be submitted by the contractor each month on or before one date fixed by the Engineer on printed forms obtainable from the Engineer's office. The Engineer shall take or cause to be taken the

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requisite measurements for the purpose of having the same verified and the claim, as far as admissible, adjusted as far as possible, before the expiry of ten days from the presentation of the bill. If the contractor does not submit the bill within the time fixed as aforesaid the Engineer may cause action within seven days of the date fixed as aforesaid an authorised representative to measure up the said work in the presence of the contractor whose signature to the measurement will be sufficient warrant and the Engineer may prepare the bill from such measurements.

d) Before taking any measurement of any work the Engineer or his authorised representative deputed by him shall give reasonable notice to the contractor. If the contractor fails to attend after such notice or fails to sign or to record the difference within a week from the date of measurement in the manner required by the Engineer then in any such event the measurements taken by the Engineer or by the authorised representative deputed by him as the case may be, shall be final and binding on the contractor and the contractor shall have no right to dispute the same.

e) The charges in the bills shall always be entered at the rates specified in the agreement or in the case of any extra work ordered in pursuance of these conditions and not mentioned or provided for in the agreement at the rate determined as per clause 10. However in case of partially executed items of work, the Employer at his discretion allows proportionate rates for such items of work as determined by the Engineer whose certificate of the sum so payable shall be final and conclusive against the contractor.

26. SECURITY DEPOSIT :

- (a) The contractor shall permit the Employer at the time of making any payment to him for the work done and measured to deduct sum at the rate of 10% of the gross value of work done in each running bill along with Earnest Money if any, as already deposited by the contractor will amount to 10% of the estimated cost or Rs 5.0 lakhs whichever is less, unless full amount of security deposit in cash or in the form of fixed deposit receipts pledged in favour of the Employer has been deposited.
- (b) In case a fixed deposit receipt of any scheduled bank is furnished by the contractor to the Employer as part of the security deposit and the bank goes into liquidation or for any reason 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 in the Employer to make good the deficit of such sum from the running bill as mentioned above. Such deductions will be held by the Employer by way of security deposit, provided always that the Employer for this purpose shall be entitled to recover the said percentage of the amount from each running bill till the balance of the amount of security deposit is realised. All compensation of the other sums of money payable by the contractor under the terms of the contract may be deducted from the 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 the Employer on any account whatsoever and in the event of his security deposit being reduced by reason of any such deductions aforesaid, the contractor shall within ten days make good in cash or further fixed deposit receipt pledged in favour of the Employer. The security deposit shall be collected from the running bills of the contractor at the rates mentioned above and the earnest money if deposited at the time of tenders will be treated as part of the security deposit.
- (c) The contractor if he so desires may furnish fixed deposit receipt in advance towards the security deposit. Such fixed deposit receipt shall be of a minimum value of Rs.25000/- each (The last such fixed deposit receipt could be of a lower value on the basis of the amount). In case any recovery effected from running account bills, such recovered amount shall not be replaced with fixed deposit receipt. It is in the contractor's interest to keep a watch about the adequacy of the fixed deposit receipt submitted.
- (d) No partial refund of security deposit shall be made during the defect liability period. In case the final bill is not settled within deposited period for reasons beyond control and the Employer is satisfied that the security deposit is not required for adjustment of Employers dues or whatsoever dues either in this or any other contract then this security deposit either in full or in part could be refunded at the sole discretion of the Employer.

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However release of security deposit would be only after written clearance of labour officer regarding no dues or claims is received. **(Added as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)**

- (e) In case of termination of contract, the security deposit shall be forfeited and amount necessary to make up this amount shall be recovered from money due to the contractor under this contract, or any other contract with the Employer.

27. COMPLETION CERTIFICATE:

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Employer and within ten days of the receipt of such notice the Engineer shall inspect the work. If there is no defect in the work the Employer shall furnish the contractor with a certificate of completion otherwise a certificate of completion indicating defects shall be issued but the work shall not be considered to be completed until the contractor shall have removed from the premises on which the work shall be executed all the scaffolding, surplus material, rubbish, and all huts and sanitary arrangements required for his work, people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor and cleaned of the dirt, splashes, droppings of finishing items from all wood work, doors, windows, walls, floors or other parts of any building, in upon or about which the work is to be executed or of which he may have had possession for the purpose of the execution thereof. If the contractor shall fail to comply with requirements of this clause on or before the date fixed for the completion of the work, the Employer may at the risk and cost of the contractor take action as he may think fit and the contractor shall have no claim except for any sum actually realised by the sale thereof.

28. ESCALATION

- a) If the prices of materials not being supplied by the Employer and/or wages of labour required for execution of the work increase, the contractor shall be compensated for such increase as per provisions detailed below and the amount of the contractor shall accordingly be varied subject to the condition that compensation for escalation in prices shall be available only for the work done during the stipulated period of the contract including such period for which the contract is validly extended under the provisions of Clause 22 of General Conditions of Contract without levy of compensation under Clause 20 of General Conditions of Contract and also subject to the condition that no such compensation shall be payable for a work for which the stipulated period of completion is six months or less. Such compensation for escalation in the prices of materials and labour when due, shall be worked out based on the following provision.
- i) The base date for working out such escalation shall be the last date on which the tenders were stipulated to be received.
- ii) The cost of work on which escalation will be payable shall be reckoned as 85% of the cost of the bills, running or final, and from this amount the value of material supplied by the Employer and proposed to be recovered in the particular bill shall be deducted before the amount of compensation for escalation is worked out **(Modified as per CSIR File No- 17/167/93–Engg dated:- 05.02.2000)**. In case of materials brought to site for which secured advance is included in the bill full value of such materials as assessed by the Engineer in charge (and not the reduced amount for which secured advance has been paid), shall be included in the cost of work done for operation of this clause. Similarly when such materials are incorporated in the work, the secured advance is deducted from the bill the full-assessed value of the materials originally considered for operation of this clause shall be deducted from the cost of work shown in the bill running or final. Further the cost of work shall not include any work for which payment is made for any item at prevailing market rates.
- iii) The compensation for escalation for materials & labour shall be worked out as per the formula given below:

$$VM = W \times \frac{A (MI-MIo)}{100 \quad MIo}$$

VM–Variation in material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

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W—Cost of work done worked out as indicated in sub para (ii) above.

A—Component of materials expressed as per cent of the total value of work and is predetermined as 75.

MI—Index numbers of Wholesale prices in India for all commodities published by the Reserve Bank of India for the period under reckoning.

Mlo—Index numbers of Wholesale prices in India for all commodities published by the Reserve Bank of India on the date of receipt of tenders.

$$VL = W \frac{B}{100} \times \frac{(LI - LLo)}{LLo}$$

VL—Variation in labour cost i.e. increases or decrease in the amount in rupees to be paid or recovered.

W—Value of work done, worked out as indicated in sub para (ii) above.

B—Component of labour expressed as per cent of the total value of work and is predetermined as 25.

LI—All India consumer price index numbers for industrial workers published by the Reserve Bank of India for the period under reckoning as for the period under consideration.

Llo-- All India consumer price index numbers for industrial workers published by the Reserve Bank of India and valid on the stipulated date of receipt of tenders.

- b) The following principle shall be followed while working out indices mentioned in sub- Para (iii) above.
- i) The compensation for escalation shall be worked out at half yearly intervals and shall be with respect to the cost of work done during the six calendar months of the said work. The first such payment shall be made at the end of the six months after the month (excluding) in which the tender was accepted and thereafter as six monthly intervals. At the time of completion of work, the last period for payment might become less than six months, depending on the actual date of completion.
 - ii) The index (MI or LI) relevant to any six months for which such compensation is paid shall be the arithmetical average of the indices relevant to the six calendar months. If the period upto date of completion after the six months covered by the last such instalment of payment is less than six months, the index MI or LI shall be the average of the indices for the months falling within that period.
 - iii) The base index (Mlo or LLo) shall be the one relating to the month in which the tender was stipulated to be received.
- c) In the event the price of materials and/or wages of labour required for execution of the work decreases there shall be downward adjustment of the cost of work so that the price of materials and/or wages of labour shall be deductible from the cost of work under this contract and in this regard formula herein before stated under this clause shall mutatis mutandis apply provided that no such adjustment for the decrease in the prices of materials and/or wages of labour aforementioned would be made in case of contracts in which the stipulated period of completion of the work is six months or less.
- d) Employer shall have the discretion to permit IEEMA (Indian Electrical & Electronics Manufacturer's Association) clause for Escalation In Case of specialised works e.g. lifts and electrical and Mechanical Installations etc. where the price variation is not similar to building works. **(Added as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)**

29. ARBITRATION:

- a) Except where otherwise provided in the contract, all questions and disputes relating to the interpretation of the specifications, designs, drawings and instructions herein before mentioned, and as to the quality or 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, specifications, estimates, instructions, orders on these conditions or otherwise concerning the works,

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or the execution of failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the person appointed by the Director General, Council of Scientific and Industrial Research at the time of such dispute or if there be no Director General, Council of Scientific and Industrial Research, The Administrative Head of the Council of Scientific and Industrial Research at the time of such appointment. Any party shall appoint the Arbitrator within 30 days from the receipt of a request. The arbitrator to whom the matter is originally referred being unwilling or unable to act for any reason the Director General shall appoint another person to act as arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from the stage at which his predecessor left it. The Arbitrator shall give a speaking award. The award of the Arbitrator shall be final and binding on the parties. The cost of the Arbitrator shall be borne equally by both the parties.

