



**TENDER DOCUMENT  
(e-Procurement)**

*Tender No: IISc/Tender 8/2019-20*

**For**

**“Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore”**

**TENDER DOCUMENT**

**Office of the Project Engineer cum Estate officer  
Centre for Campus Management and Development Indian Institute of Science  
Indian Institute of Science Bangalore – 560012**

**Website : <https://IISc.ac.in/business-with-IISc/tenders/>**

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## 1. Tender Notification

*Tender No: IISc/Tender 8/2019-20*

Scope of Work	<b>Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore.</b>
Estimated Value of work	<b>Rs 151,30,000/-</b>
Period of Work Completion	5 (Five) Months
Name of the Client	Indian Institute of Science, Bangalore
Address of the Client	The Registrar Indian Institute of Science Bangalore – 560 012 Tel No. 080-2293 2765/2202/2203 e-Mail: <a href="mailto:office.ccmd@iisc.ac.in">office.ccmd@iisc.ac.in</a>
Tender Processing Fee	As per e-procurement portal
Submission of Tender Document	e-procurement portal- <a href="https://eprocure.gov.in/eprocure/app">https://eprocure.gov.in/eprocure/app</a> Helpline no: 0120-4001005
Amount of Earnest Money to be deposited with the Tender	Rs. 2,26,950/-
Last date and Time for online submission (uploading) of tender	24.03.2020 at 15.00 hrs.
Date and Time of opening of Tender (Technical Bid)	27.03.2020 at 15:30 hrs.
Date and Time of opening of Tender (Financial Bid)	Shall be intimated to technically qualified bidders.
Pre-bid meeting Date, Time & Venue	17.03.2020 at 16.00 hrs. Centre for Campus Management and Development Indian Institute of Science Bangalore – 560 012

## 2. Scope of Tender

The REGISTRAR, Indian Institute of Science invites tenders from eligible Bidders, for “**Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore**” (as defined in these documents). The eligible Bidders may submit tenders”

### 2. Eligibility Criteria:

- 2.1 Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of India or any State Government of Union of India. (authorized signatory should provide an undertaking).  
Tenders from Joint ventures are not acceptable.
- 2.2 All Bidders shall provide the required information accurately and sufficient detail in Section 4: Qualification Information.
- 2.3 The bidder shall be OEM (Original equipment manufacturer) of the Engine makes mentioned in this tender document.
- 2.4 The Tenderer shall upload the valid and present certificate copies of PAN, GST, Contractor's Registration passbook in technical bid, **failing which the tender will be rejected**. If necessary, bidder shall produce all the original documents for verification.
- 2.5 If the rate quoted by the Contractor for each category of works is below the estimated value of the work, the contractor should pay the difference of amount in favour of The Registrar, IISc in the form of DD or Pay order or FDR (Fixed deposit receipt ) or Bank Guarantee as an additional security deposit before entering into Agreement. The same will be refunded only after satisfactory completion of the work.
- 2.6 The work shall be carried out as per the directions of the Project Engineer cum Estate Officer.
- 2.7 Blacklisted contractors/in govt/Quasi govt/boards/BBMP etc., are not eligible to quote, if found such tenders will be rejected. One who (Contractor) is penalized due to delay in completion of the previous work, those bidders will be rejected.
- 2.8 The successful Bidder shall execute an Agreement within 10 days from the date of Receipt of intimation from this office, The Tender Document will form the part and parcel of the agreement, failing which the tender will deem to be get cancelled.
- 2.9 The material shall be got approved by the Project Engineer cum Estate Officer, IISc before execution of the work.
- 2.10 Further details of the work can be obtained from this office.
- 2.11 The rates quoted should reflect all taxes separately. However, bid evaluation will be done inclusive of all taxes / cess / Royalty etc. With effect from 1/10/2018, TDS on GST will be enforced. The IISc. reserves the right to accept / reject any or all the tenders without assigning any reasons.
- 2.12 The work shall be commenced with all men and machinery within 10 days from the date of work order, failing which it would be presumed that the successful tenderer is not interested in the work and action will be taken to get the work executed through alternate agency at the risk and cost of the former Tenderer.

- 2.13 Conditional tenders will not be accepted and is liable for rejection.
- 2.14 Bidders who meet the above specified minimum qualifying criteria, shall be eligible.
- 2.15 Even though the Bidders meet the above criteria, they are subject to be disqualified if they have:
- Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
  - Record of poor performance such as abandoning the works, not properly completed the contract, inordinate delays in completion, litigation history, or financial failures etc.

**3. Site visit:**

The Bidder at his own responsibility is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for the Works. The cost of visiting the Site shall be at the Bidder's own expense.

**B. Tender documents (Two bid system – Technical & Financial)**

The Tender document can be downloaded from e-procurement website: <https://eprocure.gov.in/eprocure/app>

It may be noted that all subsequent notifications, changes and amendments on the project/document would be posted only on the same website <https://eprocure.gov.in/eprocure/app>

**4. Content of Tender documents**

The bidders should go through the Tender Document and submit online response through e-procurement portal only.

**5. Amendment of Tender documents**

- 5.1 Before the deadline for submission of tenders, the IISc. may modify the tender documents by issuing corrigendum / addendum.
- 5.2 Such corrigendum/ addendum thus issued shall be part of the tender documents and shall be published online in e-Procurement portal.
- 5.3 To give prospective Bidders reasonable time in which to take corrigendum/ addendum into account in preparing.

**C. Preparation of Tenders**

**6. Documents comprising the Tender**

- 6.1 **The Technical Bid** submitted by the Bidder shall contain the documents as follows:
- a) Earnest Money Deposit & Tender processing fee paid in any of the payment modes specified in e-Procurement platform.
  - b) Qualification Information as per formats to comply the task created in the e-Procurement Portal under General Terms and Conditions and Technical parameters and Documents required from Bidder.

- c) Any other documents / materials required to be completed and submitted by Bidders in accordance with these instructions. The required documents shall be filled in without exception.

6.2 The financial bid submitted by the Bidder shall contain the documents as follows:

Priced Bill of Quantities; online through e-procurement portal, no hardcopy of commercials should be attached or disclosed.

## 7. Tender prices

7.1 The contract shall be for category of works / whole works based on the priced Bill of Quantities submitted by the Bidder.

7.2 In exceptional circumstances, prior to expiry of the original time limit, the IISc may request that the Bidders may extend the period of validity for a specified additional period. The request and the Bidders' responses shall be made in writing or by email. A Bidder may refuse the request without forfeiting his earnest money deposit. A Bidder agreeing to the request will not be required or permitted to modify his tender but will be required to extend the validity of his earnest money deposit for a period of the extension, and in compliance with Clause 5 and Clause 9 in all respects.

7.3 All prevailing duties, taxes, and other levies like CESS/Royalty payable by the contractor under the contract, or for any other cause, shall be included in the rates, prices and total Tender Price submitted by the Bidder.

## 8. Tender validity

8.1 Tenders shall remain valid for a period not less than **180 days** after the deadline date for tender submission. A tender valid for a shorter period shall be rejected by the IISc. as non-responsive.

8.2 In exceptional circumstances, prior to expiry of the original time limit, the IISc. may request that the Bidders may extend the period of validity for a specified additional period. The request and the Bidders' responses shall be made in writing or by email. A Bidder may refuse the request without forfeiting his earnest money deposit. A Bidder agreeing to the request will not be required or permitted to modify his tender, but will be required to extend the validity of his earnest money deposit for a period of the extension, and in compliance with Clause 5 and 9 in all respects.

## 9. Earnest money deposit

9.1 Earnest Money Deposit/ Bid security

The Bidder shall furnish, as part of his tender, earnest money deposit (EMD) **of Rs. 2,26,950/-**

The Bidder can pay the Earnest Money Deposit (EMD) in the e-Procurement portal using any of the following payment modes:

- i) National Electronic Fund Transfer (NEFT) / Real Time Gross Settlement (RTGS)
- ii) Demand draft

Beneficiary Details: -

Account Holder Name – Registrar, IISc Bangalore Account No: 31728098170

IFSC code: SBIN0002215

State Bank of India IISc Branch

The bidder has to scan the receipt and attach it with Technical Bid Documents for our reference.

EMD amount will have to be submitted by the bidder taking into account the following conditions:

- a) EMD will be accepted only in the form of electronic form or Demand Draft.
  - b) The entire EMD amount for a particular tender has to be paid in a single transaction
- 9.2 The earnest money deposit of unsuccessful Bidders will be returned after awarding the contract to the successful bidder.
- 9.3 The earnest money deposit may be forfeited:
- a) If the Bidder withdraws the Tender after tender opening during the period of tender validity;
  - b) If the Bidder fails within the specified time limit to
    - i) Sign the Agreement; or
    - ii) Furnish the required Security deposit

**Provisions for Micro , Small and Medium Enterprises ( MSME ) :**

Qualification Criterion: MSME vendor must confirm that UAM No has been uploaded on CPPP website as required by Ministry's circular no F:No21(17) / 2016 dated 06.04.18 for qualifying to be considered as MSME vendor under this tender. The MSME registration to specify manufacturing / service of the tender item(s).

Registered MSME vendors shall be exempted from need to furnish EMD, subject to their submission of registration details. Declaration of Udyog Aadhar Memorandum [UAM Number] number by the MSME vendors on Central Public Procurement Portal [CPPP] is mandatory to qualify for availing the benefits as per Public Procurement Policy for MSMEs.

Preference for Price Quotation in tenders : Participating Micro and Small Enterprises quoting price within price band of L1+15%, will qualify to supply a portion of requirement by bringing down price to L1 price in a situation where L1 price is from someone other than a Micro and Small Enterprises.

**10. Format and signing of Tender**

Successful Bidder shall sign all the pages of the tender document as a token of acceptance of all the terms and conditions of the contract.

**D. Submission of Tenders**

11. Tenders must be submitted on-line in the e-Procurement portal by the Bidder before the notified date and time.

**12. Deadline for submission of the Tenders**

The Bidder shall submit a set of hard copies of all the documents in a sealed cover to IISC. required as a pre-qualification bid (Technical bid) which were uploaded through e-procurement portal. In the event of any discrepancy between them, the original uploaded document in e-procurement shall govern.

The IISC. may extend the deadline for submission of tenders by issuing an amendment in accordance with Clause 4, in which case all rights and obligations of the IISC and the Bidders previously subject to the original deadline will then be subject to the new deadline.

### **13. Late Tenders**

In e-procurement system, Bidder shall not be able to submit the bid after the bid submission time and date as the icon or the task in the e-procurement portal will not be available. IISc will not be liable (or) responsible for any delay due to unavailability of the portal and the Internet link.

### **14. Modification and Withdrawal of Tenders**

- 14.1 Bidder has all the time to modify and correct or upload any relevant document in the portal till last date and time for Bid submission, as published in the e-procurement portal.
- 14.2 The Bidder may withdraw his tender before the notified last date and time of tender submission.
- 14.3 No Tender may be modified after the deadline for submission of Tenders.
- 14.4 Withdrawal or modification of a Tender between the deadline for submission of Tenders and the expiration of the original period of Tender validity specified in Clause 8.1 above or as extended pursuant to Clause 8.2 may result in the forfeiture of the earnest money deposit pursuant to Clause 9.

### **E- Tender opening and evaluation**

### **15. Tender Opening:**

- 15.1 The IISc will open all the Tenders received in the presence of the Bidders or their representatives who choose to attend on the specified date, time and place specified. In the event of the specified date of Tender opening being declared a holiday for the IISC. The Tenders will be opened at the appointed time and location on the next working day.
- 15.2 The IISC. will evaluate and determine whether each tender meets the minimum qualification eligibility criteria.
- 15.3 Bidder to submit all the Original Documents, which are submitted in e-procurement portal, to the IISC. for verification at the time of opening of Tender.
- 15.4 The IISc record the Tender opening

### **16. Process to be confidential**

- 16.1 Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced.



## **17. Clarification of Tenders**

- 17.1 To assist in the examination, evaluation, the IISc. may, at his discretion, ask any Bidder for clarification of his Tender. The request for clarification and the response shall be in writing or by e-mail along with the section number, page number and subject of clarification, but no change in the price or substance of the Tender shall be sought, offered, or permitted.
- 17.2 Subject to sub-clause 17.1 & 18, no Bidder shall contact the IISc. on any matter relating to its Tender from the time of the Tender opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the IISc., he should do so in writing.
- 17.3 Any effort by the Bidder to influence the IISc. in the IISc.'s Tender evaluation, or contract award decisions may result in the rejection of the Bidders' Tender.

## **18. Examination of Tenders and determination of responsiveness**

- 18.1 Prior to the detailed evaluation of Tenders, the IISc. will determine whether each Tender (a) meets the eligibility criteria defined in Clause 2; (b) has been properly signed; (c) is accompanied by the required earnest money deposit and; (d) is substantially responsive to the requirements of the Tender documents.
- 18.2 A substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Tender documents, the IISc.'s rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Tenders.
- 18.3 If a Tender is not substantially responsive, it will be rejected by the IISc., and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

## **19. Correction of errors**

- 19.1 No corrections to uploaded bid is permitted by the portal. Tenders determined to be substantially responsive will be checked by IISc

## **20. Evaluation and comparison of Tenders**

- 20.1 Opening of the Financial bid will be preceded by the evaluation of the Pre-qualification Offer (Technical bid), vis-a-vis the capability, capacity and credibility of the Bidder. Evaluation of the Prequalification Offer will be done by the Evaluation Committee constituted for the purpose. After evaluation is completed, all the Bidders who are qualified will be notified and will be intimated at the time of opening of the Financial bid. Financial bid will be opened in the presence of those who choose to be present or even in the absence of any Bidder.

The IISc will evaluate and compare the Tenders as per comparative statement downloaded from e-procurement portal.

- 20.2 In evaluating the Tenders, the IISc. will determine for each Tender the evaluated Tender Price by adjusting the Tender Price as follows:
- a) Making any correction for errors pursuant to Clause 19 & 20 and
  - b) Making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Sub Clause 19.1.
- 20.3 The IISc. reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Tender documents or otherwise result in unsolicited benefits for the IISc. Shall not be taken into account in Tender evaluation.

**a) NEGOTIATIONS**

The Bidder though technically qualified and whose financial offer is the lowest, fails to convince the Tender Evaluation Committee of his capability, capacity, credibility, his offer may be reviewed, and the Bidder intimated accordingly. In such case, the Bidder, who has quoted the lowest price, may be considered and his price may be negotiated as advised by the tender committee.

**F. Award of Contract**

**21. Award criteria**

Subject to Clause 22, the IISc will award the Contract to the Bidder whose Tender has been determined to be substantially responsive to the Tender documents and who has offered the lowest evaluated Tender Price. After technical evaluation the technically qualified bidders will be considered for opening of the financial bids provided that such Bidder has been determined to be (a) eligible in accordance with the provisions of Clause 2, and (b) qualified in accordance with the provisions of Clause 3.

**22. IISc.'s right to accept any Tender and to reject any or all Tenders**

- 22.1 Notwithstanding Clause 21, the IISc. reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the IISc.'s action.

**23. Notification of award and signing of Agreement**

- 23.1 The Bidder whose Tender has been accepted will be notified of the award by the IISc. prior to expiration of the Tender validity period by e-mail or confirmed by letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the IISc. will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

- 23.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 24 & 23.1.
- 23.3 The Agreement will incorporate all agreements between the IISc. and the successful Bidder /Bidders. It will be kept ready for signature of the successful Bidder in the office of IISc. Following the notification of award along with the Letter of intent. The successful Bidder will sign the Agreement and deliver it to the IISc.
- 23.4 Upon the furnishing by the successful Bidder of the Security deposit, the IISc. will issued formal work order

#### **24. Further Security deposit (FSD)**

- 24.1 Further percentage on the running bills and final bill in addition to Earnest Money Deposit shall be levied from the contractor. When the FSD deducted from R.A Bills of the contractor @ 6.0% of the bill amount exceeds Rs.1.00 Lakh, the amount in excess of Rs. 1.00 Lakh may, at the request of the bidder, be released to him against the production of the bank guarantee issued from a Nationalized Bank only for an equal amount in the prescribed form. The bank guarantee should be valid till the completion of the defect liability period.
- 24.2 If the security deposit is provided by the successful bidder in the form of a Bank Guarantee, it shall be issued either by a Nationalized/Scheduled bank
- 24.3 Failure of the successful Bidder to comply with the requirements of Sub-Clause 23.1 & 24.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the earnest money deposit.

#### **25. Corrupt or Fraudulent practices**

- 25.1 The IISc. requires that the Bidders observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, IISc.:
  - a) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
  - b) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a IISc contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a IISc contract.

### 3. Declaration of Tenderer

**Name of Work: Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore.**

- 3.1 I/We, declare that specifications, plans, designs and conditions of contract on which the rates have been quoted are completely studied by me/us before submitting this tender.
- 3.2 I/We declare that I/We have inspected the work spot and have made myself/ourselves thoroughly conversant and satisfied as regards the field conditions prevalent there, regarding the materials, labour and the particulars of various leads with which the materials required to be brought for the work.
- 3.3 I/We declare that I/We have inspected all the quarries for materials such as metal, stone for masonry work, precast solid blocks for masonry and good quality of sand, murum etc., and satisfied myself/ourselves with regard to the quality, sufficiency of the yield of the materials from these quarries.
- 3.4 I/We, declare that the rates quoted for items of works for which now tenders are called for are inclusive of leads with which I/We propose to bring the materials whether it is from nearest approved quarry or from any other approved quarries. I/We will not have any claims for higher leads, and my/our quoted rates are with all leads and lifts etc.,
- 3.5 I/We, declare that the rates tendered by me/us for this work have not been witnessed by any other contractor/s who has/have tendered for this work.
- 3.6 I/We, declare that I/We, have understood all the conditions mentioned above and also the specifications stipulated in tender condition either by going through myself/ourselves or by getting translated into my/our own mother tongue.

### Instructions to Tenderer

- a. **Cement & Steel** - The contractor has to make his own arrangements for the procurement of Cement & Steel of approved brands and make required for the Project. For all the cement works (including RMC) The cement to be used should be Ordinary Portland Cement (OPC) - 43 Grade of Coromandal / Ultratech / ACC / PPC for GRIHA Project. The steel to be used shall be TMT Fe 550 of TATA/ SAIL/RINL (Primary plants only)

Note: No blended cement will be permitted and M sand may be used for the construction works at site.

- b. **Material at Site Payment – The Contractor can be paid for material procurement at site. Material shall be duly ensured for any losses/damages.**
- c. **Supply of Electricity** - Electricity required for construction shall be arranged by the contractor himself. Electricity if supplied to the contractor by the Institute will be metered and amount will be recovered in the Bills as per actual at rates fixed by the Institute. Supply of electricity from the Institute is not mandatory. Non-supply of electricity by the Institute cannot be held as reason for shortfall in progress.
- d. Income tax will be deducted as per the orders of the Govt. in vogue.