- b) It is also a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.
- c) It is also a term of the contract that if the contractor does not make any demand for arbitration in respect of any claim in writing within 90 days of receiving the intimation from the Employer that the final bill is ready for payment, the claim of the contractor will be deemed to have been waived and absolutely barred and the Employer shall be discharged and released of all liabilities under the contract in respect of these claims.
- d) Subject as aforesaid the provision of the arbitration and Conciliation Act, 1996 or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the Arbitration reference under this clause.
(Modified as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)

30. DISMANTLED MATERIAL:

The contractor shall treat all material obtained during dismantling of structure, services, sub-system/installations, excavation of the site for a works etc. as Employer's property and such material shall be disposed of to the best advantage of the Employer according to the instruction issued in writing by the Engineer.

(Added as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)

31.PERFORMANCE GUARANTEE:

Performance guarantee may be taken from the contractor before the award of the work, by the officer authorised to award the contract if and where considered necessary, to ensure that a part or whole of the contract is completed by the contractor. In case of non-performance, this guarantee could be encashed.

(Added as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)

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ANNEXURE-"II"

*** SPECIAL CONDITIONS ***

1. These special conditions are meant to amplify the general specifications and general conditions of contract.
2. Work shall be done as per CPWD specification.
In case of any discrepancy the order of precedence in interpretation shall be as under.
 - (i) Schedule of quantities
 - (ii) General Conditions of Contract
 - (iii) Special Conditions, Additional Conditions & Additional Specifications.
 - (iv) Specialist's work, the specification of which are attached.
 - (v) Additional Specifications for Electrical works – conduit laying, boxes, etc.
 - (vi) CPWD latest civil and Electrical works specifications.
 - (vii) I.S. Codes
 - (viii) International codes.
 - (ix) Best Engineering practice.

(Modified as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)

3. STEEL

- (i) Steel to be issued as stated elsewhere in the contract shall be for reinforcement bars for RCC work. For all other items of steel work the contractor shall procure the same.
- (ii) Reinforcement bars for RCC work will be issued in available coils and straight lengths. No claim for straightening the bars whatsoever shall be entertained.
- (iii) Issue of steel of diameters above 10 mm dia will be regulated on sectional weight basis, weight being calculated with the help of the standard sectional weights as given in the CPWD latest specifications for conversion of length to weight. However, for bars up to and including 10 mm dia the following procedure shall be adopted. The average sectional weight for each diameter shall be arrived at from samples from each lot of steel received at site. The actual weight of steel issued shall be modified to take into account the variations between the actual and the standard co-efficient and the contractor's account will be debited by the cost of this modified quantity only.
- (iv) For theoretical consumption of steel reinforcement bars will be balanced diameter wise for the purpose of penal recovery as envisaged in the contract.

4. CEMENT

Cement to be issued as stated elsewhere in the contract shall be only for site work. For factory made products such as Pre-cast tiles, hollow concrete blocks. RCC pipes etc. cement shall not be issued. Contractor shall procure cement for site work. Use of PSC/PPC cement in non-structural work / small work or minor repair work in place of OPC cement (for non-availability).

5. Unless otherwise provided in the schedule of quantities the rates tendered by the contractor shall apply for all heights, lifts, leads and depths of the work and nothing extra shall be payable on this account.
6. The surplus excavated earth, which is beyond the requirement of the Employer's work, may be allowed by the Employer to be disposed off by the contractor on his own or sell the surplus excavated earth to private parties at the discretion but nothing extra will be paid for the cartage or disposal of surplus earth if the same is not required on any other work of the Employer.

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ANNEXURE- "III"

Contractor's Site Superintendence

Staff to be employed by contractor on works. The contractor shall employ the following technical staff during execution of works: -

a) For building and road works

(i) One Graduate Engineer, when the tendered cost of work exceeds Rs. 10 lakhs.

(ii) One specified Diploma holder (overseer) with experience not less than 3 years when the tendered cost of work exceeds Rs 5.0 lakhs but is less than Rs 10.0 lakhs.

(iii) One qualified Diploma holder when the tendered cost of work is more than Rs 2 lakhs but less than Rs 5 lakhs.

(b) For sanitary and water supply works one qualified diploma holder with experience not less than 5 years, out of which one year should be in sanitary and water supply works when the tendered cost of work is more than Rs 50,000.

(c) For Electrical Works:-

(i) One qualified graduate engineer possessing degree in Electrical Engineering from recognised university with an experience of not less than 3 years or a Diploma holder in Electrical Engineering with an experience of not less than seven years when the tendered cost of work is not less than Rs. 1.5 lakhs.

(ii) One qualified graduate engineer with 2 years experience or a Diploma holder in Electrical Engineering with an experience of not less than 3 years when the tendered cost of the work is more than Rs. 75 thousand but less than Rs 1.5 lakhs.

(iii) One Diploma holder in Electrical Engineering with experience of not less than 3 years when the tendered cost of work is more than Rs 37,000, but less than Rs 75,000.

(iii) One licensed supervisor with experience of not less than 3 years when the tendered cost of work is more than Rs 7,500, but less than Rs 37,000.

(d) In case the contractor fails to employ the technical staff as aforesaid, he shall be liable to pay reasonable amount not exceeding the amount shown below for each month of default. These recoveries are subject to modifications from time to time by CSIR based on CPWD:-

(i) In case when a Graduate Engineer is to be employed ----- Rs 3,000/-

(ii) In case when a qualified Diploma holder is required to be employed ----- Rs 1,500/-

(iii) In case when a technical supervisor is to be employed ----- Rs 750/-

(Added as per CSIR File No- 17/167/93 – Engg dated:- 05.02.1997)

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***** ADDITIONAL CONDITIONS *****

1. The structural and architectural drawings shall at all times be properly correlated before executing any work. However, in case of any discrepancy in the item given in the schedule of quantities appended with the tender and drawings relating to the relevant item the former shall prevail unless and otherwise given in writing by the Engineer.
2. No payment shall be made to the contractor for any damage caused by the rain, snowfall, floods or any other natural cause whatsoever during the execution of work. The damage to work will be made good by the contractor at his own cost, and no claim on this account shall be entertained.
3. All materials used shall be as per specifications and ISI marked whenever applicable ISI marking referred relate to latest BIS code as published by Bureau of Indian Standards upto 30 days before the date of opening the tender.
4. The contractor shall give a performance test of the entire installation(s) as per standard specifications and/or as directed by the Engineer and will also submit Test certificates as are required by Municipal/Electrical authority or any other authority. Nothing extra shall be payable for the same other than the fees paid to such authorities, which shall be reimbursed on production of receipts.

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INDENTURE FOR SECURED ADVANCE

This indenture made the _____ day of _____ 20 between _____ (hereinafter called the contractor which expression shall where the context so admits or implies be deemed to include his heirs, executors, administrators and permitted assignees) of the one part and Council of Scientific & Industrial Research, New Delhi, a Society registered under the Societies Registration Act 1860 (hereinafter called the Employer which expression shall include its successors and assignees and authorized officers of the Society) of the other part.