- e. The rates to be quoted including all taxes with GST and inclusive of all statutory Levies like cess, royalty etc., and shall not be quoted above 125% and below 75% of the prevailing rates. Otherwise above 125% and below 75% of the Amount will be treated as unbalanced amount which will be accounted for security deposit.

#### 4. TECHNICAL QUALIFICATION CRITERIA

[a] The bidder shall be OEM (Original equipment manufacturer) of the Engine makes mentioned in this tender document.

[b] The contracting Firm/Agency should have achieved during last five years in any two consecutive years minimum annual financial turnover of at least 200% (two hundred percent) of the estimated cost of work, ending on 31st March 2019. The annual turnover of previous years will be adjusted to 2018—2019 price level based on annual inflation of 8% (eight percent);

[c] The contracting Firm/Agency should have satisfactorily completed as a Prime contractor during the last five years, ending March 2019.

[d] Three similar works each costing not less than 40% (forty percent) i.e. Rs. 60,52,000/- of the estimated cost or completed two similar works each costing not less than 60% (sixty percent) i.e. Rs. 90,78,000/- of the estimated cost or completed one similar work costing not less than 80% (eighty percent) i.e. 121,04,000/- of the estimated cost.

[e] Work completion certificate for having completed work of similar nature of contract certified from the competent authority not below the Rank of Executive Engineer or equivalent shall be uploaded. The work completion certificate shall mention the nature of work, items of work executed, and the date of commencement scheduled date of completion and actual date of completion of the work

[f] **Provisions for Micro , Small and Medium Enterprises ( MSME ) : Qualification Criterion:** MSME vendor must confirm that UAM No has been uploaded on CPPP website as required by Ministry's circular no F.No21(17) / 2016 dated 06.04.18 for qualifying to be considered as MSME vendor under this tender. The MSME registration to specify manufacturing / service of the tender item(s).

Registered MSME vendors shall be exempted from need to furnish EMD, subject to their submission of registration details. Declaration of Udyog Aadhar Memorandum [UAM Number] number by the MSME vendors on Central Public Procurement Portal [CPPP] is mandatory to qualify for availing the benefits as per Public Procurement Policy for MSMEs.

Preference for Price Quotation in tenders : Participating Micro and Small Enterprises quoting price within price band of L1+15%, will qualify to supply a portion of requirement by bringing down price to L1 price in a situation where L1 price is from someone other than a Micro and Small Enterprises.

The information to be filled in by the Bidder hereunder will be used for purposes of computing Tender capacity as provided in Clause 2 of the Instructions to Bidders. This information will not be incorporated in the Contract.

##### 5.1 Name of Agency as registered

Postal Address for communication	:
Principal Place of business	:
Name of the Owner	:
Nature of Company/individual/partnership/firm etc	:
Name of the authorized person with contact details	:
Constitution or legal status of Bidder	:

Place of Registration :

[Attach self-attested photocopy]

5.2 Total value of similar works executed, and payments received in the last five years (In Rs. Lakhs)

2014-15 \_\_\_\_\_

2015-16 \_\_\_\_\_

2016-17 \_\_\_\_\_

2017-18 \_\_\_\_\_

2018-19 \_\_\_\_\_

5.3 (a) Details of Works performed as a Prime Contractor (in the same name) on works of similar nature over during the five years specified in 5.2 above.

Project Name	Name of Employer	Description of work	Contract number	Value of Contract	Stipulated Period of completion	Actual date of completion	Remarks (Reason for delay)

[Attach satisfactory certificate and date of completion from the concerned Project Engineer not below the rank of Executive Engineer or Competent Authority]

(b) Details of three similar works each costing not less than 40% (forty percent) i.e. Rs. 60,52,000 of the estimated cost or completed two similar works each costing not less than 60% (sixty percent) i.e. Rs. 90,78,000/- of the estimated cost or completed one similar work costing not less than 80% (eighty percent) i.e. 121,04,000/- of the estimated cost performed in Govt / Semi Government / Reputed firm of similar nature of work carried out during the five financial years specified in 5.2 above.

Project Name	Name of Employer	Description of work	Contract number	Value of Contract		Date Of work order	Stipulated Period of completion	Actual date of completion	Remarks (Reason for delay)

[Attach satisfactory certificate and date of completion from the concerned Project Engineer not below the rank of Executive Engineer or Competent Authority]

5.4 Information on works for which Tenders have been submitted and works which are yet to be completed as on the date of this Tender.

(A) Existing commitments and on-going works:

Description Of work	Place & state	Contract Number And Date	Name & Address of the Customer	Value of contract Rs.Lakhs	Specified period of completion	Value of work remaining to be completed (Rs.Lakhs)	Anticipated date of completion
1	2	3	4	5	6	7	8

[Details to be furnished with necessary work order signed from concerned Project Engineer not below the rank of Executive Engineer or Competent Authority. Work order/Testimonials will be verified, if required]

(B) Works for which Tenders already submitted:

Description Of work	Place & state	Name & Address of the Customer	Estimated value of work Rs in lakhs	Stipulated period of completion	Date when decision is expected	Remark If any
1	2	3	4	5	6	7

5.5 A certificate from Chartered Account stating turn over for the last five years is also to be uploaded

Sl.No	Year	Turn Over Amount	Remark
1	2	3	4
2	2014-15		
3	2015-16		
4	2016-17		
5	2017-18		
6	2018-19		

5.6 Evidence of access to financial resources to meet the qualification requirement specified in ITT: Cash in hand, Letter of Credit etc. List them below and attach certificate from the Banker in the suggested format as under:

#### BANKER'S CERTIFICATE

This is to certify that M/s. .... is a reputed company with a good financial standing. If the contract for this work, namely ..... (name of the work) is K/W – 3 Works /Open awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs.45,39,000/- (30% of the tender value) to meet the working capital requirements for executing the above contract

Sd/-

Name of the Bank, Senior Bank Manger

Address:.....

Name, address, and telephone, telex, and fax numbers of the Bidders' bankers who may provide references if contacted by the IISc..



## 5. Special Conditions and Integrity Pact Clause

- i) Establishment of Labor Camp is strictly prohibited in the premises of Indian Institute of Science Campus. Essential labor for round the clock work at site will be allowed with prior permission of Project Engineer cum Estate Officer.
- ii) Uploading the BOQ scanned document shall lead to disqualification of the bid. The prices of all the line items are to be entered on the e-procurement portal with all taxes and statutory levies inclusive of GST.
- iii) Any damage to the existing service lines during execution of work shall be got rectified by the tenderer at his own cost and risk.
- iv) Tenderer shall use new shuttering material exclusively for this work.
- v) Only 43 and 53 Grade OPC cement of brand Birla Super / ACC / Ultra tech / JSW shall be used.
- vi) The reinforcement steel used shall be of Grade Fe 500 and Fe 550 tar steel of brand TISCO / SAIL / JSW / TATA.
- vii) Concrete Design Mix shall be got approved by the competent authority.
- viii) Debris shall be disposed-off to an undisputed place of Bangalore outskirts as per the direction of the Engineer-in-Charge, whenever required.
- ix) One who (Contractor/Agency) penalized by the employer due to delay in completion of work, those tenders will be rejected. Any bidder who is served with a show progress of work notice for inadequate deployment of labor and / or mobilization of material resources in any on-going project is liable for rejection if information is suppressed by the Bidder.
- x) Labor employed at the site will not be allowed to use cellphone while working at the site.

**In continuation to special clause the details of integrity pact clause are as follows:**

- A. As per directive of the CVC all organizations including IISc have to adopt an Integrity pact (IP) to ensure transparency, equity and competitiveness in major Public procurement / contracts of high value. The integrity pact envisages an agreement between the prospective bidders/vendors with the buyer committing the persons/officials of both the parties with the aim not to exercise any corrupt influence on any aspect of the contract. Only those bidders/vendors, who are willing to enter into such an integrity pact with the Institute, would be competent to participate in the bidding.
- B. The integrity Pact would be effective from the date of invitation of bids till complete execution of the contract.

### 5.1 INTEGRITY PACT FORMAT

#### INTEGRITY PACT

##### Between

Indian Institute of Science hereinafter referred to as "The Principal" and ..... Herein referred to as "The Bidder/ Contractor."

## Preamble

The Principal intends to award, under laid down organizational procedures, contract/s or.....The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relations with its Bidder(s) and/or Contractor(s). In order achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

## Section 1 – Commitments of the Principal

(1)	The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:
(a)	No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
(b)	The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution
(c)	The Principal will exclude from the process all known prejudiced persons
(2)	If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary action.

## Section 2 – Commitments of the Bidder(s)/Contractor(s)

(1)	The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
(a)	The Bidder(s)/Contractor(s) will not, directly or through any other Person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender processor/ during the execution of the contract
(b)	The Bidder(s)/Contractor(s) will not enter with other Bidders into any Undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, Certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
(c)	The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act;

	further the Bidder(s)/Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
(d)	The Bidder(s) / Contractor(s) of foreign origin shall disclose the name and address of the Agents /representatives in India, if any. Similarly, the Bidder(s) /Contractors(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the “Guidelines on Indian Agents of Foreign Suppliers” shall be disclosed by the Bidder(s) / Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent / representative have to be in Indian Rupees only. Copy of the “Guidelines on Indian Agents of Foreign Suppliers” is annexed and marked as Annexure.
(e)	The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
(2)	The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

### Section 3 – Disqualification from tender process and exclusion from future Contracts

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the procedure mentioned in the “Guidelines on Banning of business dealings”.
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### Section 4 – Compensation for Damages

(1)	If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit /EMD.
(2)	If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contract or liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

### Section 5 – Previous transgression

(1)	The Bidder declares that no previous transgressions occurred in the last 3 Years with any other Company in any country conforming to the anticorruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
(2)	If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in “Guidelines on Banning of business dealings.”

**(Section 6 – Equal treatment of all Bidders / Contractors/ Subcontractors)**

(1)	The Bidder(s) / Contractor(s) undertake(s) to demand from all Subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
(2)	The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Subcontractors.
(3)	The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

**Section 7 – Independent External Monitor**

(1)	The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
(2)	The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Registrar, IISc.
(3)	The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s)/Subcontractor(s) with confidentiality.
(4)	The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
(5)	As soon as the Monitor notice, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
(6)	The Monitor will submit a written report to the Registrar, IISc, within 8 to 10 weeks from the date of reference or intimation to him by the Principal and should the occasion arise, submit proposals for correcting problematic situations.
(7)	If the Monitor has reported to the Registrar, IISc, a substantiated suspicion of an offence under relevant IPC/PC Act, and the Registrar, IISc has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.
(8)	The word 'Monitor' would include both singular and plural.

**Section 8 – Pact Duration**

(1)	This Pact begins when both parties have legally signed it. It expires for the Contractor
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	10 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded.
(2)	If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by Registrar, IISc.

### Section 9 – Other provisions

(1)	This agreement is subject to Indian Law. Place of performance and Jurisdiction is the Registered Office of the Principal, i.e. Bengaluru, India.
(2)	Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
(3)	If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
(4)	Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

.....  
(For & On behalf of the Principal)

(Office Seal)

Place.....  
Date.....

Witness 1:  
(Name & Address):

.....  
(For & On behalf of Bidder/Contractor)

(Office Seal)

Place.....  
Date.....

Witness 2:  
(Name & Address):

## 6 Technical Specification

### **SECTION-I SPECIFICATIONS (GENERAL)**

#### **1.0 SCOPE**

##### **A) *Installation of new 625KVA DG Set***

The specification covers the general requirement for manufacturing, inspection, testing & supply, installation, testing & commissioning of 625 KVA SILENT Diesel Engine driven alternator suitable for operation with Auto Mains Failure system along with AMF panel, cabling, panels, cabling etc as per the site. Loading, unloading, transportation of new D.G., new AMF Panel are in the scope of Supplier/Contractor excluding requisite Civil works.

##### **B) The alternator is driven by I. C. Diesel Engine as per following technical specifications.**

Specification for the Alternator	—	Section II
Specification for Engine	-	Section III
Specification for sound proof enclosure	-	Section IV
Specification for AMF Panel (inclusive of Control & Monitoring Panel)	-	Section V

##### **C) *Statutory Permissions like CEA, PCB/ CPCB as per the requirement. The offered DG set must have type approval meeting CPCB-2 norms for smoke emission and also noise emission. Bidder to submit valid certificate towards the same along-with bid.***

1.01 Documents to be submitted with Technical Bid:

## 1.01.1 Technical Data Sheet &amp; Documentation - Section VI

- a) Alternator
- b) Engine
- c) AMF Panel
- d) Documentation

## 1.01.2 Deviations/Exceptions to the Specifications - Annexure –I

## 1.02 All drawings and documents shall be submitted as per the following schedule: -

Sr. No.	Description	Time of Submission	No. of Sets
1	G.A. drawing of the complete assembly	<b>Within 30 days of placement of purchase order</b>	4
2	Specifications for Control unit	<b>-do-</b>	4
3	Foundation drawing for the complete assembly	<b>-do-</b>	4
4	Open circuit characteristics of alternator	<b>-do-</b>	4
5	Short circuit characteristics of alternator	<b>-do-</b>	4
6	Terminal strip details for termination of control cables for remote ON/OFF & monitoring	<b>-do-</b>	4
7	Erection drawings including all necessary piping and auxiliaries related to the DG set	<b>At the time of effecting delivery</b>	4
8	Operation and maintenance manuals	<b>-do-</b>	4
9	Commissioning manuals	<b>-do-</b>	4
10.	Routine test / Type test certificates for alternator	<b>-do-</b>	4
11	Routine / Type test certificates for Engine	<b>-do-</b>	4
12	Erection drawings including all necessary piping and auxiliaries related to the DG set	<b>-do-</b>	4

## **2.0 ENVIRONMENT**

The DG set shall be suitable for operating satisfactorily in humid and highly corrosive atmosphere prevailing in Refineries and other petroleum installations.

AmbientTemperature range	:	8 <sup>0</sup> C (min.) to 36 <sup>0</sup> C (max.)
Precipitationduringmonsoon	:	Heavy rainfall
RelativeHumidity	:	98%
Altitudefrom MSL	:	Around 900 Mtr.
Location	:	Bangalore

## **3.0 INSTALLATION LOCATION**

The DG set shall be installed outdoor in acoustic enclosure (specification for which has been provided in the document) at Indian Institute of Science, Bangalore-560012, Karnataka.

### **4.0 General**

- 4.1** All the supply & work shall be in accordance with the relevant IS Specifications, recognized standards, modern approved practice and shall meet the requirements of the latest issue of applicable codes, factory rules and regulations, supply codes.
- 4.2** All the materials & accessories provided by Contractor under terms of this contract shall confirm to relevant IS Specifications samples of all equipment's, materials and accessories to be supplied by Contractor shall be submitted for the approval of Engineer before the use.
- 4.3** Contractor shall provide all necessary labor, tools, scaffolding and requisite work like drilling, cutting, welding at his cost. IISC Institute shall provide free water and electricity for execution of the said work.
- 4.4** Good workmanship is the essence of this contract and shall be complied with at all times. The Contractor shall have the works supervised by qualified & experienced Engineer. All the defects pointed out by the Engineer shall be rectified immediately by the contractor free of cost.
- 4.5** Applicable Indian Electricity Rules, Act (latest), CPCB Norms and all other statutory regulations that might be relevant to the installation shall be followed.



- 4.6** No alteration which may affect the structures and architecture of building shall be done without the prior approval of the engineer. All work shall be carried out in such a manner that it should not cause any inconvenience to other works which are under progress. The Contractor shall cooperate with other agencies in the area for the smooth execution of all works.
- 4.7** Accidental damage to any property shall be reported immediately to site engineers and letter confirmed in writing.
- 4.8** All Civil Works shall be carried out by IISC like breaking and providing / repairing of wall, breaking and providing / repairing flooring, New DG Set foundation, Cable trench etc. Successful bidder shall provide all necessary support and Site engineer for execution of civil works.

**5.0** **SPARES:**

**5.1** Operation and Maintenance spares: -

Bidder shall provide the list of spares required as standby to maintain the DG Set in Good working condition.

**6.0** **TESTS AND INSPECTION:**

The authorized representatives from IISC may visit the works during manufacture of equipment to assess the progress of work as well as to ascertain that only quality raw materials are used for the same. They shall be given all assistance to carry out the inspection without any extra cost.

To conduct factory and site load test as per requirement as stated in the Tender specification including sufficient sized load bank in order to conduct full load testing as required. For factory test, rate to inclusive of to & fro travel, lodging & boarding expenditure of 2 **persons** for Complete Duration of Factory Testing.

For Diesel Engine:

Manufacturer's internal test certificates in line with IS-10002 /BS-5514 shall be furnished for review and vetting by the engineer/engineers during inspection of combined assembly DG set.

For Alternator:

Manufacturer's internal test certificates in line with IS-4722 - 1968 shall be furnished for review and vetting by the engineer/engineers during inspection of combined assembly DG set.

- 6.1** All major items/equipment's i.e. engine & alternator in assembled condition, associated AMF panel etc. shall be offered for inspection & testing at factory/manufacturers work.
- a) Complete set along with AMF panel shall be tested for control wiring, manual, automatic start, stop function including fault tripping/ protection of the set. AMF panel shall be tested separately for all routine & functional test prior to load test.
  - b) Dimensions and Alignment
  - c) DG Set control panel, safety / protective devices, interlocks, IR,HV, Phase sequence, voltage regulation, frequency.
  - d) Partial load test at 50% and 75 % for one hour each and fuel consumption will be recorded
  - c) Full Load testing of complete set at 100% rated load with acoustic enclosure till the differential temperature remain steady but not less than 3 hrs. The engine and alternator parameter shall not exceed the guaranteed value during the testing. Fuel consumption shall be recorded.
  - d) Overload testing at 10% overload for one hour immediately after the full load test.
  - e) Over speed test (1.2 times the rated speed for 2 minutes)
  - f) Transient response and Governor response tests for sudden application and rejection of loads of 25%, 50%, 75% & 100% of the rated capacity.
  - g) Smoke test certificate as per rules
  - h) The noise level at 1 m from the enclosure and the temperature rise inside the enclosure shall be measured during the load test.

DG Vendor to Study Site& Confirm Transportation of DG set to location without Dismantling any component after Factory Test is Conducted. **Vendor to make all constructional damages good to any part of the building during transportation, unloading.**

**6.2** Site Testing:

Following tests shall be conducted at site in the presence of the Engineer / Engineers during commissioning. The contractor shall provide all testing equipment, labour and consumables required for the testing (Diesel oil shall be arranged by the contractor only). The Rate shall be inclusive of getting **RESISTIVE UNITY PF LOAD BANK 500 KW for 625 KVA DG set** at site & required connection

with DG set load testing as stipulated in specifications/BOQ. Entire cost is to be borne by Vendors. The cost of interconnecting Leads from Load Bank to the DG Set etc. to be borne by vendor.

- a) Checking the alignment by engine manufacturer's representative and obtaining approval.
- b) HV, IR, continuity, phase sequence, frequency, voltage regulation test on alternator, control panel and cabling.
- c) Checking the AMF operation both on auto and manual mode, start, stop, tripping / protection, IR, HV, functional and routine tests.
- d) Checking the DG Set safeties and interlocks for satisfactory operation.
- e) Checking vibration levels.
- f) Testing of individual protective devices on engine and alternator & ensuring that the wiring is carried out properly.
- g) Full load running for 8 hours continuously. All the readings shall be logged to evaluate the fuel consumption, tube oil pressure, water and oil temperature vis-à-vis the electrical load.
- h) The noise level at 1 m from the enclosure and the temperature rise inside the enclosure shall be measured during the load test.

Any deviation from the guaranteed parameters shall be made good and these performance parameters should be measured once again till the required results are achieved.

The DG set shall be deemed to be commissioned after satisfactory performance of all associated equipment's.

#### **7.0 Compliance:**

The DG set being provided by the bidder shall comply with latest environment protection rules and latest BIS standards. Conformance label as per the said rule is to be affixed on the DG set. A copy of each type approval certificate and conformity of production certificate is to be provided in along with the offer. Supplier shall clearly specify the codes and standards for designing, manufacturing, inspection and testing of the DG Set along with the bid. The DG Set shall have one-hour overload capacity of 10% in every twelve hours of duration of operation.

#### 8.0 Completion Time:

The works shall be completed in all respects within **Five months** (including Saturday, Sunday & holidays) from the date of issue of work order/purchase order.

#### 9.0 Cable:

9.11 XLPE Aluminum Conductor cable mentioned in the schedule shall be heavy duty, armoured, power cable with circular solid/stranded Aluminum conductor, XLPE insulated and with galvanized round/strip armoured. XLPE cable must comply with latest amended specification IS 7098 (Part-II),1985.

9.12 All cabling materials, such as cable compound cable lugs, tapes, sand, bricks, jointing material etc. shall be of approved quality and acceptable to Engineer In-Charge.

#### 9.2 General Rules for Cable Laying:

9.2.1 Work shall be carried out in neat workman like manner by skilled, experienced and competent workmen in accordance with standard practice.

9.2.2 Cable shall be laid in one piece length between supply and feeding point.

9.2.3 Method of work, routing of cable etc. shall in every case be as per schedule and subject to the approval of Engineer-In-Charge.

9.2.4 All new cables shall be megger tested before laying.

9.2.5 Care shall be exercised by providing suitable props for supporting other service lines in ground at the time of excavation. Where cutting of a road/lawn becomes necessary it should be done with the approval of the Engineer In-Charge.

9.2.6 Excavation of trenches shall be executed wherever necessary and the vertical sides of the trenches are kept as straight as possible. The exact location of each trench shall be settled by the Engineer In-Charge on the site, when Contractor is in position to commence the work.

- 9.2.7 The bottom of trench should be carefully leveled and free from stones but if ingredients and changes of depth are unavoidable, it should be gradual.
- 9.2.8 When more than one multi core cables are laid in same trench, horizontal inter axial spacing of cables should be taken care of and also assure that fault occurring on one cable will not damage the adjacent cable.
- 9.2.9 After the cables are laid the trench shall be filled in layer the earth in each layer being well rammed by spraying water and sufficient allowance made for settlement. Extra earth should be removed from the place of trench to the place as decided by Engineer-In-Charge.
- 9.2.10 Before laying cable through existing cable trench, cable trench should be cleaned properly. It is required existing cables to be recharged.
- 9.2.11 All XLPE/PVC Cables shall be supported on their horizontal and vertical run on wall/ceiling, with G.I. saddles, 5 mm thick galvanized M.S. spacers with S.S. screws. The spacers shall be firmly fixed by means of PVC raw plugs/fill plugs and nettle fold screws. The interval between supports shall not exceed 400 mm for horizontal run and 625 mm for vertical run.
- 9.2.12 All the cable running through trenches hall be fixed asper Clause No. 3.2.11 wherever possible.
- 9.2.13 All the cables route to be marked at the both sides of cable termination with brass plate and letter to be imposed.
- 9.2.14 Supply & fixing of clamps for cable routes and making holes in walls/slab for cable route are part of cable laying and cost should be included in cable laying. Proper slab cutting machine should be used for making holes in slab.

## 10.0 Earthing Station: -

### 10.1 Installation of Earthing Plate

Installation of earthing plate shall conform to I.E.E. rules and I.S. Specifications. The Copper earth plate of size mentioned in schedule should be buried at the depth necessary to reach moist earth surface, but not less than 2.5 mtrs. Earth plate should be properly brazed and bolted with 50 x 6 mm Copper strip. Earth plate should be provided with 25 mm

GI pipe funnel for watering and brick masonry/PCC chamber with heavy duty cast iron cover over it.

The excavated pit should be filled with alternate layer of charcoal and salt till the earth plate is submerged. Above this the earth should be filled back.

Each layer of Earth shall be rammed properly including spraying of water and allowing sufficient time for settlement. Extra earth shall be removed from the place as decided by Engineer In-Charge and carried away to the designated location.

10.2 Earthing Resistance should be less than or equal to 1ohm.

10.3 General Rules for laying Copper strip:

10.3.1 Installation shall be carried out in neat workman like manner by skilled, experienced and competent workmen in accordance with standard practice.

10.3.2 Copper strip shall be laid in one piece length as far possible.

10.3.3 Method of installation, routing of Copper strip etc. shall in every case be as per schedule and subject to approval of Engineer-In-Charge.

10.3.4 Care shall be exercised by providing suitable props for supporting other service lines in ground at the time of excavation where cutting of road/lawn becomes necessary it should be done with the approval of Engineer-In-Charge.

10.3.5 Excavation of the trenches shall be executed, and the vertical side of the trenches are kept as straight as possible. The exact location of the trench shall be settled by the Engineer-In-Charge on the site, when contractor is in the position to commence the work.

10.3.6 After the Copper strip is laid the trench shall be filled in layer, the earth in each layer shall be well rammed by spraying water and sufficient allowance made for settlement.

10.3.7 The interval between the supports shall not exceed 400 mm for horizontal, 625 mm for vertical run.

- 10.3.8 Wherever Copper strip joint is necessary it should be done with 6" overlap, proper soldering and bolting.
- 10.3.9 Proper tapping holes should be provided on the Copper strip at an interval of 300 mm. while laying inside the room.

10.4 **Earthing Station Labeling:**

Each Earthing Station shall be provided with labeling made from Brass plate of size 150x100x1.5 mm with following details:

Total no of the label for each earth pit = 2 nos.

Earthing Station No. : __ Fed	to
:	_____
Dt. Of Commissioning: Resistance at	
Commissioning	: _____
Next Testing Dt.	: _____
Resistance	: _____

The same shall be properly fixed inside the Earthing Station Chamber & near earth pit with stand.

Earth pit shall be identified properly (BE1, BE2, NE1, NE2, etc.) for body and neutral of the generator.

11.0 **Other Staff Training:**

- 11.1 Other staff training shall include training sessions provided on site after hand over of the system.
- 11.2 The training sessions shall be given by an experienced and competent engineer familiar with system installed.
- 11.3 The scope of training provided shall include full operating instructions in the use of DG Set.
- 11.4 The contractor shall provide operating instruction as required for operating the system. "Hands-on" demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- 11.5 The contractor and/or the systems manufacturer's representatives shall provide printed Sequence of Operation sheets for ready reference.

## **SECTION –II**

### **ALTERNATOR SPECIFICATION**

#### **1.0. Rating & General**

The DG Set shall be Prime Power rating Duty as per ISO:8528-1. It comprises of alternator which shall be self -excited, self-regulated and shall be rated for a output of 625 KVA Continuous Duty Power at 415 Volts, 3 Phase, 50 Hz suitable for the 4 wire system exclusive of power requirement of auxiliaries. Winding is to be STAR connected and neutral shall be brought out through a separate terminal and will be solidly grounded.

Rating	:	625 KVA (Continuous Duty)
Voltage	:	415 Volt 3 Phase with neutral brought
	:	out through separate terminal
Frequency	:	50 Hz
Degree of Protection :	:	IP23
RPM	:	1500 RPM
Duty Rating	:	Continuous S <sub>1</sub>
Short circuit withstand		
Capacity	:	3 times FLC for 10seconds
Overload	:	10%overload for one hour in 12 hours
Suitability for parallel	:	
Operation Harmonic		
Distribution factor	:	NL L-L □2.5%
Unbalanced Load	:	25%
Ball Bearing	:	SINGLE

#### **1.1 Excitation**

Self-excited, self-regulated and with brushless type **solid state excitation** facility. The rectifier shall be suitable for operation at high ambient temperature at site as indicated in Specification. Over excitation protection shall be provided as per Alternator Manufacturer standard.

#### **2.0 Standards**

The alternator shall be in accordance with latest editions of the following standards:

- i) IS : 4722/ 68 & BS : 2613/ 1970. The electrical performance of rotating electrical machine.
- ii) IS : 4889/ 68 & BS : 269/1970, Rules for method of declaring efficiency of electrical machine.
- iii) Other IS/BS/IEC/EN applicable for design, manufacturing, testing and supply of subject Alternator/DG set like IEC 43, BS 6250, EN62581, IS13364 (I&II) with CE marking.



### **3.0 Voltage Regulation:**

An automatic voltage regulator system compatible with excitation system described above shall be provided, so as to furnish a performance as defined herein under all conditions of loads. The AVR shall be static type with provision for control from remote through pushbuttons.

### **4.0 Performances:**

Voltage regulation from no load to rated load shall be within a range of 2.5% for rated voltage. The frequency regulation from no load to full load shall be as defined by the Engine Governor. Voltage dip for any addition of load upto and including 60% load shall not exceed 15% of rated voltage and shall recover to and remain within the steady band within not more than 1.5 sec. Similarly, the frequency shall recover to the steady state frequency band within 5 seconds. The windings shall not develop hot spots exceeding safe limits due to an imbalance of 25% between any two phases from no load to full load.

### **5.0 Enclosure**

Alternator enclosure should be screen protected drip proof (IP23) conforming to IS : 4691 – 1968.

### **6.0 Terminal Box**

**6.1** It shall be suitable for necessary PVC insulated 1.1 KV grade 3 Nos. of 3.5 Core 300 sqmm Al. armoured cable conforming to IS : 1554 – Part – I with sufficient space for trifurcation inside the box. Necessary individually removable gland plates, cable lugs, connections shall all be included. Suitable segregation shall be available for other cables such as excitation, control etc. The terminal box shall be suitable for withstanding the mechanical and thermal stresses developed due to any short circuit at the terminals.

Two Nos. earth terminals on opposite side with vibration proof connections, nonferrous hardware etc. With galvanized or plated and passivated washers of minimum size 12 mm dia. shall be provided.

### **7.0 Windings**

**Class H insulation** shall be used.

### **8.0 Space Heaters**

Space heater to be incorporated in the alternator to maintain the winding temperature such that it does not absorb moisture during long idle periods. The heater terminals shall be brought to a separate terminal box suitable for 240 V 50 Hz AC supply.

**9.0 Under Speed Protection:**

Alternator shall be provided with under speed protection.

**10.0 Parallel Operation:**

Parallel operation provision shall be provided as in built part of AVR.

**11.0 Wave Form:**

Sinusoidal Wave form with THD content line to line on no load shall be less than 5%.

**12.0 Transient Voltage Dip:**

Transient voltage Dip due to sudden application of full load shall be taken care.

**13.0** Radio interference shall meet VDE 0875(N).

**14.0 Painting, Packing and Transport**

All metal surfaces shall be thoroughly cleaned of scale, rust, and grease etc. prior to painting. Cleaned surface shall be given two coats of primer and prepared for final painting. Final finish shall be free from all sorts of blemishes.

The equipment shall be shipped to site suitable packed to prevent and damage. Each package shall have labels to show purchaser's name, purchase order and equipment no. Suitable lifting lugs etc. shall be provided and lifting points shall be clearly marked on the package. Packing shall be suitable for storage at site for a minimum period of 8 months.

## **SECTION – III ENGINE SPECIFICATION**

### **1.0 SPECIFICATIONS FOR DIESELENGINE**

#### **1.1 Engine**

The major subassemblies of the prime mover shall be as follows:

- i) Four stroke diesel oil engine, Battery starting type, Turbocharged, coolant cooled/Water cooled, Forced feed lubricated with its auxiliaries.
- ii) Steel channel fabricated common base plate (skid) for engine and alternator along with anti-vibration mounting pads.
- iii) Flex Plate cum Fly Wheel Bolted type coupling method between Engine and Single Bearing type Alternator.
- iv) Control system for the Diesel engine.

**1.2.** The engine shall be rated suitably to meet the requirement of alternator at its maximum rating and overload of 10% of the rated output for 1 hour in 12 hours of running as per Prime Power Duty definition mentioned in ISO:8528-I.

**13** The diesel engine offered shall be suitable for operation with high speed diesel oil as per IS : 1460 Grade A. Performance requirement of the engine shall meet the requirement of IS-10002/BS-5514 standards (latest editions).

**14** The diesel engine shall be furnished with all accessories like governor, daily service fuel tank, exhaust piping with exhaust silencer (Residential type silencer) and spark arrestor etc. The fuel tank shall be 850 Ltr Capacity and shall be fitted within Acoustic Enclosure with visual fuel level indicator/ Gauge, fuel level switches, fuel filling in remote mode with steel channel structure to mount the tank and inter-connecting fuel piping,

**15** The engine set shall have proper instrumentation & control for semi - automatic operation as per the following:

#### ***1.5.1 Unit Start-Up***

The DG set shall be started by means of battery. The unit shall be controlled locally for inspection, periodic start-up, check and normal operation. It shall have the facility to remotely switch on/off through auxiliary potential free contacts of relay to be provided in the AMF Panel. The engine control circuit shall provide terminal contacts for permissive signal to run/ stop from an external relay contact that will close by shorting the terminals and allow the engine to start/ stop on remote mode from Owner's control panel.

### **1.5.2 Unit Shut Down**

The shutdown of DG shall be made effective through a STOP solenoid switch mounted in the engine. The DG set shall permit:

- a) Immediate automatic shut-down of the unit due to irregular operation and shall have provision for creating audio-visual signals of shut- down cause at the AMF panel which shall include the following:
  - i) Low lube oil pressure (through a pressure switch).
  - ii) High Jacket water temperature (through a temperature switch)
  - iii) Diesel tank fuel level low(through a level switch).
  - iv) Engine fails to start.
  - v) Engine over speed.
- b) To facilitate generation of these fault signals suitable instruments/relays having required potential free contacts shall be provided for effecting the above. All these potential free contacts shall be wired to terminate in a separate terminal strip with proper identification in the engine local control panel. Status of potential free contact shall be changed as soon as above mentioned parameters reaches/ crosses their acceptable limits. Initially during the starting lube oil pressure switch shall be bypassed and will regain its normal status after start. **Necessary provision shall be made for remote starting/stopping of the engine through push buttons mounted in the AMF panel.** All the above-referred contacts shall be wired up to a terminal strip for wiring up to remote AMF panel.

### **1.6 Operation**

Suitable facilities shall be provided for operation and monitoring of the Engine which shall include the following:-

For status monitoring (local), following gauges shall be available in engine local control panel.

- i) Engine Lube oil pressure gauge
- ii) Engine Jacket water.
- iii) Ammeter for battery charging.
- iv) DG set in Local / Remote / Manual indication.
- v) Digital hour-cum-RPM indicator.

### **1.7 Lubricating oil system**

- 1.7.1 The engine shall be complete with its own self-contained lubricating oil system in which all the moving parts shall be lubricated by force feed system with the pump driven by the power drawn from the engine.

- 1.7.2 The lubricating oil sump shall have such capacity so as to ensure continuous operation of 48 hours without makeup.
- 1.7.3 Heat exchanger type in-built lube oil cooler shall be provided for cooling the lube oil.
- 1.7.4 Full flow paper / felt element lube oil filters (simplex / duplex) shall be provided at the beginning of lubricating oil circuit. Filter shall be equipped with a by-pass arrangement to make it possible to change the filter (while the engine is running) by using by-pass filter.
- 1.7.5 As per the manufacturer's standard design, lube oil pump shall be provided for providing lubrication when the engine is not running.

## **1.8 Starting system**

The engine shall be started from cold by automotive type lead acid battery both locally or from remote.

### **1.8.1 Electrical system**

Engine electrical system shall consist of the following:

- i) **Battery:** Automotive low maintenance type lead acid battery of reputed brand and having sufficient capacity & terminal voltage for continuous duty application and for 3 consecutive no. of starts of the engine shall be supplied. Battery capacity & the connecting cables sizes shall be adequate so as to avoid problem of poor starting of the engine. The battery capacity shall not be less than 12Volt 180AH. Supplier shall furnish details of Battery capacity calculations along with the bid.
- ii) **Dynamo:** A dynamo shall be provided with the engine. This Dynamo shall be generating a charging current whenever the engine is operating. This shall be sufficient to continuously charge the battery.
- iii) For facilitating battery trickle /boost charging during idling of engine, the battery shall have a static battery charger to be installed in the AMF panel.
- iv) **Starter Motor:** The cranking of the engine shall be through a starter motor. The starter motor shall be provided with sealed type bearing.
- v) All the interconnecting cables (Except main Power cable) with required no. of core for interconnecting fuel tank level switches, DG starting battery to Engine and to AMF panel, all the engine control/ protection parameter from engine to AMF panel including interconnection of AMF panel to Owner's MCC panel where DG incomer & Main incomer are located shall be in the Vendor scope of supply.

***Supplier shall furnish details of electrical parts & its make for which the make/details are not mentioned in the tender.***

**1.9 Exhaust System**

- 1.9.1 Exhaust piping shall be provided by the Vendor as per the Pollution Control Board's guidelines of the relevant state.
- 1.9.2 Exhaust piping system should be adequately insulated and protected by a robust Aluminum cladding cover over glass wool and a shield to prevent fuel spray on to the cladding cover, in case of failure of fuel injector piping. The exhaust piping system shall be complete in all terms to provide the exhaust piping from engine to outside atmosphere within battery limit.
- 1.9.3 Exhaust silencers (residential type) with spark arrestor shall be supplied with the engine. The silencer shall be provided with 50 mm thick glass wool insulation and with 26 SWG Aluminium cladding.
- 1.9.4 The silencer shall be straight through type with drain plug at lowest point and one accessible clean out part. The silencer shall be finished with rust preventive primer. Flexible sections shall be connected between the exhaust pipe and the engine exhaust manifold. The flexible exhaust pipe shall be of carbon or stainless steel, smoke tight and inner diameter same as of exhaust pipe. The exhaust piping shall be extended beyond roof of the shed.
- 1.9.5 All the additional pipe, bellow, vertical length, right angle band, horizontal length including cladding of pipe with all required glass wool cladded with Aluminium foil/sheet as deemed fit, shall be supplied by the Vendor. The DG Set shall be kept in open. Details of lengths for each part of the exhaust system shall be indicated.