WHEREAS by an agreement dated _____ (hereinafter called the said agreement) the contractor has agreed AND WHEREAS the contractor has applied to the Employer that he may be allowed advances on the security of materials absolutely belonging to him and brought by him to the site of the works the subject of the said agreement for use in the construction of such of the works as he has undertaken to execute at rates fixed for the finished work (inclusive of the cost of materials and labour and other charges) AND WHEREAS the Employer has agreed to advance to the contractor the sum of Rs. _____ (Rupees _____) on the security of materials the quantities and other particulars of which are detailed in accounts of secured advances attached to the running account Bill for the said works signed by the contractor on _____ and the Employer has reserved to himself the option of making any further advance or advances on the security of other materials brought by the contractor to the site of the said works. Now THIS INDENTURE WITNESSETH that in pursuance of the said agreement and in consideration of the sum of Rs. _____ on or before the execution of these presents paid to the contractor by the Employer (the receipt whereof the contractor doth hereby acknowledge) and of such further advances (if any) as may be made to him as aforesaid the contractor doth hereby covenant and agree with the Employer and declare as follows :-

1. That the said sum of Rs. _____ advance by the Employer to the contractor as aforesaid and all or any further sum or sums advanced as aforesaid shall be employed by the contractor in or towards expediting the execution of the said works and for no other purpose whatsoever.
2. That the materials detailed in the said account of secured advance which have been offered to and accepted by the Employer as security are absolutely the contractor's own property and free from encumbrances of any kind and the contractor will not make any application for or receive a further advance on the security of materials which are not absolutely his own property and free from encumbrances of any kind and the contractor indemnifies the Employer against all claims to any materials in respect of which an advance has been made to him as aforesaid.
3. That the materials detailed in the said account of secured advances and all other materials on the security of which any further advance or advances may hereafter be made as aforesaid (hereinafter called the said materials) shall be used by the contractor solely in the execution of the said works in accordance with the directions of the Engineer and in the term of the said agreement.
4. That the contractor shall make at his own cost all necessary and adequate arrangements for the proper watch, safe custody and protections against all risks of the said materials and the until used in construction as aforesaid the said materials shall remain at the site of the said works in the contractor's custody and on his own responsibility and shall at all times be open to inspection by the Employer or any officer authorized by him. In the event of the said materials or any part thereof being stolen, destroyed or damaged or becoming deteriorated in a greater degree than is due to reasonable use and wear thereof the contractor will forthwith replace the same with other materials of like quality or repair and make good the same as required by the Engineer.
5. That the said materials shall not on any account be removed from the site of the said work except with the written permission of the Employer or any officer authorised by him on that behalf.
6. That the advances shall be repayable in full when or before the contractor receives payments from the employer of the price payable to him for the said works under the terms and provisions of the said agreement. However if any intermediate payments are made to the contractor on account of work done then on the occasion of each such payment the Employer will be a liberty to make a recovery from the contractor's bill for such payment by deducting therefrom the value of the said materials then actually used in the construction

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and in respect of which recovery has not been made previously, the value for this purpose being determined in respect of each description of materials as the rates at which the amounts of the advances made under these presents were calculated.

7. That if the contractor shall at any time make any default in the performance or observance in any respect of any of the terms of provisions of the said agreement or of these presents the total amount of the advance or advances that may still be owing to the Employer shall immediately on the happening of such default be repayable by the contractor to the Employer together with interest thereon at twelve percent per annum from the date of respective date of such advance or advances to the date of repayment and with all costs charges, damages and expenses incurred by the Employer in or for the recovery thereof or the enforcement of this security or otherwise by reason of the default of the contractor and the contractor hereby covenants and agrees with the Employer to repay and pay the same respectively to him accordingly.

8. That the contractor hereby charges all the said materials with the repayment to the Employer of the said sum of Rs. _____ and any further sum or sums advanced as aforesaid and all costs charges, damages and expenses payable under these presents PROVIDED ALWAYS and it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the powers contained therein if and whenever the covenant for payment and repayment herein before contained shall become enforceable and the money owing shall not be paid in accordance therewith the Employer may at any time thereafter adopt all or any of the following courses as he may deem best :-

- a) Seize and utilize the said materials or any part thereof in the completion of the said works on behalf of the contractor in accordance with the provisions in that behalf contained in the said agreement debiting the contractor with the actual cost of effecting such completion and amount due in respect of advances under these presents and crediting the contractor with the value of work done as if he had carried it out in accordance with said agreement and at the rates thereby provided. If the balance is against the contractor he is to pay same to the Employer on demand.
- b) Removed and sell by public auction the seized materials or any part thereof and out of the moneys arising from the sale retain all the sums aforesaid repayable or payable to the Employer under these presents and pay over the surplus (if any) to the contractor.
- c) Deduct all or any part of the moneys owing out of the security deposit or any sum due to the contractor under the said agreement.

9. That except in the event of such default on the part of the contractor as aforesaid interest on the said advance shall not be payable.

In witness whereof the said _____ and _____ by the order and under the direction of the Employer have hereunto set their respective hands the day and year first above written.

Signed sealed and delivered
by the said contractor : _____

In the presence of
Signature : _____
Name : _____
Address : _____
Signed by _____

By the order and direction
of the Employer : _____

In the presence of
Signature : _____
Name : _____
Address : _____

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PERFORMANCE GUARANTEE

To :

Council of Scientific & Industrial Research

In consideration of Council of Scientific & Industrial Research (hereinafter) called "The Council" having awarded to M/s. _____ a Company registered under the Companies Act, 1956 (hereinafter) called the Contractor a contract for (hereinafter) called the said contract under the terms and conditions of an Agreement dated. _____ made between the Council and the Contractor hereinafter called the said agreement and Council agreed to accept a Deed of Guarantee as herein provided for Rs. _____ (Rupees. _____ only) from a Scheduled Bank towards due performance of the contract by the Contractor as per the terms and conditions of the contract on the condition that the Bank on demand from the Council and without demur pay to the Council the aforesaid amount.

2. We, _____ Bank Ltd, (hereinafter) referred to as the 'bank' do hereby undertake to pay to the Council and amount not exceed Rs. _____ against any loss or damage caused to or suffered or would be caused to or suffered by the Council by reasons of any breach or breaches of any of the terms of conditions contained of the said agreement by the said contractor.
3. We, _____ Bank Ltd, do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, merely on a demand from the Council by stating the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Council for reasons of any breach by the said contractor(s) of any of the terms & conditions contained in the said Agreement or by reason of the contractor(s) failure to perform the said Agreement. 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. _____
4. This guarantee shall come into force immediately and continue in force and remain valid till six months after the completion of all works under the said contract which according to the terms of the said contract, should be Five Year from the probable date of completion viz, the _____ day of _____. If, however, the period of the completion of the works under the said contract is for any reason extended and upon such extension if the Contractor fails, before the terms of this guarantee expires, to furnish a fresh or renewed guarantee for the extended period the Bank shall pay to Council the said sum of Rs _____ or such lesser sum as Council may demand.
5. This guarantee shall not be affected by any change in the constitution of the Bank or of the Contractor.
6. Notwithstanding anything hereinbefore contained, the liability of the Bank under this guarantee is restricted to Rs. _____ (Rupees. _____ only) and the guarantee shall remain in force till _____ day of _____ 20 _____ unless claim or demand under this guarantee is presented to the Bank within six months from that date all the rights of Council under this guarantee shall be forfeited and the Bank shall be released and discharged from all obligations hereunder.

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**CSIR-NATIONAL METALLURGICAL LABORATORY
JAMSHEDPUR-831007**



WORKS & SERVICE MAINTENANCE DIVISION

ABSTRACT OF THE FINANCIAL/PRICE BID

Name of Work: Replacement of Existing (2Nos.x86TR Units) inefficient Creep Central A.C. Plant with energy efficient Central A.C. Plant in CSIR-NML, Jamshedpur.

SI. No.	SUB HEAD	PARTICULATS	ITEM NO.	AMOUNT (Rs.)
1	A	Air Conditioning Work	01 to 29	
2	B	Civil Work	30 to 80	
3	C	Internal Electrification Work	81 to 102	
4	D	Buy-Back	103 to 108	
5	E	Operation & Annual Maintenance	109 to 115	
		Total Sub Head(A+B+C-D+E)=Rs		
		Discount, if any Rs:		
		Grand Total=Rs.		
Total Amount in Words: (Rupees				

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CSIR-NATIONAL METALLURGICAL LABORATORY

JAMSHEDPUR-831007

WORKS & SERVICE MAINTENANCE DIVISION

BILL OF QUANTITY (PART-II)

(Financial/Price Bid)



Name of Work: Replacement of Existing (2Nos.x86TR Units) inefficient Creep Central A.C Plant with energy efficient Central A.C Plant in CSIR-NML, Jamshedpur.