**1.10 Fuel Oil System**

- 1.10.1 The fuel oil circuit shall include:-
- i) Independent daily service tank of 850 ltrs. capacity or continuous operation of 12 hours shall be provided. The fuel tank shall have provision for flanged inlet/outlet connections, vent, top cover with opening, overflow drain, drain plug, breather and also necessary level monitoring instrumentation and alarm. Fuel tank shall be installed/ housed within Acoustic Enclosure.
  - ii) Manual type fuel transfer pump for filling of fuel tank like in automobiles as per site condition.
  - iii) Pipe, flanges, fittings, valves, gaskets and all other material required for the circuit i.e. from fuel tank to Engine.
  - iv) Full flow fuel filters, fuel inlet & outlet, air vent, drain plug etc.

- v) Level indicator inside the fuel tank and level switch (High & low) indication on Control Panel with alarm to be provided.
- vi) Fuel tank shall be fabricated from 2 mm thick CRCA sheet.
- vii) The fuel level shall be measured through a dip stick / Gauge /Electronic fuel indicator with high and low level indications.
- viii) Fuel tank shall be provided with strainer.
- ix) Fuel tank connected to engine with wire braided fuel pipes.
- x) The fuel tank shall be painted after Antirust treatment as mention in Sound Proof Enclosure specifications.
- xi) The minimum capacity of fuel tank shall be 850 Ltr with lockable top cover.
- xii) The fuel tank preferably shall be located at Subbase/ within Acoustic Enclosure as per approved design by DG Set OEM/ Manufacturer.

### ***1.11 Cooling System***

- 1.11.1 The engine waste heat shall be dissipated to a closed circuit water system which in turn shall be cooled by radiator cooling system driven by the power from the engine. The proposal shall be complete including the necessary pipe work for radiator, accessories etc. for the cooling system.
- 1.11.2 Engine jacket water shall be circulated by an engine driven self priming pump.
- 1.11.3 Jacket water valve / Thermostatic switches for temperature control and alarm will be provided as per design.
- 1.11.4 Radiator Heat Ducting shall be provided as per the site condition.

### ***1.12 Engine Governor***

- 1.12.1 An over speed device required to shut off the system.

#### ***1.12.2 Fly Wheel***

Engine shall be fitted with a heavy flywheel with guard to ensure smooth operation throughout the speed range and at rated power. The effect of this fly wheel shall be such that cyclic irregularity of the system should comply with (or better than) the limit laid down in BS-5514.

### ***1.13 Name Plate***

A corrosion resistant name plate of proper size shall be securely fastened by stainless steel pins at an easily visible and accessible point on the engine and gear unit. The name plate shall be stamped with the following information.

- i) Type, Model and SerialNumber
- ii) Brake Horse Power
- iii) RPM
- iv) Manufacturer's Name
- v) Conform to which standard.
- vi) Weight
- vii) Firing order of the engine.
- viii) P.O.No.

In addition to the above an arrow shall be stamped at an easily observable point on the engine to indicate direction of rotation.



## **SECTION – IV SOUND PROOF ENCLOSURE**

### **1.0 CONSTRUCTION**

- a) The Enclosure should be designed for easy access to serviceable parts.
- b) Modular construction for easy assembling and dismantling.
- c) Fabricated out of CRCA sheet of 1.6 mm. Base Frame shall be made out of ISMC of suitable sections or made out of sheet steel minimum of thickness 5 mm.
- d) The hardware shall be of high tensile grade i.e. bolts of 10.9/8.8 grade. Hardware should be passivized.
- e) Battery should be accommodated in a separate tray in the enclosure.
- f) There should be provision for drain plugs for draining mobile oil.
- g) The doors should be gasket with high quality EPDM gaskets to avoid leakage sound.
- h) The door handles should be lockable type.

### **1.1 PAINTING** (for Fuel tank, Sound Proof Enclosure, AMF Panel, Control Panel etc.)

- a) The sheet metal components should be hot dip seven tank pretreated.
- b) Proper Antirust treatment shall be provide to suit the location
- c) To have long life of container it should be P.P. based powder coated (inside as well as outside).
- d) Base frame should be epoxy quoted when fabricated.

### **1.2 ACOUSTIC ENCLOSURE**

- a) Sound proofing of enclosure should be done with quality rock wool/mineral wool confirming to IS-8183 of 64 Kg/M<sup>3</sup> density.
- b) The rock wool /Glass wool should further be covered with fibre glass cloth/fiber tissue paper fire resistive and perforated powder coated sheet of 0.6 mm thickness.
- c) Residential silencer shall be provided within the DG to control the exhaust noise.
- d) Interconnection between silencer and engine should be through stainless steel flexible hose/pipe.
- e) Attenuators should be provided to control sound at air entry to the container and exit from the container.
- f) The length of enclosure shall not be more than 5.75 mtrs on Ground Level.

### **1.3 VENTILATION AND AIRCIRCULATION**

The system shall be engineered to provide air inlet/exhaust acoustic louvers for efficient air circulation and shall have following special features:

- a) Adequate ventilation is to be provided to meet air requirement for combustion and heat removal.
- b) The temperature inside the enclosure shall not exceed 40 degree centigrade above ambient under full load condition while ambient is below 35 Deg. C. under the shed. There should be no Derating due to temperature under Full load condition (100% load).

### **1.4 ELECTRICAL**

- a) The earthing point shall be isolated through DMC insulator mounted on enclosure.
- b) Control panel should be mounted in the container itself. All parameters should be visible from outside and all push buttons accessible easily.

### **1.5 GENERAL**

- a) Engine carries warranty/guarantee of engine manufacturer for the DG Set in the enclosure of Silent Diesel Generating Set.
- b) Emergency Stop Push Button shall be provided outside the container
- c) The maximum sound pressure level shall be average 75 db(A) at one meter from the enclosure at Free field condition at 75% load as per CPCB-2 Norms.

## **SECTION – V AMF Panel**

Supply, Erection, testing and commissioning of AMF cum Auto Synchronizing Auto Load Sharing Auto Load Depended start /Stop panel suitable for Total 5 x 625 KVA DG Sets (i.e. existing 2 Nos. + Proposed 3 Nos. = Total 5 x 625 KVA). The panel is of cubical type base/floor mounting control panel with hinged doors, undrilled bottom gland plate, aluminum Bus Bar with the accommodation for 1000 Amp, 4P, EDO type ACB for alternator with thermal O/L relay, short circuit protection, Microprocessor based AMF cum Synchronizing DG Set controller module with supply failure timer, Restoration timer, 3 impulse automatic engine start/stop logic, Mains/generator voltage, 436V.capacity bypass switch and frequency sensing, DG Controller as per DG Set manufacturer standard Practice controller with water temperature/Lube oil pressure/ engine speed, Voltage/ampere/Frequency/ KVA, Running-hour count, No of starts, Fault indication, over / under speed, Fails to start, Low oil pressure, High engine temperature, Under/over voltage, over current, Earth fault relay, with indications for Mains on, Load on Mains, Battery charger on Push buttons AMF module by pass Mode, Battery charger unit with inbuilt Auto/Manual and Flat/Boost facility. DG Set controller should have Auto Synchronizing, Auto Load Sharing, Load Dependent Start/ Stop facility etc. inbuilt without depending on external PLC.

**Note: This AMF cum Auto Synchronizing Panel shall be connected / cascading with the existing 2 x 625kVA AMF panel.**

- 1.0 **AMF Panel** (inclusive of Control &Monitoring)  
The AMF panel shall be PLC based, cubicle, floor mounting type with hinged type doors suitable for 415 Volt 50 Hz AC supply.
  - i. The normal power supply shall be constantly monitored by a mains voltage monitor. When the mains voltage fail or drops below 80%, D.G. set should start.
  - ii. System shall permit 3 attempts for starting the DG set: failing which the annunciation circuit shall be activated for alarm.
  - iii. If the engine starts during 3 attempts & the engine reaches its operating speed and the alternator its operating voltage, the cranking circuits shall be isolated, and the load shall be transferred to the DG set.
  - iv. Upon return of the normal supply voltage of 90% (adjustable & selectable) of the rated voltage for a minute, the load shall be transferred to the normal source. However, the DG set shall continue running for 3 minutes and then stop.
  - v. If the DG set fails to start and reach its operating speed in 25 seconds in three attempts the DG set shall automatically be disconnected and locked in isolated position.
  - vi. A clock / time switch shall be provided for automatic run of lube oil primer pump

of the Engine for a specified period of time. The DOL starter of the lube oil priming pump shall be provided in the AMF panel. The control signal as per the preset time shall be used to start & stop the DOL starter.

- vii. The AMF system shall include a battery charger for trickle / boost charging of AMF panel battery and DG set battery during DG set idling period. The charger shall be of approved capacity to cater to the battery requirements.
- viii. All control fuses shall be of link type (HRC) conforming to ISS. Rewireable fuses shall not be accepted. All fuses shall be readily accessible for replacement. Fuses shall have an operating indicator which will be visible without removal of fuses from the service. It shall not be necessary to remove any piece of equipment or to disconnect any wiring before replacing the fuses.
- ix. The following details of the existing DG sets / Control panels can be collected from the site before quoting.
  - a) Engine Make/ Model
  - b) Alternator Make/ Frame Size/ KVA Rating
  - c) Date/ Month/ Year of Commissioning
  - d) Type of Governor existing.
  - e) Type of AVR existing.
  - f) DG Set Controller Make/ Model existing.
  - g) Panel SLD/ Wiring Drawing.
  - h) Qty x Type of ACB used in existing Panel.

ix AMF panel should be suitable to accommodate 3Nos. of 3.5 core 300 sqmm armored cable as incomer, 3Nos. of 3.5 core 300 sqmm armored cable from DG Set to AMF panel and 3Nos. of 3.5 core 300 sqmm armored cable as common output from AMF Panel to Distribution Panel.

## 2.0 **Construction:**

2.01 All dimensions in mm.

2.02 Degree of Protection IP54.

2.03 Danger Notice Board shall be provided.

2.04 AMF Panel shall have following sections.

- i) Control & Monitoring Section.
- ii) Change over & power section.

2.05 Main Switch Board frame : 2 mm thick CRCA sheet.

2.06 Base Frame : 100 x 40 x 4 mm  
(Base frame should be independent of Main Panel)

2.07	Frame for MCCB, MCBs Protection relays, Contactors, instruments etc.	:	2 mm thick CRCA sheet
2.08	Partitions(internal/external)	:	2 mm thick CRCA sheet
2.09	Fixing bracket for MCCB, Protection Relays, Contactors, Rectifiers & other Control & Monitoring compartments	:	3 mm thick CRCA sheet
2.10	Doors	:	Hinged type door made of 2 mm thick CRCA sheet
2.11	Earthing Terminals (interconnected with 25 x 3 mm Copper strip)	:	4 Nos. (2 top + 2 bottom)
2.12	Gland Plate	:	3 mm thick CRCA sheet
2.13	Rating of Busbar	:	1.5 times of FLC 99.9% pure 100% conductivity Electrolytic Copper tinned.
2.14	Riser Connections for MCCB & Change over MCCB"s	:	----- do -----
2.15	Breaking Capacity	:	55 KA
2.16	Control Circuit Voltage	:	110 V 50 Hz AC
2.17	Control Circuit wiring	:	2.5 sq. mm PVC FRLS Insulated Copper wire

2.18 Control cable from DG Set to : 2.5 sq.mm. Copper  
AMF & PCC conductor armoured (No. of  
cores depend on Control  
Circuit/Mounting)

2.19 Panel manufacturer should have in house fabrication plant with CNC turret punching & NC bending machine. Manufacturer should have 7 tank pretreatment cleaning process & powder coating plant. If panel fabrication is to be outsourced by the contractor, the details of such panel manufacturers should be included in the offer.

### 3.0 List of Power, Control or Monitoring Equipments to be used for 625 KVA:

Sr. No.	Name of Equipment	Qty.	Purpose	Make
1.	Voltmeter Digits 96 x 96mm 0-625 V50 Hz	02 Nos.	For Mains Voltage and DG Voltage	Meco/AE
2.	V. Selector Switch (5 Amp)	02 Nos.	For Mains Voltage and DG Voltage	L&T/Kaycee
3.	Voltmeter Digital 96x 96 mm 0-50 VoltDC	01 Nos.	For battery	Meco/AE
4.	Ammeter Digital 96 x 96mm 0-50 Amp DC	01 Nos.	For battery	Meco/AE
5	KWH Meter 50 Hz 415 Volt	01 Nos.	For D.G. Set	L&T
6	CT 1000/5 Amp. Minimum 15 VA Class 1.0	03 Sets	For Mains, DG & Output measurement	Epoxy
7	Battery Charging (trickle & boost) equipment complete with all accessories	01 Sets	For battery Charging	Reputed make or approved make
8	Digital Hour Meter	01 Nos.	For Set (For 625 D.G. KVA )	L&T
9	Digital Frequency Meter	01 Nos.	For Set (For 625 D.G. KVA )	L&T
10	Push Buttons Start Stop Reset acknowledge Test	Quantity y as per panel requirement	For 625 KVA DG Set	Siemens

11	Control Contactors	Quantity y as per panel requireme nt	For 625 KVA DG Set	Siemens
12.	Audio Visual Alarm	01 Nos.	For 625 KVA DG Set	Reputed or approved make
13.	Digital Engine Protection Relay suitable for low water, low fuel, HCT, HET, V Belt, Low battery, low Lube oil, low Lube Oil pressure etc.	01 Sets	For D.G. Set (For 625 KVA)	Kirloskar Green or equivalent
14.	LED Indicating lamp for load on main, load on D.G., fails to start, low water, low fuel, HCT, HET, low bottom, low lube oil pressure, DC Control ON, overload	01 Set	-----	Siemens
15.	Multi-function meter for electrical. Model Type - PAC 4200 with profinet communication port (without software)	01 No.	For Mains &DG output measurement	Siemens
16	Selector Switch Engine Control ON/OFF	01 Nos.	For D.G. Set (For 625 KVA)	L&T/Kaycee
17	Selector Switch Auto/Manual/ Test/OFF	01 Nos.	For D.G. Set (For 625 KVA)	L&T/Kaycee
18	Timers	As per AMF Panel	For 625 KVA DG Set	Legrand/ Siemens
19	4 Pole 415 V 55 kA motorized MCCB 1000 Amps for 625 KVA DG Set. Protection ETU LSI with Profinet/profibus communication port without software & compatible to Automatic Transfer Control Device.	02 Nos.	For Incomer D.G. & Main supply	Siemens

20	4 Pole 415 V 55 kA MCCB 1000 Amps for 625 KVA DG Set. Protection ETU LSI with Profinet/ profibus communication port without software.	01 No.	For Output supply	Siemens
21	Automatic Transfer Control Device for 625 KVA DG Set with Profinet/profibus communication port without software.	01 Set	D.G./Main Transfer Switch	Siemens Model: SENTRON ATC5300
22	16 Point window Annunciator (fascia type)	01 Set	Annunciation (For 625 KVA DG Set)	Minilec
23	MCB	As required	Protection (For 625KVA DG Set)	Legrand
24	Cooling Fan	As required	For cooling (For 625 KVA DG Set)	
25	Panel Heater (with Thermostat)	As required		



## SECTION – VI

### **TECHNICAL DATA SHEET & DOCUMENTATION** **( DOCUMENTS TO BE SUBMITTED WITH TECHNICAL BID)**

- a) *Alternator*
- b) **Engine**
- c) **AMFPanel**
- d) **Documentation**

Note : Bidder shall furnish the above , failing which the offer may be summarily rejected.

**SECTION – VI****TECHNICAL DATA SHEET & DOCUMENTATION****(DOCUMENTS TO BE SUBMITTED WITH TECHNICAL BID)****1.0) DATA SHEET (Alternator)**

Sr. No.	Details of Particulars	Guaranteed Data	To be filled by Vendor
1.	Make :	KEC/Stamford/ Crompton/Caterpillar India/Leroy Somer	
2.	Governing Specifications	IS : 4722	
3.	Full load output in KVA	625 KVA	
4.	Ingress protection class of enclosure	IP 23	
5.	Speed/ Frequency	1500 RPM, 50 Hz	
6.	No. of phases	3	
7.	Is neutral brought out?	Yes	
8.	Voltage between phase/ neutral	240 V Ph to neutral & 415 V Ph to Ph	
9.	Regulation band of voltages	+ 2.5% to 5%	
10.	Short time overload at : 110 % load	1 Hour in 12 hours	
11.	Efficiency at 0.8 p.f. at a) following Load:- b) 400 KW/500KVA c) 320 KW/400KVA 200 KW/250KVA		
12.	Exciter type		
13.	Three phase sustained short circuit current		
14.	AVR make, type & response time AVR shall be suitable for control from remote through push buttons.	.	
15.	Overall dimensions of DG set (mm)		
16.	Weight of set overall (kg)		
17.	Head room needed for lifting/ Servicing		

18.	Other features of Alternator which are not covered above	
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**DATA SHEET - ENGINE**

Sr.No.	DESCRIPTION	To be filled by Vendor
	<b>GENERAL</b>	
1.	Model no.	
2.	Manufacturer : Cummins/ Caterpillar India/ Perkins/Volvo Penta	
3.	Number of cylinders	
4.	Bore/stroke	
5.	Displacement volume(cc)	
6.	Compression ratio/bmfp	
7.	Piston travel-continuous Speed	
8.	Continuous HP at max. Continuous rated speed.	
9.	Continuous max. Rated rpm	
12.	Normal working rpm	
<b>FUEL SYSTEM</b>		
14.	Fuel consumption at 0.8 power factor with	
a)	400 KW/500 KVA	
b)	320 KW/400KVA	
c)	200 KW/250KVA	
15.	Fuel tank capacity	
<b>LUBRICATION SYSTEM</b>		
18.	Lube oil grade	
19.	Lube oil consumption	
20.	Lube oil filter - type and replacement period	
<b>COOLING SYSTEM</b>		
21.	Type of mechanism of cooling	
<b>AIR INLET SYSTEM</b>		
	Air filter: type and replacement period	
22.	HP/WATTS absorbed by radiator fan	

**DATA SHEET - ENGINE**

<b>EXHAUST SYSTEM</b>		
23.	Exhaust gas temperature at At stack at full load	
24.	Maximum permissible exhaust back pressure at full load	
<b>STARTING SYSTEM</b>		
25.	BATTERY a) Make b) Voltage grade c) AH capacity d) Solenoid start switch make e) Whether suitable for 6consecutive starts (yes/no)	
<b>Cabling (specify cable sq.mm, no. of cores)</b> All control cables of 2.5 sq.mm. Copper armoured		
26.	Instrumentation system Make of level switch Make of pressure switch Make of mechanical Hour meter/ Digital hour Meter Make of pressure gauge, temperature gauge and other gauges.	
27.	Noise level at 1 m, 75 db	
28.	Governor Type, make and tolerance	

**Note:**

1. Information/data marked as **To be filled by Vendor** shall be furnished by the bidder along with the offer. Failure to furnish data/information shall make the offer liable for rejection.
2. The bidder may supplement the data sheet to suit the particular design and model of engines offered and ensure that all relevant technical data and information are included in the datasheet.
3. Complete technical data on all auxiliary items such as governor, pumps, motors (if any), starting system, instrumentation and control system, etc. shall be included in the datasheet.
4. The materials details for the above items as applicable shall also be furnished.
5. List of deviations if any, shall be furnished as per Annexure –I indicating respective clause no. & details of deviation thereof.