Sub Head -(A) Supply, Installation, Testing & Commissioning of energy efficient Central AC Plant.					
Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
1)	Water Cooled Screw Chiller				
	Supply, Installation, Testing & Commissioning of 125 TR (Net Capacity) Screw type Chilling unit complete with Screw compressor, Shell and Tube Condenser and Chiller (Flooded Evaporator and Flooded Condenser), Hermetic or Semi Hermetic motor, (R- 134a or equal gas) refrigeration piping, integral microprocessor electrical panel with digital control and controllers, one touch operating parameters display, chiller insulation, 1st charge of R-134a refrigerant, Lube oil, duly factory tested, appropriate packing for shipment in container from factory upto site, finish painting, with all ancillaries, site delivered, erected commissioned and tested as per specification.	Each	2.00		
	Operating Parameters				
	TR output - 125 TR (At Specified Conditions)				
	EWT Chiller - 12°C				
	LWT Chiller - 6.4°C				
	IKW/ TR at Full Load at Stated Conditions: 0.64 to 0.68				
	Refrigerant - R- 134a/ Equal (R-22 not Acceptable)				
	Flow Through Chiller = 2.4 USGPM/ TR				
	Condenser ΔT - 36.60C/32.20C				
	Condenser flow - 4 USGPM/ Ton				
	Fouling Factor Chiller - 0.0005 (British)				
	Fouling Factor Condenser - 0.001 (British)				
	Number of Compressors: 1 or 2				
	Target IKW/TR at 100% Load - 0.64 to 0.67				
2)	Airside Equipment				
	Supply of Air Handling Units (AHU):				
	Supply, Installation, Testing & Commissioning of Double skin AHU's, 45 mm PUF injected insulation panels (Exterior Panel - 0.8mm Pre-Coated and Interior Panel 0.8mm Plain), Thermal break profile, complete with 10μ washable pleated prefilters, Chilled water cooling coils with copper tubing of 12 mm diameter, Aluminium fins, copper header, SS-304 coil casing, 18 G SS-304 drain tray, DIDW high efficiency backward curved centrifugal fan, low fan rpm (Less than 9 m/s) , low noise level, fire retardant flexible canvas connection, heavy gauge extruded aluminium fan motor base, Efficiency - 1 TEFC squirrel cage motor of 4 pole, belt drive package. All AHU's to be equipped with Limit Switch and Light duly interlocked with AHU motors. Capacity as follows:				

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
a)	Creep Bay: 13,000 CFM/ 50mm W.G. Static Pressure/ Filter & Coil Area 28 ft² /4-Row Cooling Coil + 2 Row Reheat Coil for RH Control, 5.5 KW Motor	Set	2.00		
b)	Mezzanine Office: 1,600 CFM/ 50mm W.G. Static Pressure/ Filter Area 4 ft²-Coil Area 4 ft² /4-Row Cooling Coil, 1.1 KW Motor	Set	1.00		
c)	Director Floor: 3,000 CFM/ 50mm W.G. Static Pressure/ Filter Area 9 ft²--Coil Area 9 ft² /6-Row Cooling Coil, 1.5 KW Motor	Set	1.00		
d)	Auditorium: 16,000 CFM/ 60mm W.G. Static Pressure/ Filter & Coil Area 32 ft² /6-Row Cooling Coil, 7.5 KW Motor	Set	1.00		
e)	Supply, Installation, Testing & Commissioning of Wall Mounted Axial Fans with Gravity Louver and Bird Screen for capacities as below: 1000 CFM/ 15mm Static Pressure (Power Pack Room)	Set	1.00		
3)	Cooling Tower:				
a)	Supply, Installation, Testing & Commissioning of Cooling Tower: - Induced draft cross/counter flow type with FRP Body, PVC Louvers and Eliminators, Polypropylene nozzles, Aluminium Alloy fan blades, FRP fan body, of single cell type (a) Hot water flow = 600 usgpm (b) HW Temp = 36.38C(97.5 F) (c) CW Temp = 32.22 C (90 F) (d) WB Temp = 28.3 C (83 F) (e) Drift Loss = 0.005% (f) Motor = 5.5 KW Making of RCC Support for CT (as per item No.43)	Each	2.00		
b)	Fabrication/ Installation of MS Structural Support for Cooling Tower and Grouting to RCC Pedestals, Carrying out Levelling of MS I-Beam/ Channel supports and finished with 2 Coats of Red Oxide Primer (Berger/ Shalimar make) and Black Enamel paint	Kg.	2500.00		
4)	Fan Coil Unit				

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
(A)	Supply, Installation, Testing & Commissioning of Cassette type Fan Coil Unit hung from slab with GI threaded rods and levelled with the False Ceiling. FCU to be of 4-Way type with Powder Coated Architectural finish (on the visible portion under F/C). All FCU'S to be provided with Programmable Thermostat with ability to program 3-speed fan, set Temperature. This thermostat shall be Wall Mounted at 1m level.				
i)	1.5 TR (Director Flr 16 Nos + Mezz Floor 5 Nos)	Each	21.00		
ii)	2 TR (Director Flr 11 Nos + Mezz Floor 6 Nos)	Each	17.00		
(B)	Supply, Installation, Testing & Commissioning of Concealed type Fan Coil Unit hung from slab with GI threaded rods complete with Drain tray insulated with Nitrile foam. All FCU'S to be provided with Programmable Thermostat with ability to program 3-speed fan, set Temperature. This thermostat shall be Wall Mounted at 1m level				
i)	2 TR (40mm Static Pressure Reqd)	Each	2.00		
(C)	Supply, Installation, Testing & Commissioning of Combined Valve set (Factory assembled) consisting of Isolation valves (3 Nos), drain cock, bypass, Strainer, and Control Valve with ON-OFF actuator encased in a openable preinsulated kit . All valve sets to be provided with helical flexible steel connector pipes.	Sets	40.00		
5)	PUMPS:				
	Supply, Installation, Testing & Commissioning of End Suction Back Pullout Centrifugal Pumps complete with MS Frame Base Mounting Bolts/ Fastenig Bolts of Design Duty as mentioned below. All pumps to be supplied duly mounted on a base frame in coupled and aligned configuration. All motors to be IE-2/ Efficiency 1 rating.				
a)	Primary CHW Pump (PCHWP) 320 GPM/ 50 ft	Set	2.00		
b)	Secondary CHW Pumps (SCHWP) 320 GPM/ 55 ft	Set	2.00		
	All Secondary pumps to be fitted with VFD, and these shall be part of a pumping solution (VFD's and Programmable Logic Controller in a IP-55 protection panel) with provided as a complete set by pump manufacturer. This price is to include the price of Differential Pressure Transmitter and fixing of same, associated control wiring and all required programming and commissioning of the same under actual operating load. As an alternative, Vertical Inline Pumps may be offered with or without the provision for Sensorless Control of the VFD's.				
c)	Condenser Water Pump (CNDWP) 500 GPM/ 60 ft	Set	2.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
d)	Hot Water Pump 150 GPM / 10m Head (Vertical Inline Pumps)	Set	2.00		
e)	Supply, Installation, Testing & Commissioning of Condensate Removal Pump (CE Marked) for FCUs. All pumps to have pump mounted on integral tank, IP20 rating. Rated for 230V, power cables and suitable for capacity upto 500 L/hr at 5m head. Pump to be provided with MS platform suspended from ceiling by 8mm threaded rods	Each	10.00		
6)	<u>Piping: MS C-Class ERW Pipes</u>				
	Supplying, Fixing, Testing & Commissioning of MS "C" class heavy duty pipe (all pipes shall be ISI marked and shall be one of approved makes) along with all necessary clamps, vibration isolators and fittings like elbows, tees, flanges, tapers, (except valves, strainers gauges etc) nuts bolts, gaskets etc, adequately supported wall/slab with suitable rigid supports and painting with two or more coats of synthetic enamel paint of required shade.				
a)	250mm dia. (6mm Thick)	meter	6.00		
b)	200mm dia. (Condenser Water Header) 6mm Thick	meter	96.00		
c)	150mm dia.	meter	114.00		
d)	125mm dia. (Chiller Connections)	meter	30.00		
e)	100mm dia. (Creep Bay AHU Connection)	meter	42.00		
f)	80mm dia.	meter	60.00		
g)	65mm dia.	meter	66.00		
h)	50mm dia.	meter	114.00		
i)	40mm dia.	meter	150.00		
j)	32mm dia.	meter	6.00		
k)	25mm dia.	meter	420.00		
l)	20mm dia.	meter	24.00		