## **7. GENERAL CONDITIONS**

### **7.1 DEFINITIONS OF TERMS**

In constituting these conditions and specifications, the following expressions shall have the meaning, therein assigned to them unless there is something repugnant in the subject of context in consisting with such meanings.

- 7.1.1 Institute shall mean the “Indian Institute of Science, Bangalore”.
- 7.1.2 “Office” shall refer to the Office of the Project Engineer cum Estate officer.
- 7.1.3 “Contractors” shall mean the tenderer whether a firm, registered company, partnership or any individual whose tender has been accepted by Institute or by an Officer (duly authorized in this behalf) on behalf of the Institute and who has entered into agreement with Institute for due fulfillment of the contract and shall include the legal representatives, successors, heirs and assignees of the tenderer.
- 7.1.4 “Engineer” shall mean the “Project Engineer cum Estate officer”, Indian Institute of Science, Bangalore or such other officer as may be appointed to call as the Project Engineer cum Estate officer for the purpose of the contract and shall also mean and include other officers of equivalent rank directly in charge of the work or any part thereof under administrative control of the Director, IISc, Bangalore-12.
- 7.1.5 When the Engineer is named as final authority, it includes all the above mentioned officers and in such matters, the contractors shall have the right of appeal against the orders up to the Director, IISc, Bangalore, whose decision shall be final and legally binding on all the parties concerned.
- 7.1.6 The Project Engineer cum Estate officer named as final authority for any decision taken, shall mean only the Director, IISc, Bangalore or his duly authorized assistant.
- 7.1.7 The Engineer in charge shall mean the Project Engineer cum Estate officer directly in charge of the work or his duly authorized assistants.
- 7.1.8 Plant shall mean and include any or all plants, machinery, tools and other implements of all description necessary for the execution of the work in a safe and workmen like manner.
- 7.1.9 The expression “Works” where used in these conditions shall unless thereby something in the subject or contract repayment to such construction, be construed to mean the work or the works constructed to be executed under or virtue of the contract whether temporary or permanent and whether original, altered, substituted or additional.
- 7.1.10 “Contract and contract document” shall mean and include the notice inviting tenders, proceedings of the pre bid meeting, the stamped agreement, conditions of contract, specifications and Schedules ‘B’, drawings and all other connected documents with tender schedule.
- 7.1.11 “Specifications” shall mean the specifications annexed and where these are not specifically mentioned shall be as may be detailed and necessary due to particular nature of work as approved by the Project Engineer cum Estate officer.
- 7.1.12 “Site” shall mean and include all the area in which operations in respect of the work are carried out. This shall also include materials stacking yards and the area where temporary structures are put up for installing any machinery etc.

7.1.13 “Tests” shall mean such tests as are required to be carried out either by the contractor or by the Project Engineer cum Estate officer from time to time on completion as detailed in the specifications before the work is certified as being satisfactory and is taken over by the Project Engineer cum Estate officer.

7.1.14 “Month” shall mean a Calendar month.

7.1.15 “**Prime contractor**” mean a firm that performs construction work itself and that the work is directly entrusted to the firm by the owner / Government / local body / Quasi Government / Government under taking.

Words used in singular shall also include the plural & vice-versa where the context so demands.

## **7.2 GENERAL NOTES & CONDITIONS**

### **7.2.1 CONTRACTOR TO INSPECT SITE:**

The contractor shall visit and examine the construction site and satisfy himself as to the nature of the existing roads or other means of communications, the character of the soil for the excavations, the extent and magnitude of the work and facilities for obtaining materials and shall obtain generally his own information on all matters affecting the execution of the work. No extra for charges made in consequence of any misunderstanding or incorrect information on any of these points or on the grounds of insufficient description will be allowed. All expenses incurred by the contractor in connection with obtaining information for submitting this tender including his visits to the site or efforts in compiling the tender shall be borne by the Tenderer and no claims for reimbursement thereof shall be entertained. .

### **7.2.2 ACCESS TO SITE:**

The Contractor is to include in his rates for forming access to the site, with all temporary roads and gangways required for the works.

### **7.2.3 SETTING OUT:**

The Contractor shall set out the building in accordance with the plans. All grid/centre lines shall be pegged out to the satisfaction of the Engineer. The Contractor shall be responsible for the correctness of the lining out and any inaccuracies are to be rectified at his own expense. He will be responsible for taking ground levels of the site before setting out and recording them without any extra charge.

The Contractor shall construct and maintain proper bench mark at the intersection of all main walls, columns, etc., in order that the lines and levels may be accurately checked at all times.

### **7.2.4 TREASURE TROVE:**

Should any treasure, fossils, minerals, or works of art of antique interest be found during excavation or while carrying out the works, the Contractor shall give immediate notice to the Engineer of any such discovery and shall make over such finds to the Institute.

### **7.2.5 ACCESS FOR INSPECTION;**

The Contractor is to provide at all times during the progress of the works and the maintenance period proper means of access, with ladders, gangways etc., and the necessary attendants to move and adapt as directed for the inspection of measurement of the works by the Engineer or their representatives.

### **7.2.6 ATTENDANCE UPON ALL TRADERS:**

The Contractor shall be required to permit tradesmen/ Specialized agencies appointed by the employer to execute works like water supply, Sanitary, Electrical installation, lifts, air conditioning, hardware and other specialized works. The contractor shall also permit the above mentioned agencies to use his scaffolding and retain the scaffolding till such works are completed. The rates quoted by the contractor shall be inclusive of the above facility.

#### **7.2.7 GATEKEEPER AND WATCHMAN:**

The Contractor from the time of being placed in possession of the site must make arrangements for watching, lighting and protecting the work, all materials, workmen and the public by round the clock on all days including Sundays and holidays at his own risk and cost.

#### **7.2.8 STORAGE OF MATERIALS:**

The Contractor shall provide for necessary sheds of adequate dimension for storage and protection of materials like cement, steel, lime, timber and such other materials including tools and equipment which are likely to deteriorate by the action of sun, wind, rain or other natural causes due to exposure in the open. The cement storage site shall be leak proof and shall hold at least 4 months requirement. All such sheds shall be cleared away and the whole area left in good order on completion of the contract to the satisfaction of the Engineer.

All materials which are stored on the site such as bricks, aggregates etc., shall be stacked in such a manner as to facilitate rapid and easy checking of quantities of such materials.

#### **7.2.9 COST OF TRANSPORTING:**

The Contractor shall allow in his cost for all transporting, unloading, stacking and storing of supplies of goods and materials for this work on the site and in the places approved from time to time by the Engineer. The Contractor shall allow in his price for transport of all materials controlled or otherwise to the site.

#### **7.2.10 W.C. AND SANITARY ACCOMMODATION AND OFFICE ACCESSORIES AND ACCOMMODATION:**

The contractor shall provide at his own cost and expense adequate closet and sanitary accommodation complying in every respect to the rules and regulations in force of the local authorities and other public bodies, for his workmen, for the workmen of nominated sub-contractors and other contractors / specified agencies working in the building, the Project Engineer of works and other Institute agents connected with this building project and maintain the same in good working order.

The Contractor shall also provide at his own expense adequate office accommodation for the Project Engineer of works preferably contiguous to his office and shall maintain the same in a satisfactory condition and shall provide light, fan and attendant etc., for the same and shall remove them after completion of the works. He shall arrange to provide latest survey Instruments and at all times maintain the same in good working order at site, to enable the Project Engineer of works or other representative of Institute to check the lines and levels of the work.

#### **7.2.11 MATERIALS:**

Materials shall be of approved quality and the best of their kind available and shall conform to I.S. specifications. The Contractor shall order all the materials required for the execution of work as early as necessary and ensure that such materials are on site well ahead of requirement for use in the work. The work-involved calls for high standard of workmanship combined with speed and to the entire satisfaction of the Project Engineer.

#### **7.2.12 TO ASCERTAIN FROM CONTRACTORS FOR THE OTHER TRADES.**

The Contractor shall ascertain from all agencies / Sub-contractors all particulars relating to their work with regard to the order of its execution and the position in which chases, holes and similar items will be required; before the work is taken in hand as no patch works shall be allowed for cutting away work already executed in consequence of any neglect to ascertain these particulars before hand.

#### 7.2.13 **SAMPLE APPROVAL:**

Before ordering materials, the Contractor shall get the samples approved from the Project Engineer cum estate officer well in time.

#### 7.2.14 **TESTING OF WORK AND MATERIAL:**

The Contractor shall, if required by the Engineer arrange to test materials and/or portions of the works at his own cost in order to prove their soundness and efficiency. If after any such test the work or portion of works is found in the opinion of the Engineer to be defective or unsound, the Contractor shall pull down and redo the same at his own cost. Defective materials shall immediately be removed from the site at his own cost.

#### 7.2.15 **MECHANICAL PLANT:**

The Contractor will be required to provide and maintain in working order the following power-driven equipment's during the construction-work and number of equipment's shall depend on the volume of work involved pertaining to this project as and when required.

1. Concrete mixers of required capacity.
2. Concrete pumps.
3. Vibrators
4. Concrete testing equipment.
5. Stone cutting machines.
6. Jack Hammers.
7. Pumps with required capacity.
8. Air compressors with required capacity.
9. Diesel Generators.
10. Welding, cutting and bending equipment.
11. Builders hoist.
12. Tipper/Dumper.
13. Tractor with Trailer.
14. Earth Compactor.
15. Earth rammer
16. Steel tubular scaffolding.
17. Slab shuttering
18. Floor polishing machines.
19. Surveying instruments with total station.
20. Any other machinery required during the execution of work.

#### 7.2.16 **FOREMAN AND TRADESMEN:**

All Tradesmen shall be experienced men properly equipped with suitable tools for carrying out the work of carpentry and joinery and other specialist trades in a first class manner and where the Engineer deem necessary, the Contractor shall provide such tools which are considered necessary for carrying out of the work in a proper manner.

All such tradesmen shall work under an experienced and properly trained Foreman, who shall be capable of reading and understanding all drawings, pertaining to this work and the contractor shall also comply with other conditions set out in different clauses of the conditions of the contract.

#### 7.2.17 **PROJECT PROGRAMME OF WORKS AND WEEKLY PROGRESS REPORT:**

##### **a) Organisation chart:**

The contractor should submit the proposed organization chart for the project including the details of staff to be deployed full time on site to the approval of Project Engineer , where the PROJECT ENGINEER raises any objection to either the qualification or experience or required professionalism of any of the staff deployed by



the contractor, the same shall be replaced by suitably competent person to the approval of PROJECT ENGINEER within 7 days.

**b) Program chart:**

The Contractor shall furnish the detailed programme of execution for timely completion of the project within 24 months (inclusive of rainy season). Such a detailed program of works prepared using Industry Standard Scheduling Software like **MS Project 2000 or Primavera** shall be submitted by the Contractor within ten days after receiving communication of tender acceptance. As per the detailed drawings and schedule of quantities; the contractor shall work out concurrent activities with start and finish times, integrating of all tasks with interface and mile stone event drawn and to evaluate for reduction in total project duration through improved over lapping of tasks and activities where feasible. The Contractor shall plan for improved planning and scheduling of activities and forecasting of resource requirements, ability to use the Computer effectively to produce timely valid information for Project Management purpose. Accordingly, PERT; CPM Networking shall be drawn. GANNT charts shall also be furnished. The Contractor shall also furnish necessary particulars to the Project Engineer of works for compiling weekly progress reports in the form furnished by the Institute. A monthly financial programme shall also be submitted.

**7.2.18 CLEARING OF SITE:**

The contractor shall after completion of the work clear the site of all debris and left over materials at his own expense to the entire satisfaction of the Institute. The same should be carted out of the Institute at his own cost.

The contractor shall also clear the labour camp/RMC plant of all types of permanent/temporary structures, soak pits, sump, septic tanks or any other such installations as identified by the PROJECT ENGINEER to the entire satisfaction of the Institute. The debris/excess stuff shall be carted out of the Institute at his own risk and cost.

**7.2.19 PHOTOGRAPHS:**

The Contractor shall at his own expense supply to the Institute photographs in duplicate copies not less than 25 cm x 20 cm. (10" x 8") along with soft copy, of the works taken from all the portions of the building at intervals of not more than one week during the progress of the work, or at every important stage of construction, as directed by the Project Engineer of work.

**7.2.20 PROVISION OF NOTICE BOARD:**

The Contractor shall provide a notice board on proper supports 3m x 2m (10' x 6') in a position approved by the Engineer. He shall allow for painting and lettering stating name of work; name of Architects; Structural Consultants; General Contractor and Sub-Contractors. All letters except that of the name of the work shall be in letters not exceeding 5 cm. in height and all to the approval of the Engineer. Proper barricading shall be erected all-round the site before commencement of the work.

**7.2.21 PROTECTION:**

The contractor shall properly cover up and protect all work throughout the duration of work until completion, particularly masonry, moldings, steps, terrazzo or floor finishes, staircases and balustrades, doors and window frames, plaster angles corners lighting and sanitary fittings, glass, paint work and all finishing.

**7.2.22 PREPARATION OF BUILDING FOR OCCUPATION AND USE ON COMPLETION:**

The whole of the work shall be thoroughly inspected by the Contractors and all deficiencies and defects set right. On completion of such inspection, the Contractor shall inform the Engineer in writing that he has finished the work and it is ready for the Engineer's inspection.

On completion, the Contractor shall clean all windows and doors and all glass panes, including cleaning of all floors, staircases and every part of the building including oiling of all hardware. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the Engineer.

### 7.3 OTHER CONDITIONS

- 7.3.1 The tenderer must understand clearly that the rates quoted are for complete items of works including charges due to materials, labour, all lead and lift, HOM of plant and machineries, scaffolding, supervision, service works, power, all types of royalties, sales tax, labor cess, all types of taxes payable to the Govt and local bodies, over head charges, etc., and includes all extra to cover the cost of night work if and when required and no claim for additional payment beyond the prices or rates quoted will be entertained for payment subsequently towards any claims on the grounds of misrepresentation or on point that he was supplied with information given by promise or guarantee by the Institute, or by any person whether member of or employee in Institute will not be entertained. Failure on the contractor's part to obtain all necessary information for the purpose of submitting his tender and quoting rates therein shall not absolve him of any risk or liability consequent upon the submission for tender.
- 7.3.2 All the works shall be carried out as per specifications prescribed by BIS, National Building code, KPWD specifications, relevant IS codes or as directed by the Project Engineer in the absence thereof.
- 7.3.3 deleted
- 7.3.4 In case there is any conflict in the specifications and drawings the decision of the Project Engineer cum Estate officer shall be final and binding on the contractor.
- 7.3.5 All the materials shall be got approved by the Project Engineer cum Estate officer before use.
- 7.3.6 The rates quoted for in individual items shall include labour, cost of materials conveyance and lift charges for all materials required for successful completion of work and all taxes payable to any authority as per rules in vogue from time to time.
- 7.3.7 Necessary pillars shall be constructed by the Contractor for benchmark at no extra cost as directed by the Project Engineer.
- 7.3.8 Site order book shall be maintained in the work spot and the contractor shall sign in the order book in token of having gone through the instructions issued by the inspecting officers and carryout the instructions promptly.
- 7.3.9 In the work spot the contractor shall provide suitable temporary office with a covered area of 1000 sft matching that of the Contractor's office with necessary furniture for use of Institute as directed by the Project Engineer for which no extra payment or compensation shall be claimed. The furniture however will after completion of the work, be the property of the contractor and shall remove them at the close of the contract.
- 7.3.10 The contractor shall take all precautions against damage from accident. No compensation will be allowed to the contractors for their tools and plant materials lost or damaged from any cause. The contractor is liable to make good the structure or plants damaged by any other cause at his own cost. The Institute will not pay the contractor for corrections or repairing any damaged portion of work done during construction.

#### 7.3.11 **Storage of Cement:**

Large stocks of cement shall not be kept at the work spot. Only sufficient quantities to ensure continuity of the work shall be at stores. The contractor shall provide and maintain sufficient storage sheds for cement, steel etc., on the works. The cement shall be covered with tarpaulin or any other impervious materials in order to protect the cement bag from moisture

Cement bags shall be neatly stacked in an orderly manner so as to admit to easy recount. A regular day to day account of Cement received and used on the work together with the mention the particular portion and the quantity of the work in which it was used shall be maintained and shown to the Project Engineer cum Estate officer or his representative whenever he asks for it.

Cement that has been affected by the moisture shall be removed at once from the site.

Cement shall be used in order in which the consignments are received and not stored for unduly long period.

- 7.3.12 The contractor shall employ adequate no. of skilled & unskilled labours required for successful timely execution of work. He shall submit daily reports to the Engineer in charge regarding the strength of labour employed both skilled and unskilled.
- 7.3.13 The contractor shall furnish weekly medical report showing number of persons ill or incapacitated and nature of their illness, to the Project Engineer.
- 7.3.14 The contractor shall furnish a report of any accident which may occur, within 24 hours of its occurrence to the Project Engineer.
- 7.3.15 The contractor shall keep on site of work a qualified Engineer as required as per rules of registration as their authorized representative who will receive all instructions given from the Institute officers. The representative shall have permanent office at site of work where communications can be sent and notices can be served by the Project Engineer throughout the duration of work.
- 7.3.16 Prior approval should be obtained from the Project Engineer for the construction and location of the temporary site office, store sheds and labour quarters, within the premises of the site, similarly the contractor shall get approval of the Project Engineer regarding the areas to be utilized for stacking the materials etc., for the work.
- 7.3.17 Reference to detailed specifications are indicated against the items contained in the Schedule 'B', in case there is any item for which no detailed specifications is indicated, it shall be carried out as per specifications intimated by the Project Engineer. The contractor shall not be entitled for any extra claims or compensation on this account. In case of additional or extra items not covered by the Schedule 'B', the contractor shall carry out the work as per specifications intimated by the Project Engineer.
- 7.3.18 The Engineer shall have the right to direct the contractor to progress the various items of works in the manner prescribed by him.
- 7.3.19 Failure to adhere to any of the above will be sufficient cause for taking action under clause (2) or clause (3) or both along with their sub clauses of conditions of contract.
- 7.3.20 Contractor shall make arrangements at his own cost to construct approach road for conveyance of materials etc., preferably on the alignment accepted by the Institute to procure land etc. for housing, staff and workmen near the site of the work.
- 7.3.21 It is not possible for the Institute to release any quarry (metal and sand etc.,) for this work. The contractor has to make his own arrangements. No claim regarding leads and lift will be accepted.
- 7.3.22 The contractor has to make his own arrangements in regard to power supply and water required for construction and drinking water facilities.
- 7.3.23 Tool, Tax, Octroi, Royalty for collecting earth, gravel, sand, stone, excise duty, sales tax, labour cess or any other tax payable on account of this contract shall be met by Contractor.
- 7.3.24 The contractor shall be entirely responsible for sufficiency of the scaffolding, timbering, machinery, tools, implement and generally of all means used for fulfillment of the work. Whether such means may not be approved or recommended by the Project Engineer, the contractor must accept at his own cost all risks of accidents or damages.
- 7.3.25 ***After completion of the work, service drawings as per actual execution in Auto CAD should be submitted by the agency for services such as Electrical, Water supply and Sanitary before submission of final bill.***

#### **7.4 GENERAL SPECIFICATIONS – PART A**

Extra care shall be taken regarding the laborers by providing waist belt, Helmets scaffolding etc at your own cost and supervision and shall be carried out as per the directions of the Project Engineer.