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Item No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
7)	Supply, Installation, Testing & Commissioning of CI / MS Strainers for with SS-Jali of 3mm Mesh Size, PN-16 rating complete with mathing flanges, nuts, bolts, gaskets etc.-				
a)	150mm dia. (Pot Strainer with Swinging Arrangement with Wide Pot For Cooling Tower)	each	2.00		
b)	125mm dia. (Y-Strainer for Chillers)	each	2.00		
c)	100mm dia. (Y-Strainer For Creep Bay AHU)	each	1.00		
d)	80mm dia. (Y-Strainer For Auditorium AHU)	each	2.00		
e)	50 mm dia. (Y-Strainer For Mezzanine and Director's Floor AHU)	each	1.00		
8)	Supply, Installation, Testing & Commissioning of CI Butterfly Valves (PN-10 rating) - with CI body, SS disc, SS shaft on Teflon sleeve bearings complete with matching E-Table flanges, GI Nut-Bolts, Gaskets etc as per IS:13095				
a)	150mm dia.	each	16.00		
b)	125mm dia.	each	13.00		
c)	100mm dia.	each	6.00		
d)	80mm dia.	each	11.00		
e)	65mm dia.	each	6.00		
f)	50mm dia.	each	10.00		
9)	Supply/ Installation of Ball valves (Brass) (PN 25 Rating)				
a)	40mm dia.	each	2.00		
b)	32mm dia.	each	2.00		
c)	25mm dia.	each	10.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
10)	Supply/ Installation of Swing Check Valve (Non Return Valve) with CI body/ Door/ Cover conforming to IS 210 Gr 200, Body-Door ring of leaded tin bronze conforming to IS-318 and SS hinge pin, complete with matching flanges, GI Nut-Bolts, gaskets etc				
a)	6" dia.	each	2.00		
b)	5" dia.	each	4.00		
c)	3" dia.	each	2.00		
11)	Supply, Installation, Testing & Commissioning of Balancing Valve PN-16 Rated with CI body/ SS-410 stem and Pressure Test cocks complete with flanged ends				
a)	150mm dia.	each	2.00		
b)	125mm dia.	each	2.00		
c)	100mm dia.	each	1.00		
d)	80mm dia.	each	2.00		
e)	65mm dia.	each	2.00		
f)	50mm dia.	each	2.00		
12)	Supply/ Installation of Flow Switches with Paddle installed in MS Socket as suitable for pipe size.	each	4.00		
13)	Indicators/ Gauges				
a)	Water pressure gauge, 4" dial, complete with ball valve, syphone etc (0 - 50 psig rating) Make- Fiebig/ Equivalent.	each	26.00		
b)	Industrial Thermometer with brass well, mercury in glass type (0 - 50°) complete with fittings. Make- Japsin/Equivalent.	each	18.00		
14)	Insulation:				
(A)	Chilled Water Piping Insulation: Supply/ Fixing of Nitrile Foam (Class O) (Preformed Tubes of Class O material where applicable) of 19mm Thickness as follows				
a)	150mm dia. (Plain Sheet with UL/FM Approved Lag Coating 2 Coats on Glass Cloth)	meter	114.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig. & words	Amount (Rs.)
b)	125mm dia. (Plain Sheet with UL/FM Approved Lag Coating 2 Coats on Glass Cloth)	meter	30.00		
c)	100mm dia. (Plain Sheet with UL/FM Approved Lag Coating 2 Coats on Glass Cloth)	meter	42.00		
d)	80mm dia. (Aluminium Faced Sheet to be used)	meter	60.00		
e)	65mm dia. (Aluminium Faced Sheet to be used)	meter	66.00		
f)	50mm dia. (Preformed Tubes)	meter	114.00		
g)	40mm dia. (Preformed Tubes)	meter	150.00		
h)	32mm dia. (Preformed Tubes)	meter	6.00		
i)	25mm dia. (FCU Connections)	meter	420.00		
j)	20mm dia. (Preformed Tubes)	meter	24.00		
(B) Insulation of valves, Strainers, Flow control valves					
	19 mm thick Nitrile Foam insulation material, factory faced with aluminium foil, complete with ancillaries like bituminous paints, PVC cello tape etc.				
a)	200mm dia. Valves / Strainers	each	2.00		
b)	150mm dia. Valves / Strainers	each	2.00		
c)	125mm dia. Valves / Strainers	each	18.00		
d)	100mm dia. Valves / Strainers	each	2.00		
e)	80mm dia. Valves / Strainers	each	2.00		
f)	65mm dia. Valves / Strainers	each	4.00		
g)	25 - 50mm dia. Valves / Strainers	each	20.00		
15)	Supply, Installation, Testing & Commissioning of 2-Way Flow Control Valve for AHUs with Modulating Actuator and Programmable Temp. Controller & Actuator Motor (24Volts):				
a)	100mm dia. (Auditorium)	each	1.00		
b)	80mm dia. (Creep AHU)	each	2.00		
c)	50 mm dia. (Mezz and Director Floors) - ON-OFF Type Actuator	each	2.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
16)	Ducting : Limited to small number of Concealed FCU's and AHU Rooms only				
	Supply & Fixing of GSS Ducting made from GI Sheet of approved makes as per IS 655 (Class 1 Zinc Coating thickness) complete with MS Angle Bracing/ MS Angle Flanged Joints for Heavy Gauge Ducts/ GI Nut-Bolts, GI Threaded Rods for Hanging and W-Brackets/ MS Angle where required for supports.				
a)	24 G	sq.m	100.00		
b)	22 G	sq.m	50.00		
c)	20 G	sq.m	20.00		
17)	Supply & Fixing of Powder coated Extruded Aluminium Grilles				
a)	With Aluminium Collar Damper (Opposed Blade type)	sq.m	15.00		
b)	Without Collar Damper	sq.m	3.00		
18)	Supply & Fixing of Round Epoxy Painted MS SA Diffuser (Heavy Gauge) as per existing diffusers.				
a)	With Aluminium Butterfly Damper	each	60.00		
19)	Supply & Fixing of Powder coated Extruded Aluminium RA Grid Diffusers for Creep Bay	sq.m	25.00		
20)	Duct Insulation				
	Supply/ Fixing of Nitrile foam (Class O) covered with stuck with Pidilite adhesive (AC Duct King), finished joints with sticky aluminium tape. All Flange Joints to be Covered by 200mm strips of Insulation material and tightened by PVC Straps.				
a)	13 mm (UL/FM Certified Lag Coating on Plain Insulation in AHU Room)	sq.m	200.00		
b)	13 mm (Factory Faced Aluminium Foil)	sq.m	150.00		
21)	Supply/ Fixing GI Volume Control Damper (VCD) , made from 18 G GI Frame , 22 G GI Blades, Nickel Plated Spindels fully enclosed by metal plate. Damper to be fixed by GI Nut-Bolts to Ducts	sq.m	4.00		
22)	Supply/ Fixing of CBRI Certified Fire Damper (GI 16 G Construction) in SA / RA ducts made of 18G leaves / casing, with UL Stamped Fusible Link	sq.m	3.00		
	Electrical Work :				
23)	Main Electrical Panel & AHU Panels :				

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
	Supply, Installation, Testing & Commissioning of Front operated totally enclosed Electrical floor standing Panel, IP 54 rating, made of 2 mm thick CRCA sheet metal; powder coated finish. Suitable for 415 volts, 3Ø, 4 wire AC system Fault level 50 KA for 1 second at 415 volts. Refer tender specifications for other details.	No.	1.00		
	Main Incomer of 600A and 600A Busbar				
	200 A MCCB for 2 Nos x 125 TR Chillers (Y-Δ starters integral with chiller) - 2 Nos				
	20 A MCCB for 2 Nos PCHWP with DOL Starters - 2 Nos				
	30 A MCCB for 2 Nos SCHWP with VFD (Space to be left for VFD's - Supply as separate item) - 2 Nos				
	40 A MCCB for 2 Nos CNDWP with Y-Δ starters - 2 Nos				
	10 A with HWP with DOL Starter - 2 Nos				
	20 A MCCB for 2 Nos Cooling Towers (One Working, one standby) with DOL starters				
	2Nos 5.5 KW DOL Starter for Creep Bay AHU's				
	1.1 KW DOL Starter for Mezzanine AHU				
	2.2 KW DOL Starter for Director Floor AHU				
	7.5 KW Y-Δ Starter for Auditorium AHU				
	Space to supply 1st Floor DB				
	Space to supply Mezz.Floor DB				
	Spare feeder				
24)	AHU Panels/ Sub-Electrical Panels				
	Front operated totally enclosed Electrical Panel (Floor or Wall Mounted), IP 54 rating, made of 2 mm thick CRCA sheet metal; powder coated finish. Suitable for 415 volts, 3Ø, 4 wire AC system Fault level 50 KA for 1 second at 415 volts. Refer tender specifications for other details.				
a)	4 Nos. 20 A TPN MCBs for 2 Nos. AHUs (5.5 Kw), for Creep Bay 2 Nos. AHUs- 13000 Cfm & 2Nos for Cooling Towers (with Ammeter switch)	No.	1.00		
b)	10 Amps (1No.)TPN MCB for AHU (1.1 Kw) for Mezzanine Floor 1 No. AHU-1600 Cfm (with Ammeter switch)	No.	1.00		
c)	10 MCB for AHU (2.2 Kw), for Director Floor 1 No. AHU- 3000 Cfm (with Ammeter switch)	No.	1.00		
d)	30 Amps(1No.) TPN MCCB incomer, for AHU for Auditorium 1 No. AHU- 16000 Cfm(with Ammeter switch)	No.	1.00		
25)	Electrical Wiring :				
	Supply/ Laying/ Termination of XLPE insulated aluminium armoured cable, 1100V grade, complete with end terminations. Refer specifications in tender.				
	Kw Rating Equipment Cable Rating				

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Item No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
a) 87	Chiller (2 Nos) 4C x 185 mm ²	meter	30.00		
b) 5.5	PCHWP (2 Nos) 3C x 6 mm ²	meter	30.00		
c) 7.5	SCHWP (2 Nos) 3C x 10 mm ²	meter	25.00		
d) 14.5	CDWP (2 Nos) 3C x 16 mm ² (Twin)	meter	25.00		
e) 5.5	CT (2 Nos) 3C x 6 mm ²	meter	90.00		
f) 1.1	HWP (2 Nos) 3C x 4 mm ²	meter	25.00		
g) 5.5	AHU (2 Nos.) 3C x 6 mm ²	meter	60.00		
h) 1.1	AHU (1 No.) 3C x 6 mm ²	meter	30.00		
i) 2.2	AHU (1 No.) 3C x 10 mm ²	meter	40.00		
j) 7.5	AHU (1 No.) 3C x 10 mm ²	meter	45.00		
26)	Supply, Installation, Testing & Commissioning of Control Wiring -Multicore Copper Armored: as required for HVAC system.				
a)	2C x 1.5mm ² (Control Valves etc)	meter	60.00		
b)	3C x 2.5mm ² (Limit Switches - Control Interlocking of AHU)	meter	150.00		
27)	GI Earthing as per IE rules/ IS codes: -				
a)	Supply & laying 8 SWG GI (Twin) Earthing wire for electrical gadgets with soldering etc. as required.	meter	1800.00		
28)	Cable Racks/Trays: Supply and Installation of perforated type GI Cable Trays of the following sizes fabricated out of minimum 2mm thick with 50 mm flange to be installed horizontally or vertically. The cable tray shall be complete including cost of all cable tray couplers, 90 deg Turn pieces as per drawing / site condition and rate shall include all support hardware including cost of GI anchor fastners, screws, nuts, bolts, threaded rods, MS Bar & angle iron etc for hanging arrangement complete as required.				
a)	450 mm Wide	meter	50.00		
b)	300 mm Wide	meter	90.00		
c)	200 mm Wide	meter	60.00		
d)	150 mm Wide	meter	120.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
e)	100 mm Wide	meter	45.00		
29)	Supply/ Fixing of PPR pipe (for Condensate Drain) with all joints, supports and fittings including unions, tees elbows etc. All piping to be joined using heat-joint method.				
a)	20mm Ø	meter	144.00		
b)	25mm Ø	meter	204.00		
Total [Sub Head-A]:Rs.					
Sub Head -(B) CIVIL WORKS: -					
30)	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in charge.				
	Nominal concrete 1:3:6 or richer mix (i/c equivalent design mix)	Cum	11.50		
31)	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in- charge.	Cum	20.80		
32)	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge.				
	In cement mortar	Cum	5.00		
33)	Dismantling old plaster or skirting raking out joints and cleaning the surface for plaster including disposal of rubbish to the dumping ground within 50 metres lead.	Sq.m	90.00		
34)	Dismantling tile work in floors and roofs laid in cement mortar including stacking material within 50 metres lead.				
	For thickness of tiles above 25 mm and up to 40 m	Sq.m	215.00		
35)	Dismantling steel work in single sections including dismembering and stacking within 50 metres lead in:				
	Channels, angles, tees and flats	Kg	6800.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
36)	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material within 50 meters lead as directed by Engineer-in-charge.	Sq.m	1400.00		
37)	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	Cum	12.00		
38)	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All kinds of soil.	Cum	10.00		
39)	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	Cum	4.00		
40)	Supplying chemical emulsion in sealed containers including delivery as specified.				
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	Litre	20.00		
41)	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL antitermite treatment (excluding the cost of chemical emulsion) :				
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300 mm including excavation channel along the wall & rodding etc. complete:				
(a)	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	meter	120.00		
(b)	Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1:2 (1 cement : 2 Coarse sand) to match the existing floor:				
	With Chlorpyrifos/Lindane E.C. 20% with 1% concentration	Sqm	20.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
(c)	Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same.	Metre	20.00		
42)	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :				
a)	"1:2:4 (1 cement : 2 coarse sand (zone-III) : 4 graded stone aggregate 20 mm nominal size).	Cum	2.00		
b)	1:3:6 (1 Cement : 3 coarse sand (zone-III) : 6 graded stone aggregate 20 mm nominal size).	Cum	2.00		
c)	1:4:8 (1 Cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size)	Cum	3.00		
43)	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level :				
	1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size).	Cum	2.00		
44)	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
	1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20 mm nominal size).	Cum	21.00		
45)	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level				
	Thermo-Mechanically Treated bars of grade Fe-500D or more.	Kg.	2760.00		
46)	Centering and shuttering including strutting, propping etc. and removal of form for all heights				
a)	Foundations, footings, bases of columns, etc. for mass concrete	Sq.m	60.00		
b)	Suspended floors, roofs, landings, balconies and access platform	Sq.m	40.00		
c)	Weather shade, Chajjas, corbels etc., including edges	Sq.m	60.00		

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Item No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
47)	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	4.00		
48)	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	Sq.m	30.00		
49)	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry.	Sq.m	30.00		
50)	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	kg	6800.00		
51)	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete.				
	40 mm thick with 20 mm nominal size stone aggregate	Sq.m	30.00		
52)	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
a)	For fixed portion				
	Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15)	kg	15.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
b)	For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately) Page 2 of 27				
	Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15)	kg	2.00		
53)	Providing and fixing 12 mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of Engineer-in-charge.				
	Pre-laminated particle board with decorative lamination on one side and balancing lamination on other side	Sq.m	8.00		
54)	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of Engineer-in-charge. (Cost of aluminium snap beading shall be paid in basic item)				
	With float glass panes of 5.50 mm thickness	Sq.m	8.00		
55)	Providing and fixing 6 mm dia. G.I. level adjusting hangers (upto 1200mm length), fixed to roof slabs by means of ceiling cleats made out of G.I. flat 40x3mm size 60 mm long and stainless steel expandable dash fastener of 12.5 mm dia and 50 mm long, complete as per direction of Engineer-in-charge.	each	600.00		
56)	Providing and fixing powder coated aluminium work (minimum thickness of powder coating 50 micron) consisting of tee/ angle sections, of approved make conforming to IS : 733 in frames of false ceiling including aluminium angle cleats with necessary C.P. brass/ stainless steel sunk screws, aluminium perimeter angles fixed to wall with stainless steel rawl plugs @ 450 mm centre to centre and fixing the frame work to G.I. level adjusting hangers 6 mm dia. with necessary cadmium plated machine screws all complete as per approved architectural drawings and direction of the Engineer-in-charge (level adjusting hangers, ceiling cleats and expansion hold fasteners to be paid for separately).	kg	1650.00		
57)	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete.	each	1.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
58)	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
	With stainless steel cover plate minimum 1.25 mm thickness	each	1.00		
59)	Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab, including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :				
	25 mm thick	Sq.m	105.00		
60)	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @3.3kg/sqm including grouting the joint with white cement & matching pigments etc. complete.				
	Size of Tile 600x600 mm	Sq.m	88.00		
61)	12 mm cement plaster of mix :				
	1:4 (1 cement: 4 coarse sand)	Sq.m	50.00		
62)	15 mm cement plaster on rough side of single or half brick wall of mix:				
	1:4 (1 cement: 4 coarse sand)	Sq.m	50.00		
63)	6 mm cement plaster of mix:				
	1:3 (1 cement : 3 fine sand)	Sq.m	30.00		
64)	Neat cement punning.	Sq.m	30.00		
65)	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	Sq.m	200.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
66)	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				
	One or more coats on old work	Sq.m	230.00		
67)	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :				
	Two or more coats on new work.	Sq.m	100.00		
68)	Renewing glass panes, with putty and nails wherever necessary including racking out the old putty:				
	Float glass panes of thickness 4 mm	Sq.m	8.00		
69)	Renewal of old putty of glass panes (length)	metre	30.00		
70)	White washing with lime to give an even shade :				
	Old work (two or more coats)	Sq.m	150.00		
71)	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade :				
	Old work (one or more coats)	Sq.m	150.00		
72)	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	each	1.00		
73)	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	each	2.00		
74)	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (Hafele make) embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	each	5.00		
75)	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specification.	kg per 50 kg cement	10.00		
76)	Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete				
	On concrete work	Sq.m	50.00		