##### **7.4.1 EXCAVATION:**

All specifications of various items of work pertain to Karnataka Public Works Department Handbook / CD, Bureau of Indian Standards (BIS) and 2016 National building Code (NBC). For the points not covered by these specifications for the portions thereof and if no mention be made there in, the written instruction of the Project Engineer cum Estate officer shall be binding on the contractor.

Before starting the work the contractor or his duly authorized agents shall be present while taking ground levels, along and across the alignment of the various works, etc., and shall have to sign the field book, and also working plans showing working longitudinal and cross sections of their alignment in token of having accepted the ground levels without which they will not be allowed to start the work.

Excavation for foundation shall be done up to required depth and in steps with sides properly sloped as shown on plans, without any charges etc., except when instructed in writing by the Project Engineer cum Estate officer. Only depths and widths according to plan or as per written orders of the Project Engineer shall be measured and paid for.

Any damage done to the work due to the contractor's operation beyond the excavation lines shall be repaired at the expense of the contractor. Any and all excess excavation or over breaking performed by the contractor for any purpose or reason except as may be ordered in writing by the Project Engineer and whether or not due to the fault of the contractor shall be at the expense of the contractor. Cost of refilling for all such excavation with materials as specified by the Project Engineer has to be done by the contractor at his expense.

##### **7.4.2 WORKMANSHIP AND LABOUR:**

The quality of all materials, tools, operators and labour used on the work shall be subject to the approval of the Project Engineer cum Estate officer or his authorized agent who shall have power to order immediate removal by the contractor any of the above that may not meet with his approval.

In case of failure to carry out orders of removal within the time specified, the Project Engineer or his authorized agents shall get the same removed at the contractor's expense.

##### **7.4.3 KEEPING DRY AND PUMPING:**

7.4.3.1 Unless otherwise provided for in the contract, the contractor will at his own expense keep all portions of the work free from undue water, whether due to springs, soakage or inclement weather and will use his own implements and machinery for this purpose.

##### **7.4.3.2 BAILING OUT OR DEWATERING:**

Adequate arrangements shall be made by the contractor for dewatering the foundation trenches and excavation and keeping the same dry while the masonry or concrete work is in progress and till the Project Engineer considers that the mortar is sufficiently set.

The rates for the various items include the cost of shoring, strutting, coffer dam, channels or other incidental devices necessary for diverting the water met within foundation. The cofferdam and the diversion channel shall, however, be maintained in good and working condition till the completion of the

structure or until such time, as in the opinion of the Project Engineer till the coffer dam or/and diversion channel is no longer necessary. Bailing out water necessitated by the failure to maintain the cofferdam and diversion channel will not be paid for separately under any conditions.

No extra rate shall be paid for removing any stuff outside, which might find excess due to rains or for reasons whatsoever from the sides or bottom of the foundation trenches and excavation or from also where when the dewatering operations are in progress.

The contractor must assure himself by making the necessary investigation regarding the depths to which foundations are likely to go. If any work is ordered to be done beyond dimensions or deviations marked in the drawings, no extra rate other than the rate for the Undertaking of work quoted by the contractor be paid.

The contractor will make himself arrangements for necessary plant such as Pump, engines, and other materials required in this connection.

#### **7.4.4 FACILITIES FOR INSPECTION:**

The work at all times be open for inspection by the Project Engineer or his duly authorized Assistant and the contractor shall arrange easy access to every part of the work and shall provide such ladders, scaffolding and lifts for this purpose as necessary at his own cost.

#### **7.4.5 DELIVERY OF WORKS:**

The final bill will be prepared after the work is handed over to the Project Engineer or his duly authorized representative in a thoroughly complete, clean, sound and workman like state.

#### **7.4.6 EXTRA ITEM:**

Whenever the contractor is ordered by the Project Engineer or the person duly authorized by him to execute any item of work, which is not in his tender, it shall be the contractors duty to see that the order is duly entered in the order book on the work, unless a separate communication to this effect is received by him, it shall be his duty to get the rates sanctioned for the item by the appropriate authority. For any extra item of work not thus ordered either by any entry in the order book or separate communication, the contractor shall have no claim to payment.

#### **7.4.7 COMPLIANCE WITH BYELAWS AND PROTECTIONS AGAINST ACCIDENTS, ETC:**

Contractor is responsible for complying with all acts, bye-laws, Municipal and other regulations for the provision and maintenance of lights during nights, barricading, providing any other protection that may be necessary and will be liable for all claims that may arise from accidents of nuisance caused by works.

#### **7.4.8 DISPUTES:**

Disputes on the points between the Project Engineer and the contractors shall be referred to the Center for campus management and Development, whose decision shall be given in writing and shall be final and binding on the contractor.

#### **7.4.9 TOOLS ETC.,**

The contractor shall unless otherwise specially stated in the contract, be responsible for the payment of all import duties, octroi duties, sales tax, quarry fees etc., on all materials and articles brought to site.

#### 7.4.10 **CLEARANCE OF SITE:**

The site described and shown on the plan is to be cleared of all obstruction, loose stones and materials, rubbish of all kinds of shrubs and brushwood, the roots being entirely removed.

The products of the cleaning to be stacked in such a place and manner as ordered by the Project Engineer.

In jungle clearing all trees not marked for preservation, jungle wood and brushwood shall be cut down and their roots entirely removed up. All wood and materials from the clearings will be property of the Institute and should be stacked as the Engineer in charge directs. **Trees shall not be cut without prior permission of the Institute.**

All holes or hollow, whether originally existing or produced by digging up roots, shall be carefully filled up with earth well rammed to the required density and leveled off, as may be directed.

#### 7.4.11 **LINE OUT:**

The contractor shall use necessary measuring instruments, theodolite, workstation and other materials like flags, strings, pegs, nails, pillars, paints, etc., and also Labour required for ascertaining of the initial ground levels at the different stages of excavation and construction of masonry or other structures at his own cost. Any dispute in regard to the accuracy of the measuring instruments and the device shall be subjected to the final decision of the Engineer-in charge of the work.

#### 7.4.12 **ALL MATERIALS SHALL CONFORM TO BIS SPECIFICATION**

##### 7.4.12.1 **STONES:**

Except where otherwise stated the word "Stone" mentioned in these specifications means best granite stone obtained from approved quarries by the Project Engineer. Stones obtained from unapproved quarries and inferior stones obtained from approved quarries will be rejected.

Stones having any skin or covers of earth shall not be used.

All stones shall be fine or medium grained bright in colour breaking with a clear structure making a ringing sound when struck with hammer.

##### 7.4.12.2 **COARSE AGGREGATE:**

Coarse aggregate shall be as per BIS specifications. The coarse aggregate for concrete shall consist of hard, dense, durable, uncoated, coarse, rock fragment and shall be free from injurious amounts of friable, thin elongated or laminated process alkali, organic matter or other substances. Round pebbles, flaky and decayed stone shall not be used.

The broken stone shall be free from all dusts and dirt and washed if necessary, to ensure that all faces of the broken stones are perfectly clean.

7.4.12.3 **SAND:** The source and quality of the sand to be used shall have to be approved by the Project Engineer. The sand shall be as per BIS specifications. The sand shall consist of hard, durable, dense uncoated rock fragments, and shall be free from impurities with dust lumps, soft or flaky particles of shales, alkali, organic material, and other deleterious substances. Filter sand shall not be used.

7.4.12.4 **WATER:** Water to be used for the work shall be clear and free from alkali, acid, oil or other deleterious substances and generally fit for drinking.

#### **7.4.12.5 CEMENT CONCRETE:**

The material used, i.e., water, cement and aggregate shall be of approved quality and the grading of the aggregate shall be as specified at the time of concreting.

The design of concrete mix shall be done by trial mix and testing. The same has to be approved by the Project Engineer cum Estate officer before adopting at site.

##### **7.4.12.5.1 PLACING CONCRETE:**

Concrete shall be placed only in locations where authorized and no concrete or mortar shall be placed until formwork, installation of embedded parts, preparation of surface and necessary cleanup has been done and checked to be in conformity with specification and drawings. Earth foundation, on which concrete is to be laid shall be firm, drained soil free from any soft and other objectionable materials and on which there is no standing or running water. Rock surface or rigid masonry or concrete surface upon or against which, concrete is to be placed, shall be prepared in the same manner as rock foundation or old masonry or concrete surface over old masonry. All concrete shall be placed directly in its final position within 30 minutes after it is mixed. Concrete shall not be dropped from excessive distance and the free fall should be kept to a minimum to avoid segregation, air entertainment and damage to form work.

##### **7.4.12.5.2 RATE OF PLACE:**

Concreting shall be continued without interruption when it is unavoidable until the structure or section is completed or until satisfactory construction joint can be made. Concrete shall not be placed faster than the placing crew can compact it properly. The difference in elevation between adjacent block shall not exceed 15" inches.

##### **7.4.12.5.3 CONSOLIDATION OF CONCRETE:**

Each layer of concrete, where smooth surface are required and for all surfaces which will be permanently exposed to the weather, and for all surface next to embedded metal work, the concrete shall be worked, or vibrated to obtain concrete of maximum density and imperviousness and to assure proper contact of the concrete with the form and reinforcement bed. Ordinary hand methods consisting of ramming, tamping and skiing with suitable tools and tamping shall be permitted only in situation where it is impracticable to use power vibrators. Excessive vibrations sufficient to cause segregation tending to bring in excess of finer particles to the surface shall be avoided. Vibrators shall be inserted to lower course that has commenced final set.

##### **7.4.12.5.4 CHIPPING AND ROUGHENING CONCRETE SURFACE:**

Surface upon or against which additional concrete is to be placed shall be chipped and roughened to a depth not greater than one inch on the surface. The roughening shall be performed by chipping or other satisfactory method and in such a manner as not to loosen, crack or shatter any part of the concrete beyond roughened surface. After being roughened the surface of concrete shall be cleaned well thoroughly of all loose fragments, dirt and other objectionable substances and shall be sound and hard and in such conditions as to ensure good mechanical bond between old and new concrete. The old prepared surface shall be treated with epoxy and cured before concreting.

##### **7.4.12.5.5 CURING AND PROTECTION:**

All concrete shall be protected against injury until final acceptance. Concrete shall be kept continuously moist for not less than 21 days. Construction joint shall be cured. Separate labors to be engaged 24 x 7 exclusively for curing the concrete works.

#### **7.4.13 MACHINERY:**

7.4.13.1 All the machinery that will be employed on the work shall be approved, efficient and thoroughly, complying with the specifications of each machine or parts and shall have been manufactured by reputed and qualified firms. All the machinery employed on the work shall be open to inspection at all working hours, by the Project Engineer and any defect shall be rectified, repaired, replaced, renewed or remodeled so that its performance in the opinion of the Project Engineer is satisfactory. Any defective part of the machine, which requires replacement, shall be promptly replaced, failing which the Engineer-in-charge, shall be at liberty to cause the defective fittings removed from site of work at the cost of the contractor.

#### **7.4.13.2 OPERATORS:**

The machines shall be in charge of efficient and trained operators, which terms shall include drivers, mechanics or other personnel who are actually operating the machines. The Engineer in-charge has the right to test operators, etc., as deemed necessary by him for the class of machinery, which he is to operate and shall drive out such of the operators who fail in the tests.

#### **7.4.14 SAFETY PRECAUTION :**

All reasonable safety precautions for the safety of workers shall be taken. The contractors shall be responsible for the maintenance of all regulations under the Factory Act, workmen's compensation. Minimum wages act and other act for the safety and welfare of the workers employed by him. In addition, the contractors shall provide adequate protection to all workers employed by him against natural elements such as rain, sun, wind etc., during working hours and provide free, pure protected drinking water during working hours.

#### **7.4.15 NON-STOP OPERATION:**

In the continuous or non-stop operations suitable shifts or working hours for each shift shall be maintained. The contractor is liable for all reasonable extra payment for all extra hours of work done by the workers employed by him.

#### **7.4.16 TESTS:**

The Project Engineer cum Estate officer or his authorized representatives shall have full scope and right of entry at all times to examine and test, measure, count, weigh, take bores, or in any manner satisfy himself that the work executed is according to the specifications and required strength. Any portion of work got disturbed, during such tests, shall be made good by the contractors, without extra cost. The Engineer in charge has the right to change the design proportions, mixes within reasonable limits to ensure requisite strength of the structure. **Laboratory for requisite tests shall be established by the Contractor at site only, at his own cost.**

#### **7.4.17 ADEQUATE ARRANGEMENTS TO ACHIEVE PROGRESS:**

The Project Engineer shall have the right to advise the contractor on the strength, quality and nature of labour to be employed on work to maintain progress on the work, commensurate with the strength of structure. Similarly, he shall advise the contractor on the nature and adequacy of the machinery that are required on the work.

#### **7.4.18 MEASUREMENTS:**

Estimates of quantities contained in the attached schedule of work are based on the use of standard



methods of measurements applicable to the various items. The methods of measurements for some items are briefly described below.

- 7.4.18.1 **EXCAVATION:** All excavation shall be measured as the original volume in undisturbed condition in site.
- 7.4.18.2 **DRILLING:** The drilling holes shall be measured as the actual number of linear feet of holes drilled including linear feet drilled through concrete or masonry. The drilling holes for blasting shall be considered as the part of the excavation operation and no separate measurements of such holes will be made.
- 7.4.18.3 **CONCRETE:** Concrete shall be measured as the volume of concrete in place of the structure. This item shall include all materials in all forms, form lining and fixture, framing and scaffolding and all operations in connection with mixing, conveying, placing and curing of concrete. It shall also include batching and finishing operations except where finishing as defined in the specifications is required. In measuring concrete the **volume of openings, embedded pipes and metal work except reinforced bars and anchor bolts and bars will be deducted.**
- 7.4.18.4 **REINFORCEMENT:** Reinforcement shall be linearly measured and paid in terms of weight of steel reinforcement placed in the structure calculated as per IS Standards. It shall also include weight of metal chair supporters, clips used to set and fix reinforcement in place. Laps and wastage shall not be measured and paid.
- 7.4.18.5 **CEMENT POINTING:** The exposed faces shall be measured in superficial area.

## 8 ADDITIONAL CONDITIONS

### **8 (a) CONDITIONS/INSTRUCTIONS TO BE NOTICED BY TENDERER BEFORE QUOTING FOR THE WORK**

I. DETAILS TO BE FURNISHED FOR ENGAGING SUB-CONTRACTOR FOR SPECIALISED WORKS: The tenderer shall be required to engage agencies of standing and repute who have experience in executing works of similar nature and magnitude. Such specialized trades cover electrical installation (HT/LT), Lifts, A.C. sanitary and water supply works, firefighting installation and any such other trades as may be directed by the Institute. The successful tenderer shall be required to engage Sub-agencies for such specialized trades only with the prior written approval of the Project Engineer cum Estate officer after giving an opportunity to the Project Engineer cum Estate officer to evaluate the experience and competence of the sub-agency for each trade. In order to ensure implementation of this requirement, it is required that each tenderer shall submit along with his tender, names of three sub-agencies for each trade amongst whom tenderer proposes to engage if successful in the tender. Along with names of sub-agencies for each trade, the tenderer shall furnish in detail the following particulars in respect of each sub-agency in the format furnished in Technical Bid.

All such information concerning sub-agencies shall be furnished along with the tender. Any tender containing insufficient information in this regard is liable for rejection. In the event of non-compliance of this requirement, the Institute shall have the right to nominate any sub-agency who in their opinion meets the selection criteria. In such event it would be incumbent on the successful tenderer, to accept and appoint the nominated sub-agency without demur and on this account, if there is any additional cost, such cost shall be borne by the successful tenderer. The Institute shall have no liability on this account. The Institute has the right to evaluate the experience, reputation etc., of such sub-agencies and on their approval in writing to the successful tenderer, successful tenderer shall be required to engage only such approved agencies for execution. If the Institute is not satisfied with the performance or capability of the names in the panel furnished by the tenderer, the successful tenderer shall be required to engage an agency nominated by Institute.

In all these matters, there shall be no additional financial implication to the Institute. The successful tenderer shall be required to execute works within the accepted rates only and no claim will be accepted due to the Institute, insistence on engaging any sub-agency. The Institute further reserves the right to instruct the successful tenderer to terminate the work of sub-agency at any time during the contract, if the performance is found unsatisfactory. In such case, the successful tenderer shall be required to furnish a further panel of names from whom a similar selection can be made by the Institute. In this instance also, the Institute is not liable for any additional cost. Responsibility for the delay occurred in this process, if any shall rest with the successful tenderer.

- 8.1 It is the responsibility of the successful tenderer to ensure that the sub-agencies engaged in the work comply with all the clauses in the agreement between the Institute and the successful tender. It shall be responsibility of the successful tenderer to exercise first line supervision on the works executed by his sub-agencies including supervision on the quality of materials and workmanship and to ensure that the sub-agencies comply with the technical specifications, drawings and bill of quantities. The successful tenderer shall also establish competent site organization technically and administratively to ensure that the works of various sub-agencies are supervised and well co-ordinate to ensure proper sequencing of construction, and finishing works and to ensure that the overall time schedule is fully complied with. The detailed construction programme schedule to be furnished by successful tenderer shall include action plan for procurement of materials and execution of works at site for each of the sub-agency and the detailed construction programme schedule shall reflect proper integration of each component of the building to ensure well-coordinated execution so as to complete the project including services within the stipulated time schedule.
- 8.2 Every tenderer shall furnish Line of Credit / Over Draft facility to the agency from any Public Sector Undertaking Bank/Scheduled commercial Bank/Nationalized Bank for a sum of \_\_\_\_ Lakhs as to their financial soundness without which such tender may not be considered further at the discretion of the Institute without questioning thereof.
- 8.3 Dismantling/Demolition of existing buildings/structures shall be commenced in the order of preference as approved by the Institute whose discretion in this regard is final and binding on the contractor.
- 8.4 Pre-measurements of all items of work shall be taken before demolition or dismantling and specification for deduction for voids, openings etc., shall be on the same basis as that adopted for new construction of the work.