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Item No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
77)	Providing and fixing pre-coated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in-charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.	Sq.m	10.00		
78)	False Ceiling Works in Mezzanine and Director Floor				
a)	Providing, Erecting and fixing in position of 84C lineal G.I./CRCA GI Strip False Ceiling with all necessary fittings and fixtures - 84c- off white consisting of panel made of enamelled coil coated 0.6 mm thick CRCA alloy; 84mm wide and 12.5mm deep with a recessed flange of 23.9mm of approved colour; panel carriers made of enamelled 0.6mm thk steel black sat in; 32mm widex 39mm deep with cut outs to hold panels in a module of 100mm with edge cover at the edges; and cut-outs for light fittings and ventilation grills suspended from ceiling as per direction of the manufacturer including supplying & fixing all fittings and fixtures as necessary as per site requirement with all materials, tools & tackles, plant and labour in complete as per EIC. The complete false ceiling system should be rigid enough to take minor load during maintenance without any deformation. No cost deduction will be made for the area covered by light fittings/A C grills.	Sq.m	300.00		
b)	Supply & Fixing of 9.00 mm thick square edge PVC Laminated Gypsum Tiles (Armstrong, India Gypsum make) of size 595 X 595mm, made of Gypsum plaster board, manufactured from natural gypsum and laminated with white 0.16 mm thick fire retardant PVC film on the face side and 12 micron metalized polyester on the back side with all edges seals with face side PVC film which goes around and wraps the edges and is bounded to the edges and the back side metalized polyester film so as to make the tile a completely sealed unit.	Sq.m	1050.00		
79)	Scaffolding with bamboo for specified jobs as per direction Engineer -In Charge .	Sq.m	750.00		
				Total(B1):	

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
80)	Disposal Item.				
	Price for taking out of old damaged unusable wood members/ scraps as doors, windows, ventilaors, false ceiling boards etc.	Kg.	2000.00		
				Total(B2):	
				Total [Sub Head-B]=[B1-B2]:Rs.	

Sub Head -(C) INTERNAL ELECTRIFICATION WORK

81)	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required:				
	1) 20 mm.	meter	100.00		
	2) 25 mm.	meter	100.00		
82)	Supply and drawing following sizes of FRLS PVC insulated copper conductor single core cable in the existing surface/ recessed steel/ heavy gauge PVC conduit/ casing capping etc as required:				
	1) 3 x 1.5 sq. mm	meter	50.00		
	2) 3 x 2.5 sq. mm	meter	200.00		
	3) 3 x 4 sq. mm	meter	200.00		
	4) 3 x 4 sq. mm	meter	200.00		
83)	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting of all types, complete with all accessories and tube/lamp etc. directly on ceiling/ wall, including connections with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.	each	344.00		
84)	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
	i) Single pole	each	55.00		
	ii) Single pole and neutral	each	55.00		
85)	Supplying and fixing of 40 amps rating, four pole, 415 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.	each	6.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
86)	Supply and fixing single pole blanking plate in the existing MCB D.B. complete etc. as required.	each	20.00		
87)	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and tewrminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections,etc, as required.				
	a)100A,16KA, TP MCCB	each	2.00		
	b)125A,16KA, TP MCCB	each	2.00		
88)	Laying and fixing of one number PVC insulated and PVC sheathed/XLPE power cable of 1.1 K V grade of following sizes on wall surface as required: Upto 35 sq.mm (clamped with 1mm thick saddle)	meter	150.00		
89)	Supplying and making end termination with brass compression gland & heavy duty lugs for the following size of PVC insulated and PVC sheathed/XLPE aluminium conductor cable of 1.1 KV grades as required: 3&1/2 x 35mm square	each	4.00		
90)	Lettering with black Japan paint of approved brand and manufacture as required.	Per letter /cm	1000.00		
91)	Providing and fixing 25mmx5mm G.I strip on surface or in recess for connections etc. as required.	meter	30.00		
92)	Supplying and fixing of 4 way (4+12), Double door, prewired TP&N MCB distribution board of steel sheet for 415 volts on surface/ recess complete with loose wire box, terminal connectors for all incoming and outgoing circuits, duly prewired with suitable size FRLS PVC insulated copper conductor up to terminal blocks, tinned copper bus bar, neutral link, earth bar, din bar, detachable gland plate, interconnections, powder painted including earthing etc. as required.(But without MCB/ RCCB/ Isolator).	each	6.00		
93)	Supplying and fixing of 4 way Double door, prewired vertical type TP&N Loadline MCB distribution board of steel sheet for 415 volts on surface / recess complete with loose wire box of sheet steel,dust protected, duly powder painted, inclusive of 200 amps tinned copper bus bar, common neutral link, earth bar, din bar for mounting MCB's, trminal connectors for all incoming and outgoing circuits,duly prewired with adequate size of FRLS PVC insulated copper conductor upto the terminal connector/neutral,earthing etc. as required (but without MCB's/ MCCB) . (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required).	each	2.00		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
94)	Supply of 1.1KV grade, PVC insulated and PVC sheathed heavy duty/XLPE aluminium conductor cables conforming to IS:1554 (Part-1) of following sizes etc as required.				
	a)3&1/2 x 35mm square	Mtr.	150.00		
95)	Supply, testing of following LED tube light fixture, 230 volt, 50Hz including accessories etc as required:				
	a) 4ft, 20 Watts LED Tube Light	Nos.	210.00		
	b) 2ft, 12 Watts LED Tube Light	Nos.	20.00		
	c) 600mmx600mm,36 Watts LED light fitting for recessed mounting	Nos.	70.00		
	d) LED Spot light (Halogen type), 30 Watt	Nos.	20.00		
	e) LED down lighter, 16 Watt, Dia:158mm+/-2mm	Nos.	24.00		
96)	Dismantling of existing tube light fixtures / point wiring and handing over the material to electrical section as required.	Nos.	354.00		
97)	Dismantling of sub main wiring from the surface, restoring the surface & handing over the materials as required.	Mtr.	100.00		
98)	Dismantling of existing old switches, D.B.' s. after disconnecting cables / wires, restoring of walls and handing over the material to electrical section as required.	Nos.	20.00		
99)	Dismantling of various sizes of cable from the surfaces, restoring the surfaces & handing over the materials as required.	Mtr.	200.00		
100)	Providing and fixing of 3mm phenolic laminated sheet/Perspex sheet on existing metal board/box etc as required.	Sq.Cm	10000.00		
101)	Supply & mounting of SPN sheet steel enclosure fitted with din rail for fixing of existing MCB's etc as required.	Nos.	55.00		
102)	Supply and fixing of 63 amps., triple pole rating 240/415 V 'C' series miniature circuit breaker in the existing MCB DB complete with connections, testing and commissioning etc. as required.	Nos.	6.00		
			Total[Sub Head-C]:Rs.		