- 8.5 Existing service lines such as electrical, water supply, sewer lines, telephone lines etc., shall be carefully protected and preserved before commencement and during excavation, dismantling /demolition operations. Details of UG facilities shall be provided to the successful tenderer. Any damage caused to the aforesaid service lines, etc., during excavation, demolition/dismantling shall be made good at Contractor's own expense/cost. Restoration of any service lines, which needs to be shifted and found in the proposed site, is the responsibility of the contractor and the agency shall carry out the work as per the direction of Project Engineer the cost of such work will be borne by the Institute.
- 8.6 Dust nuisance to neighbor shall be minimized by providing and erecting screens to the required height as per direction of Project Engineer cum Estate officer with Aluminum sheets or canvas or other suitable material before commencement of the work. The site shall be cleared off such protection arrangement after virtual completion of work. All the operations shall be carried out strictly in accordance to regulations of municipal and other local authorities and shall be restricted to normal working hours.
- 8.7 No debris or materials got from dismantlement/demolition the building(s) shall be thrown in the public road causing inconvenience to the traffic and any fine or penalty imposed by local authority for non-compliance of this provision shall be borne by the contractor.
- 8.8 ***Excess excavated earth including debris etc., collected at site during and after completion of the work shall be carted out of the Institute premises by the contractor. The road used for transportation shall be kept clean without any spillages.***
- 8.9 The Contractor shall be responsible for any injury to persons, animals, or things and for all structural damage to property which may arise from the operation or neglect of himself and or any nominated sub-contractors, contractor's Employees and or third party whether such injury or damage arising from carelessness, accident or any other cause whatsoever, in any way connected with the carrying out the construction/dismantling/demolition.
- The contractor shall take required insurance cover with an approved insurance company as provided in the contract and deposit with the Institute well before commencement of construction/ demolition / dismantling.
- 8.10 The successful tenderers shall make own arrangements to obtain all materials required for the work including **cement and steel** from approved vendors.
- 8.11 **The Agency shall bring the approved Ready-Mix Concrete from outside IISc for RMC works based on the approved design mix for which necessary certificate should be furnished. Regarding minimum cement content relevant IS specifications shall prevail. Only Ordinary Portland land cement shall be used for RMC works.**
- 8.12 **Preservation of trees:** The contractor shall preserve all existing trees in and adjacent to the site which does not interfere with the construction as determined by the Engineer-in charge.
- 8.13 Drawings and working Details: The work shall be carried out strictly in accordance with the approved plans and estimates and specifications and as per the instructions of the Engineer-in-charge, and no deviations or changes are permitted without the written order of the Engineer. The designs and drawings enclosed with the tender documents are only typical and tentative. The working drawings and the working details of the several components of works will be prepared and made available at the time of execution and the contractor shall carryout the work in accordance with such working drawings and working details.
- 8.14 **Omissions and discrepancies in drawings and instructions:**
- 8.14.1 In all cases of omissions, doubts or discrepancies in the dimensions or discrepancies in the drawings and item of work, a reference shall be made to the Project Engineer cum Estate officer, whose elucidation and elaboration shall be considered as authorized. The Contractor shall be held responsible for any error that may occur in the work through lack of such reference and precautions.
- 8.14.2 The contractor shall be responsible for accuracy for all shapes, dimensions and Alignments both vertical and horizontal etc., of all the components of the work.

**8.15 Lands for the use of the Contractors Camp:**

The contractor shall have to make his own arrangements at his own cost for construction of living accommodation outside the IISc premises. The Employee shall not provide any space / building for labour camp.

**8.16 Undesirable Person to be removed from site:**

The contractor shall not employ on site any person who is undesirable, if in the opinion of the Project Engineer the person or persons at site of work employed on behalf of the contractor is/are considered undesirable. The Project Engineer shall notify the contractor to this effect and the contractor will be bound by the decision of the Project Engineer to remove such person or persons from the site of work and from the labour camp. The contractor shall not be entitled to any damage or loss on this account. On the contrary, the contractor shall be liable to compensate the Institute for any loss or damage to the Institute property caused by the employment of such person.

**8.17 Labour Statistics:**

The contractor shall submit daily reports on the following:

(a) Total No. of labour employed in the working area.

**8.18 Execution of work during night time:**

The work shall normally be carried out between 08.00 hours and 17.00 hours with a break of one hour and when permitted during night period, the second shift shall be between 17.00 hours and 00 hours with a break of half an hour during night. When ordered to work at night, adequate provision for lighting the working area should be made by the contractor at his cost and got approved by Engineer. The agency shall not be paid extra for the works executed during night.

**8.19 Safety code:**

8.19.1 The Contractor at a prominent place at work spot should bring these safety provisions to the notice of all concerned by display on notice board. The persons responsible for compliance of the safety code shall be named therein by the contractor.

8.19.2 To ensure effective enforcement of the rules relating to safety precautions, the arrangement made by the contractor shall be open to inspection by the Labour Officer, Engineer or his representatives.

8.19.3 All necessary personal safety equipment's as considered adequate by the Engineer should be kept available for immediate use of persons employed at the site and maintained in the good condition and the contractor should take adequate steps to ensure proper use of equipment by those concerned.

8.19.3.1 Workers employed on mixing concrete, cement grout, cement mortar shall be provided with protective footwear protective goggles and protective gloves.

8.19.3.2 Those engaged in mixing or stacking cement or any materials injurious to the eye, nose and mouth shall be provided with a face mask and protective cover free of cost by the contractor.

8.19.3.3 Those engaged in welding work shall be provided with welder's protective eye Shield and gloves.

8.19.3.4 Stonebreakers shall be provided with protective goggle and protective clothing and seated at sufficiently safe intervals.

8.19.3.5 Those engaged in binding and fabricating steel shall be provided with protective gloves.

8.19.3.6 Those engaged in deep cuts, large rock excavation shall be provided with helmets.

8.19.3.7 All labour / persons at work shall wear helmet compulsorily

- 8.19.4 When the work is near any place where there is risk of drowning all necessary equipment's shall be kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provisions should be made for prompt first aid treatment of all injuries likely to be sustained during the course of work.
- 8.19.4.1 Adequate and suitable caution and danger signal boards shall be prominently exhibited at road/high tension overhead line/where heavy electrical machines are working where overhead cranes or hoist; derricks, winches are working where blasting zone is demarcated. The content of the board shall be in English and the local language for easy identification.
- 8.19.4.2 All scaffolding, ladder, stairways, gangways, staging, centering, form work and temporary support and safety devices etc., shall be sound in strength and constructed and maintained as such throughout its use. The agency shall obtain approval from Project Engineer cum Estate officer for scaffolding, formwork etc., before commencement of work.
- 8.19.4.3 No materials on any site of work shall be so stacked as to cause danger or inconvenience to any persons or public.
- 8.19.4.4 The Contractor shall provide all necessary fencing and lighting to protect the public/working men from accident and shall be bound to bear the expense of defense of every suit action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost, which may be awarded in any such suit action or proceedings to any such persons or which may with consent of the contractor be paid to compensate any claims by any such person.
- 8.19.4.5 No electric cables or apparatus, which is liable to be a source of danger to persons, employed shall remain electrically charged unless a caution Board is put into that effect and close approach to the same is prohibited.
- 8.19.4.6 All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosives. No floor, roof or other portion of any building used for residence shall be so over-loaded with debris or materials so as to render it unsafe.
- 8.19.4.7 The final disposal of water used for work or removed from work spot as well as the supply used for domestic consumption shall be as directed by the Engineer. The contractor shall make his own arrangement for purification of domestic water supply used by his staff and labour colony and used on the site of work to the satisfaction of the Engineer.
- 8.19.4.8 The source of drinking water supply/distribution system in workers colony shall be protected from chances of contamination by poisonous materials epidemic causing infections bacteria etc., by maintaining the source and system under adequate hygienic conditions.

Notwithstanding the above clauses from 8.19 (1) to (4) there is nothing in this to exempt the contractor to exclude the operations of any other Act or Rules in force of the Central Govt., State Govt.

## **8(b) CONDITIONS FOR ELECTRICAL WORK:**

### **8.1 GENERAL**

These conditions are meant to amplify the specifications and General Conditions of Contract. If any discrepancy is noticed between these conditions, Specifications, Bills of Quantities and Drawings, **the most stringent of the above shall apply for execution of the work.**

The materials, design and workmanship shall satisfy the specifications contained herein and Codes Referred to. Where the technical specifications stipulate the requirement in addition to those contained in the Standard Codes and specifications, those additional requirements shall also be satisfied. In the absence of any Standard/ Specifications covering any part of the work covered in this tender document, the instruction/ directions of Project Engineer will be binding on the contractor.

The scope of this section is to describe materials and systems for complete electrical installations of building which form together with the project documents, a complete volume of work and quality description. All electrical installation shall be of high quality, safe, complete and fully operational including all necessary items and accessories whether or not specified in detail. All electrical work shall be completed in accordance with the regulations and standards to the satisfaction of the Project Engineer. The general provisions, provisions and general requirements apply to the entire installation.

The work shall be carried out simultaneously with building work and shall be continued till it is completed satisfactorily along with the completion of essential portions of the building works.

During the progress of work, completed portion of the building may be occupied and be put to use by the owner but the contractor shall remain fully responsible for the maintenance of electrical installations till the entire work covered by this contract is satisfactorily completed by him and handed over to the institute.

### **8.2 SCOPE OF WORK:**

8.2.1 The scope under this contract shall include the internal electrical installation for the work. The work to be carried out under this contract shall cover the supply, installation, testing and commissioning of the complete electrical installation as detailed herein under and shown in the drawings and specifications.

In general the work to be performed under this contract shall comprise of the following:

- a) Supply, installation, testing and commissioning of All Main Lighting panels, distribution panels and other miscellaneous panels.
- b) Supply, installation, testing and commissioning of mains and sub mains, distribution cables and cable trays etc.
- c) Supply, installation, testing & commissioning of all wiring/cabling for lights, fans and power outlets including point and circuit wiring along with wiring accessories etc.
- d) Supplying and drawing of cables/wires for telephone system including installation of terminal boxes etc.
- e) Supply, Installation, testing and commissioning of light fixtures as indicated in the BOQ and installation, testing and commissioning of lighting fixtures supplied by the owner, if

any.

- f) Supply, installation, testing and commissioning of external lighting poles, cables lighting fittings panels/feeder pillars etc.
- g) By only licensed Electrical Contractor holding valid 'A' grade license issued by Electrical Inspector to Govt. of Karnataka.

Contractor shall carry out and complete the said work under this contract in every respect in conformity with the current rules and regulations of the local electricity authority. The contractor shall furnish all labour and install all materials, appliances, equipment, necessary for the complete provision and testing of the whole electrical installation as specified herein and shown on the drawings. This also includes any materials, appliances, equipment not specifically mentioned herein or noted on the drawings as being furnished or installed but which are necessary and customary to make complete installation with all outlets for power, light, telephone conduits and other electrical systems/& Extra low voltage systems shown on the schedule and described herein, properly connected and in working condition.

The work shall include all incidental jobs connected with electrical installation such as excavation in trenches and back filling, cutting/drilling and grouting for fixing of fixtures, equipment, making good the damages etc.

### 8.3 **RATES:**

8.3.1.0 The rates quoted shall be deemed to allow for all minor extras and constructional details which are not specifically shown on drawings or given in the specifications but are essential in the opinion of the Project Engineer to the execution of works to conform to good workmanship and sound engineering practice. The Project Engineer reserve the right to make any minor changes during the execution without any extra payment.

8.3.1.1 The Project Engineer decision to clarify any item under minor changes, minor extras and constructional details shall be final, conclusive and binding on the Contractor.

8.3.1.2 The rates quoted by the Contractor shall be net so as to include all requirements described in the contract agreement and no claim whatsoever due to fluctuations in the price of material and labour will be entertained.

8.3.1.3 The rates quoted by the Contractor shall include for supplying material and labour necessary for completing the work in the best and most workmanship like manner to the satisfaction of the Project Engineer. The rates shall be complete in all respects including cost of materials, erection, fabrication, labour, supervision, tools and plant, transport, sales and other taxes, royalties, duties and materials, contingencies, breakage, wastage, sundries, scaffoldings, etc. on the basis of works contract. The rates quoted shall include all taxes, duties, transport, insurances, octroi, or any other levies applicable under the statute.

8.3.1.4 In case the rates of identical items under different sub-heads/parts are different, the lowest of these will be taken for the purpose of making the payments.

8.3.1.5 The rates for different items are for all heights, depths, widths and positions, unless otherwise specified against the item. No claim in respect of any leads/lifts for any item specified in the Schedule of Quantities, for which separate items for lead/lift do not exist in that schedule, will be entertained.

8.3.1.6 The work shall be executed as per the programme drawn or approved by the Project Engineer and

it shall be so arranged as to have full co-ordination with any other agency employed at site. No claim for idle labour shall be entertained nor shall any claim on account of delay in the completion of the work be tenable except extension of time secured by the contractor on request to be submitted to the Engineer-in-Charges.

**8.3.1.7 The Contractor shall permit free access and afford normal facilities and usual convenience to other agencies or departmental workmen to carry out connected work or other services under separate arrangements. The Contractor will not be allowed any extra payment on this account.**

**8.3.1.8** The contractor shall provide all equipment's, instruments, labour and such other assistance required by the Project Engineer for measurement of the works, materials etc.

**8.3.1.9** Even though the payment shall be effected under different items in the schedule of quantities, the various items in the schedule of quantities shall be deemed to cover all aspects of the work for the completion of the work as per drawings, from excavation to the finishing notwithstanding any space adjustment possible omission in the description of the item and specifications thereof regarding incidental items of work, without which the whole work cannot be deemed to have been included under the scope of the different items of the schedule of quantities. The Contractor is advised to keep this in mind while quoting rates as no claims in this regard shall be entertained.

#### **8.4 AWARENESS OF SITE CONDITIONS AND CARRYING OUT OF SITE INSPECTION PRIOR TO TENDER SUBMISSION**

Prior to the preparation and submission of his Tender, the Contractor shall make visits to the site and carry out all the necessary inspections and investigations in order to obtain all information and to make his own assessment of the conditions and constraints at site, including the means of access to it. The Contractor shall make himself aware of all the features of the site and the working conditions and space and shall, in general, be responsible for obtaining all the necessary and requisite information needed for him to prepare and submit his Tender.

Should the Contractor require any clarifications he shall seek these in writing from the Project Engineer before submitting his Tender. At no stage will any extra claims be entertained or allowed on any matter or for any reason arising from or as a consequence of the Contractor's failure to comply with all the requirements stipulated in this Clause.

#### **8.5 WORK AND WORKMANSHIP**

**8.5.1** To determine the acceptable standard of workmanship, the Project Engineer may order the Contractor to execute certain portions of works and services under the close supervision of the Project Engineer. On approval, they shall label these items as guiding samples so that further works are executed to conform to these samples.

#### **8.6 TEST CERTIFICATES**

The contractor shall submit copy of test certificates for all the major electrical equipment such as circuit breakers, CTs, PTs, instruments, relays, busducts, rising mains, busbars, cables etc., and panel as a whole, confirming to relevant IS/BIS standards issued by manufacturers.

#### **8.7 SAMPLES AND CATALOGUES**

Before ordering the material necessary for these installations, the contractor shall submit to the Engineer-in-Charge/Consultants for approval, a sample of every kind of material such as cables, conductors, conduits, switches, socket outlets, circuit breakers, lighting fixtures, boxes etc., along with the catalogues with their dimensional details.



For major items such as sub lighting panels distribution boards, the submission of drawings/catalogues along with technical details shall be enough. Prior to ordering any electrical equipment/material/system, the contractor shall submit to the Engineer-in-Charge/Consultants the catalogues, along with the samples, where applicable, from the approved manufacturer. The contractor shall arrange inspection and testing at the manufacturer's factory or assembly shop for final approval. No material shall be procured prior to the approval of the Engineer-in-Charge/Consultant.

Also contractor shall ensure that the dimensional details of the equipment fit into the allotted space provided in the building.

## **8.8 COMPLETION CERTIFICATE**

On completion of the electrical installation a certificate shall be furnished by the contractor countersigned by the licensed supervisor, under whose direct supervision the installation was carried out.

## **8.9 PERFORMANCE GUARANTEE**

The contractor shall indemnify the Institute against defective materials and workmanship for a period of one year after completion of the work. The contractor shall also hold himself fully responsible during that period for reinstallation or replacement at free of cost to institute, the following :

8.9.1 Any defective work or material supplied by the Contractor.

8.9.2 Any material or equipment damaged or destroyed as a result of defective workmanship by the contractor.

## **8.10 RATE ANALYSIS**

At anytime and at the request of the Project Engineer the contractor shall provide details or breakdown of costs and prices of any part or parts of the works.

8.11 The Project Engineer reserves the rights to delete any item from the contractor's scope of works.

## 9. CONTRACTOR'S LABOUR REGULATIONS

### ANNEXURE I.

#### 9.1 DEFINITION:

In these regulations unless otherwise, expressed or indicated the following words and expressions shall have the meaning hereby assigned respectively that is to say:

- 9.1.1 Labour means workers employed by the contractor or the Institute directly or indirectly through sub-contractor or any other person, or any agent on his behalf on a payment as per prevailing Karnataka State labour regulations and will not include supervisory staff like overseers etc.
- 9.1.2 Fair wages means whether for item or place of work notified at the time of inviting tenders for the work and where such wages have not been so notified, the wages prescribed by the Karnataka Public Works Department for the district in which the work is done.
- 9.1.3 Contractors shall include every person whether a sub-contractor head or agent employing labour on the work taken contract.
- 9.1.4 The relevant orders of Government of Karnataka in regard to payment of wages as amended from time to time shall be followed by the contractor.

#### 9.2 WORKING HOURS:

- 9.2.1 Normally working hours of a labour employed should not exceed 8 hours a day. The working day shall be so arranged that inclusive of interval for rest if any, it shall not spread over more than 12 hours on any day.
- 9.2.2 When a worker is made to work for more than 8 hours on a day or for more than 48 hours in any week, he is entitled to double the ordinary rate of wages. Children shall not be made to work.
- 9.2.3 Every worker shall be given a paid weekly holiday normally on Sunday.

#### 9.3 DISPLAY OF NOTICE REGARDING WAGES ETC.

The contractor shall (a) before he commences his work on contract, display and correctly maintain in a clean legible condition in conspicuous places on the work, notices in English and in the local language spoken by the majority of the workers, giving the rate of wages which have been certified by the Regional Labour Commissioner, as fair wages and the hours of work which such wages are earned, and a copy of such notices shall be sent to the certifying officers.

#### 9.4 PAYMENT OF WAGES:

Wages due to every worker shall be paid to him direct.