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
Sub Head -(D) BUY-BACK					
103)	CHILLER				
	Existing Old 86TR (voltage reciprocating chiller -5H80 compressor) water cooled chiller under AMC at present, in working condition- on <u>AS IS WHERE IS</u> basis.	each	2.00		
104)	AIR HANDLING UNITS				
	Dismantling of following AHUs, carting away of the same and giving credit to NML towards the value of these goods. All AHU's Single Skin AHU's over 40 years old. All Cooling coils of AHU's have been replaced in the last ten (10) years.				
a)	Air Handling Unit -For Creep Bay- 15 KW Motor	each	1.00		
b)	Air Handling Unit -For Mezzanine- 3.7 KW	each	1.00		
c)	Air Handling Unit -For First floor- 5.5 KW	each	1.00		
d)	Air Handling Unit -For Auditorium- 7.5 KW	each	1.00		
105)	CONDENSER PUMPS				
	Monoblock Centrifugal Pumps Complete With TEFC Squirrel cage 4 pole motor, flexible coupling , MS base frame for pumps & motor , Base bolts etc (Nameplates not fixed).(In working condition at present)				
a)	7.5 HP Condenser Water Pump with motor & Base	each	4.00		
106)	CHILLER PUMPS				
	Monoblock Centrifugal Pumps Complete With TEFC Squirrel cage 4 pole motor, flexible coupling , MS base frame for pumps & motor , Base bolts etc (Nameplates not fixed).(In working condition at present)				
a)	7.5 HP CHW water Pump with motor & Base	each	4.00		
107)	COOLING TOWER				
	Dismantle Old 2Nos X 100TR Cooling Tower with all supports etc in its entirety, and carting away the components. Giving credit to NML for buyback of useable components like Motor, Fan , steel channels etc. Cooling tower is on roof.	each	2.00		
108)	Condenser Water Piping (Weights are indicative. Actual weight to be taken before disposal)				

Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
	All pipe supports and wooden saddles for pipe supports shall remain as it is - as these are in good condition. The MS Condenser Pipes, Drain pipes Chiller plant, cooling tower make up water line, CT drain etc shall be removed after cutting in small practical pieces and then carted away. # Before dismantling joint measurement shall be made between HVAC Vendor & NML & the measurements signed off.				
(A)	Water Piping				
a)	150 mm dia MS heavy class black pipe	Kg	383.40		
b)	125 mm dia MS heavy class black pipe	Kg	751.80		
c)	100 mm dia. MS heavy class black pipe	Kg	174.00		
d)	80 mm dia. MS heavy class black pipe	Kg	118.80		
e)	50 mm dia. MS heavy class black pipe	Kg	74.28		
(B)	Butterfly Valve (PN-10) Cast Iron (with flanges)				
a)	150 mm dia. with lever only - 2 Nos	Kg	42		
b)	100 mm dia. with lever only- 14 Nos	Kg	224		
c)	80 mm dia with lever only- 4 Nos	Kg	48		
d)	50 mm dia. with lever only- 2 Nos	Kg	12		
(C)	Pot Strainer (PN-10)				
	100 mm dia - 6 Nos.	Kg	300		
Total[Sub Head-D]:Rs.					

Sub Head -(E) OPERATION AND ANNUAL MAINTENANCE CHARGES

AMC					
109)	Water Cooled Screw Chiller				
	Comprehensive Annual Maintenance Contract (AMC) for Water Cooled Screw Chillers as per Sub Head -A of BOQ (Priced Bill of Quantity) to include all periodic maintenance, adjustment and <u>complete</u> replacement of <u>defective item</u> with New (as available at that time). Cost to include all materials, accessories and labour required to perform said maintenance (by OEM of Chiller) and for replacement of any defective parts.	each	2		

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Item No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
110)	Airside Equipment				
	Air Handling Units (AHU):				
	AMC of Double SKIN AHU's as supplied per Part-A to include periodic Coil cleaning of AHU's with Pressure pumps and detergent/ changing of V-Belts/ aligning of motor-fan pulleys as required.	Job	1		
	Creep Bay:(2Nos AHU's): 13,000 CFM/ 50mm W.G. Static Pressure/ Filter & Coil Area 28 ft² /4-Row Cooling Coil + 2 Row Reheat Coil for RH Control, 5.5 KW Motor				
	Mezzanine Office: 1,600 CFM/ 50mm W.G. Static Pressure/ Filter Area 16 ft²-Coil Area 4 ft² /4-Row Cooling Coil/ Bypass Damper on Remaining Area, 1.1 KW Motor				
	Director Floor: 3,000 CFM/ 50mm W.G. Static Pressure/ Filter Area 9 ft²--Coil Area 9 ft² /6-Row Cooling Coil, 1.5 KW Motor				
	Auditorium: 16,000 CFM/ 60mm W.G. Static Pressure/ Filter & Coil Area 32 ft² /6-Row Cooling Coil, 7.5 KW Motor				
	Wall Mounted Axial Fans with Gravity Louver and Bird Screen for capacities as below				
	1000 CFM/ 15mm Static Pressure (Power Pack Room)				
111)	Cooling Tower: -				
	Comprehensive AMC of Cooling Tower as supplied in Part-A. This is to include periodic cleaning of fills, maintenance of any gear drives, changing of any belts, replacement of any broken fan blades or adjusting pitch angles of the same to maintain the desired performance of the cooling tower	each	2		
	(a) Hot water flow = 500 usgpm				
	(b) Motor = 5.5 KW				
112)	Fan Coil Unit:-				
(A)	AMC of Cassette type Fan Coil Unit hung from slab with GI threaded rods and levelled with the False Ceiling. FCU to be of 4-Way type with Powder Coated Architectural finish (on the visible portion under F/C). All FCU'S provided with Programmable Thermostat with ability to program 3-speed fan, set Temperature. This thermostat is Wall Mounted at 1m level.				
a)	1.5 TR (Director Flr 16 Nos + Mezz Floor 5 Nos)	each	21		
b)	2 TR (Director Flr 11 Nos + Mezz Floor 6 Nos)	each	17		
(B)	Concealed type Fan Coil Unit hung from slab with GI threaded rods complete with Drain tray insulated with Nitrile foam. All FCU'S provided with Programmable Thermostat with ability to program 3-speed fan, set Temperature. This thermostat are Wall Mounted at 1m level.				

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
a)	2 TR (40mm Static Pressure Reqd)	each	2		
113)	PUMPS:				
	AMC of End Suction Back Pullout Centrifugal Pumps to include changing of mechanical seals in case of early defect/ leakage, rectification of misalignment, annual cleaning of pump casing				
a)	Primary CHW Pump (PCHWP) 320 GPM/ 50 ft	Set	2		
b)	Secondary CHW Pumps (SCHWP) 320 GPM/ 55 ft	Set	2		
	Comprehensive AMC Price of All Secondary pumps (fitted with VFD and PLC), as part of a pumping solution is to cover the entire pumpset and the Controls (including the Differential Pressure Transmitter). Price to include replacement of Key components (VFD, motor, PLC etc) if repair and troubleshooting operations are unable to restore pump to operating status, or if the pump is unable to supply variable flow to suit system. All work on the PLC/ VFD to be done by OEM authorized personnel ONLY.				
c)	Condenser Water Pump (CNDWP) 500 GPM/ 60 ft	Set	2		
d)	Vertical Inline Hot Water (HW) Pumps	Set	2		
114)	AMC of 2-Way Flow Control Valve for AHUs with Modulating Actuator and Programmable Temp. Controller & Actuator Motor (24Volts): To cover against all manufacturing defects in Valve body, and repair/ replacement (if deemed not repairable) of Actuator/ Controller if not found working properly.				
a)	100mm dia. (Auditorium)	each	1		
b)	80mm dia. (Creep AHU)	each	2		
c)	50 mm dia. (Mezz and Director Floors) - ON-OFF Type Actuator	each	2		
	AMC Charges after completion of Defect Liability period (for the items 109 to 114) of Sub Head-D			1st Year (E1) Rs.	
				2nd Year(E2)Rs.	
	AMC Charges for the period of two years			Total (E3) = (E1)+(E2)= Rs.	
	OPERATION OF AC PLANT				

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Item. No	Description	Unit	Quantity	Rate(Rs.) in fig.& words	Amount (Rs.)
115)	Operation of Plant with three (3) Operators and three (3) helpers for three years (i.e. during defect liability period + 2years AMC period) in three shift (Each Shift to have one Operator and one helper) N.B: There shall be no operation of AC plant during winter season/shut down period of 3 Months.				
	a) Operator (semi-skilled)	Manday	2745.00		
	b) Helper (unskilled)	Manday	2745.00		
	Operation Charges for the period of three years Total (E4)=Rs.				
	Total[Sub Head-E]=Total(E3) + Total(E4)=:Rs.				
	Total [Sub Head-A] + [Sub Head-B] + [Sub Head-C] - [Sub Head-D] + [Sub Head-E]=Rs.				
	Total:Rs.				
	Total Amount in Words:(Rupees				

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