#### 9.5 FIXATION OF WAGES PERIODS:

- 9.5.1 The contractor shall fix the wages period of which the wages shall be payable.
- 9.5.2 Wages of every worker employed on the contract shall be paid.
  - 9.5.2.1 In case of establishments in which the wage period is one week, within three days from the end of the wage period wages shall be paid.
  - 9.5.2.2 In the case of other establishment before the expiry of the 7<sup>th</sup> day or 10<sup>th</sup> day from the end of the wage period according to the numbers of the workers employed in such establishment does not exceed 100 or exceeds 1000.

9.5.3 When the employment of any workers is terminated by or on behalf of the contractor the wages earned by him shall be paid before the expiry of the days succeeding the one which his employment is terminated.

9.5.3.1 All payment of wages shall be made on a working day except when the work is completed before the expiry of the wages period in which case final payment shall be made within 48 hours of the last working day at work site and during the time.

NOTE: The term working day means a day on which the labour is employed and the work is in progress.

#### 9.6 FINES AND DEDUCTIONS WHICH MAY BE MADE FROM WAGES:

The Wages of workers shall be paid to him without any deductions of any kind except the following:

##### 9.6.1 Deductions:

9.6.1.1 Deductions for absence for duty i.e., from the place or the places whereby the terms of his employment he is required to work. The amount of deductions shall be in proportion to the period for which he was absent.

9.6.1.2 Deductions for damage or loss of goods expressly entrusted to the employed person for custody or for loss of money or any other deduction which he is required to account, where such damage or loss is directly attributable to neglect or default.

9.6.1.3 Deduction for recovery of advance or for adjustment of over payment of wages, advance granted shall be entered in a register.

9.6.1.4 And other deductions which the Institute may from time to time allow.

##### 9.6.2 Fines:

9.6.2.1 No fine shall be imposed on any worker save in respect of such acts and the Commissioner of Labour has approved omissions on his part as.

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

9.6.2.3 The total amount of fines which may be imposed in any one wage period on a worker shall not exceed an amount equal to the wages payable to him in respect of that wage period.

9.6.2.4 No fine imposed on any worker shall be recovered from him by installments or after the expiry of sixty days from the date which it was imposed.

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

9.6.3 The contractor shall issue an employment card in Form III to each worker on the day of the worker's entry into the employment. If the worker has already any such card with him for the previous employment of contractor, he shall merely endorse that employment card with relevant entries. On termination of employment, the employment card shall again be endorsed by the contractor and returned to the worker.

#### 9.7 REGISTER OF UNPAID WAGES:

The contractor should maintain a register of unpaid wages in such a form as may be convenient at the place of work but same shall include the following particulars:

9.8.1 Full particulars of the laborer's whose wages have not been paid.

9.8.2 Reference number of the muster roll and wage register

9.8.3 Rate of wages

9.8.4 The period

9.8.5 Total amount not paid

9.8.6 Reasons for not making payment

9.8.7 How the amount of unpaid wages was utilized

9.8.8 Acquaintance with dates.

**9.8 REGISTER OF ACCIDENTS:**

The contractor shall maintain a register of accidents in such form as may be convenient at the work place but the same shall include the following particulars.

9.9.1 Full particulars of the laborers who met with accidents.

9.9.2 Rate of wages

9.9.3 Sex

9.9.4 Age

9.9.5 Nature of accidents and cause of accident

9.9.6 Time and date of accidents

9.9.7 Date and time when admitted in Hospital

9.9.8 Date of discharge from the Hospital.

**9.9 REGISTER OF FINES ETC.**

9.9.1 The contractor shall maintain a register of fines and a register of deductions for damages or loss in form Nos. I and II respectively which shall be kept at the place of work.

9.9.2 The contractor shall maintain both in English and local language a list approved by Commissioner for labour clearly stating the acts and commissions for which penalty or fine may be imposed on a workmen and display it in a good condition in conspicuous place on the work.

**9.10 SUBMISSION OF RETURNS:**

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

**9.11 AMENDMENTS:**

The Government of Karnataka may from time to time add to or amend the regulations and on may question as to the application interpretation on effect if these regulations the decision of the Commissioner of Labour or Deputy Commissioner for Labour to Govt. in that behalf shall be final.

## ANNEXURE II

### Labour Clause 9.12

Clause 12 A No labourers below the age of 15 years shall be employed on the work.

Clause 12 B Payments of wages of labourers.

The contractor shall pay not less than fair wage of labourers engaged by him on the work.

#### EXPLANATION:

- (a) The contractor shall notwithstanding the provision of any contract to the contrary cause to be paid wages to labourers indirectly engaged for the work including any labour engaged by his sub-contractors in connection with the same works if the labourers have been immediately employed by him.
- (b) In respect of all labours directly or indirectly employed in the works for the performance of the contractor's part of this agreement, the contractor shall comply with or cause to be complied with Karnataka Public Works Department Contractors Labour Regulations from time to time, in regard to payment of wages. Wage period, deductions from wages recovery of wages not paid and deductions unauthorized made, maintenance of wage book, wage slips, publication of scale of wage and other terms of employment, inspection and submission of periodical returns and all other matter of a like nature.

The Project Engineer cum Estate officer or In-charge Engineer concerned shall have the right to deduct from the money due to the contractors any sum required for making good the loss suffered by a worker or workers by reason of non-fulfillment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or her wages which are not justified by their terms of the contract or non-observance of the regulations.

- (c) For payment of minimum wages the Contractor is bound to follow the relevant orders of Govt. of Karnataka from time to time.
- (d) Vis-à-vis the Institute the contractor shall be primarily liable for all payments to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim indemnity from his sub-contractors. The regulations aforesaid shall be deemed to be part of this contract, and any breach thereof shall be deemed to be a breach of this.

**Clause 12(c):** In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this agreement the contractor shall at his own expense arrange for the safety provisions as per Karnataka P.W.D. safety code framed from time to time and shall at his own expense provide for all facilities in arrangements and provide necessary facilities as aforesaid he shall be liable to pay penalty of Rs. 50/- for each default and in addition the Project Engineer cum Estate officer in charge shall be at liberty to make arrangements and provide facilities as aforesaid, and recover the cost incurred in that behalf from the contractor.

**Clause 12(d):** The contractor shall submit by the 4<sup>th</sup> and 19<sup>th</sup> of every month to the Project Engineer of true statement showing in respect of the second half of the preceding month and the first half of the current month respectively (1) the name of labourers employed by him on the work (2) their working hours, (3) the wages paid to them, (4) the accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused to them and (5) the number of female workers who have been allowed, maternity benefit according to clause 19F and the amount paid to them, failing which the contractor shall be liable to pay the Institute a sum of not exceeding Rs. 50/- for each default or materially incorrect statement by deduction from any bill due to the contractor and amount levied as fine.

**Clause 12(e):** In respect of all labour directly or indirectly employed in the works for the performance of the contractor's part of this agreement, the contractor shall comply with or cause to be complied with all the rules framed by Institute from time to time for the protection of health and sanitary arrangements for workers employed by the Indian Institute of Science and its contractors.

**Clause 12(f):** Maternity benefit rules for female workers employed by contractor, leave and pay during leave shall be regulated as follows:

Leave (i) in case of delivery: Leave during maternity leave not exceeding 8 weeks up to and including the day of delivery and 4 weeks following that day.

(ii) In case of miscarriage, up to 3 weeks from the date of miscarriage.

**9.13 Pay:**

- i) In case of delivery: Leave pay during maternity leave will be at the rate of women's average daily earning calculated on the total wages earned on the days when full time work was done during the period of three months immediately preceding the date on which she gives notice that she expects to be confined.
- ii) In case of miscarriages: Leave pay at the rate of average daily earnings calculated on the total wages earned on the day's full time works was due during a period of 3 months immediately preceding the date of miscarriage.
- iii) Conditions for the grant of maternity leave: No maternity leave benefit shall be admissible to a woman unless she has been employed for a total period of not less than 6 months immediately preceding the date of delivery /miscarriage.

**Model rules for the protection of Health and Sanitary arrangements for workers employed by the Indian Institute of Science or its contractors.**

**Applications:** The rule shall apply to all building and construction work in charge of Indian Institute of Science

Definition (i): Work place means a place at which on an average fifty or more workers are employed in connection with construction work.

**9.14 First Aid:**

- (a) At every place, there shall be maintained in readily accessible place first aid appliance including the adequate supply sterilized dressing and sterilized cotton wool. The appliances shall be kept in good order and in large work places they shall be placed under the charge of responsible person who shall be readily available during working hours.
- (b) At large work place where hospital facilities are not available within easy distance of the works first aid posts shall be established and be run by a trained compounder with one bed for every 250 employers.
- (c) Where large work places are situated in cities, town or in their suburbs and no beds are considered necessary due to proximity of city or town hospitals, suitable transport shall be provided to facilitate of urgent cases to these hospitals at the work places, some conveyance facilities such as a car should be kept readily available to take injured persons suddenly taken seriously ill, to the nearest hospital.

**9.15 DRINKING WATER:**

- (a) In every work place there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.
- (b) Where drinking water is obtained from an intermittent public water supply each work place shall be provided with storage tank for drinking water to be stored.
- (c) Every drinking water supply storage tank shall be at distance not less than 50 ft. from any latrine, drain or other source of pollution. The tank shall be properly chlorinated before water is drawn from it for drinking. All such tanks shall be entirely closed with a trap door, which shall be dust and waterproof.
- (d) A reliable pump shall be fitted to each covered well. The trap door shall be kept locked and opened only for cleanings or inspection, which shall be at least once a month.

**9.16 SCALE OF ACCOMMODATION TO LATRINES (L) AND URINALS (U):**

There shall be provided within premises of every work place latrines and urinals in an accessible place, and the accommodation separately for each of them shall not be less than following scale:

	L + U
Where the No of persons does not exceed 50	– 3 + 3 Nos.
Where the No of persons exceeds 50 but does not exceed 100	– 3 + 3 Nos.
For every additional 100	- 3 + 3 Nos.

In particular cases the Project Engineer cum Estate officer shall have the powers to vary the scale wherever necessary.

**9.17 LATRINES AND URINALS FOR WOMEN:**

If women are employed separate latrines and urinals screened from those for men, and marked in the vernacular conscious letter “For women only” shall be provided on the scale in rule 9.17. Those for men shall be similarly marked for men only. A poster showing figures of men and women shall also be exhibited at the entrance of latrines for each sex. There shall be adequate supply of water closet for the urinals and latrines.

**9.18 LATRINES AND URINALS:**

Except in work provided with water flushed latrines connected with water borne sewerage all latrines shall be provided with receptacles on dry earth system which shall be cleaned at least four times daily and at least twice during working hours and kept in a strictly sanitary condition. The replaces shall be tarred inside and out side at least once a year.

**9.19 CONTRUCTION OF LATRINES:**

The inside walls shall be constructed of masonry or some suitable heat resisting non-absorbent materials and shall be cement washing noted in a register maintained for this purpose and kept available for inspection. Latrines shall not be of a standard lower than borned other system and should have thatched roofs.

**9.20 PROVISIONS OF SHELTERS DURING REST:**

At every work place there shall be provided free of cost two suitable sheds one for meals and other for rest separately for men and women for use of labour. The height of the shelter shall not be less than 11 ft. from the floor level to the lowest part of the roof. The shed should be roofed with at least thatch and mud flooring will be provided with dwarf wall around not less than 2.5 feet. Sheds shall be kept clean and space shall be on the basis of at least 5 square feet per head.

**9.21 CRECHES:**

At every place, at which fifty or more women are ordinarily employed there shall be provided two huts for the use of children under the age 6 years belonging to such women. One hut shall be used for infant games place and the other as their bedroom. The huts shall not be constructed of a lower standard than the following:

- (i) Thatched roofs
- (ii) Mud floor and walls
- (iii) Planks spread over the mud floor and covered with matting.

9.21.1 The huts shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the places clean; there shall be two boys in attendance. Sanitary utensils shall be provided to the satisfaction of the Health Officer of the area concerned. The use of the hut shall be restricted to children, their attendants and mother of the children.

- 9.21.2 Where the number of women workers is more than 35 but less than 50, the contractor shall provide at least one hut and one attendant to look after the children of women workers.
- 9.21.3 The crèche shall be properly maintained and necessary equipments like toys etc., shall be provided.
- 9.21.4 The size of the crèches shall vary according to the number of workers.
- 9.22 **CANTEENS:**
- A cooked food canteen on a moderate scale shall be provided for the benefit of workers wherever it is considered expedient.
- 9.23 The above rules shall be incorporated in the contract and in notices inviting tenders, and shall form an integral part of the contract.



**10. CONDITIONS OF CONTRACT****Clause 1. Security Deposit**

- (a) **Clause -1(a)** The person/persons whose tender may be accepted (hereinafter called the contractor which expression shall unless the context otherwise requires, include his heirs, executors, administrators and assigns) shall pay Earnest Money Deposit indicated in Column (ii) of the table given below and shall permit Institute (a) to deduct FSD at the percentage mentioned in Column (iii) of the table given below of all moneys payable of work done under the Contract, at the time of making such payments to him/them and (b) to hold such deductions as further Security Deposit. The EMD + FSD will be limited to % of the contract value.

Estimated cost of the work put to Tender	E.M.D. Percentage	F.S.D. Percentage
(i)	(ii)	(iii)
	1.5%	6.0%

Note : EMD + FSD to be limited to 7.5% of the contract value

E.M.D. - Earnest Money Deposit  
F.S.D. - Further Security Deposit

**No Interest will be paid on EMD / Security deposit.****(b) Additional or Reduction in Security Deposit.**

The EMD for the tendered work and additional amount of Security Deposit at the rates mentioned in **Sub-clause 1(a)** above should be, paid by the contractor. The Project Engineer cum Estate officer may allow if a portion of the work is withdrawn from the Contractor under the provisions of Clause 12(a) a proportionate reduction in the amount of security Deposit.

- (1) **EMD paid along with the tender shall be refunded only after the completion of the defect liability period without any interest.**
- (2) **1% labour cess towards workers Welfare Fund on the works expenditure will be recovered from RA bills for depositing the same to the welfare board as per Karnataka Govt. Order. Rates quoted should be inclusive of cess.**

- (c) However if the Contractor desires, agency may furnish a BG issued by the Public Sector Undertaking Bank / Scheduled commercial Bank / Nationalized Bank in favour of the Registrar, Indian Institute of Science, payable at Bangalore amounting to 7.50% of the total contract value valid up to completion of defect liability period in which case EMD deposited by them will be refunded and no recoveries towards security deposit will be effected in the running account bills.

**(d) Dues to Institute, to be set off against Security Deposit.**

All compensation or other sums of money payable by the Contractor to Institute under the terms of this contract may be realized or deducted from any Security Deposit payable to him or from any sums which may be due or may become due by Institute to the Contractor on any account whatsoever and in the event of his security deposit being reduced by reason of any such realization or deduction as aforesaid, the Contractor shall, within ten days thereafter, make good in cash any sum or sums which have been deducted from his security deposit or any part thereof. Otherwise the amount will be treated as outstanding due from the agency.

**(e) Refund of Security Deposit (EMD & FSD):**

i) EMD paid by the contractor at the time of tendering and FSD deducted from the R.A.bills at the prescribed rates shall be refunded to the contractor immediately after the virtual completion of the work against production of bank guarantee for an equal amount from any of the Public Sector Undertaking Bank/Scheduled commercial Bank/Nationalized Bank valid for a period as mentioned in clause (ii) below.

ii) The bank guarantee received as stipulated in (i) above, will be treated as performance guarantee and shall be returned to the contractor after the final bill is paid or after **eighteen months including monsoon period** from the date of virtual completion of the work during which period the work should be maintained by the contractor in good order, whichever is later. The validity of the bank guarantee shall be maintained for the above period.

- iii) In case of BG's furnished towards security deposit same shall be returned after completion of the defect liability period.

## **Clause 2. PENALTY FOR DELAY**

### **(a) Written Order to Commence Work**

After acceptance of the tender, the Project Engineer cum Estate officer shall issue a written order to the successful tenderer to commence the work. The Contractor shall enter upon or commence any portion of work only with the written authority and instructions of the Project Engineer cum Estate officer. Without such instructions the Contractor shall have no claim to demand for measurements of or payment for, work done by him.

### **(b) Programme of work**

The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor. It shall be reckoned from the date of handing over the site to the Contractor not less than 75 percent of work site area comprising a continuous block. The work shall throughout the stipulated period of the contract be proceeded with, all due diligence (time being deemed to be the essence of the contract on the part of the Contractor). 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) to comply with the time schedule according to the programme of execution of the work as agreed upon and enclosed by the contractor during execution of agreement.

### **(c) Review of progress and responsibility for delay etc.,**

The Project Engineer cum Estate officer shall review the progress of all works with the contractor at least once every month. Such a review shall take into account the programme fixed for the previous week, obligations on the part of the Institute for issue of drawings etc, and also the obligations on the part of the Contractor. The review shall also examine the accumulated delays by the contractor if any and mitigation measures proposed by the contractor to overcome the delay.

#### **Apportioning of responsibility for delay between Contractor and Institute.**

In case the progress achieved falls short by more than 25 percent of the cumulative programme, the reasons for such shortfall shall be examined and a record made thereof apportioning the responsibilities for the delay between the contractor and the Institute. This record should be signed in full and dated both by the Project Engineer cum Estate officer and the Contractor. If the contractor refuses to sign the said record, approval of the reasons for delay may be submitted to CENTER FOR CAMPUS MANAGEMENT AND DEVELOPMENT ( CCMD) for approval and such approval is binding on the contractor.

#### **Shortfall in progress made up subsequently.**

To the extent the shortfall is assessed, as due to the delay on the part of the contractor, a notice shall be issued to him by the Project Engineer cum Estate officer to make up the shortfall. If the shortfall is not made up before the progress of the work is reviewed during the second month succeeding the month in which the shortfall was observed, the Contractor shall be liable to pay penalty as indicated in **Clause 2(d)** below.

#### **Grant of extension of time.**

If the delay is attributable to reasons beyond the control of the Contractor, requisite extension of time shall be granted by the Project Engineer cum Estate officer in accordance with **Clause 5** after obtaining the approval of his higher authorities, wherever necessary.

#### **Review of progress by Center for campus management and Development.**

The Center for campus management and Development shall review the progress periodically, preferably more number of times as required. These reviews are in addition to the monthly reviews required to be done by the Project Engineer cum Estate officer. The results of such review by the CENTER FOR CAMPUS MANAGEMENT AND DEVELOPMENT ( CCMD) shall, wherever necessary, be incorporated in the next review of the Project Engineer cum Estate officer.

If the Contractor stops the work for 45 days when no stoppage of work is shown on the current

Program and the stoppage has not been authorized by the Employer then The Employer may terminate the Contract at the risk and cost of the contractor.

**Settlement of dispute regarding shortfall in progress.**

In case of dispute between the Project Engineer cum Estate officer and Contractor regarding the responsibility for the shortfall in progress, the matter shall be referred to the Center for campus management and Development who shall thereupon give a decision within fifteen days from the date of receipt of reference. The decision of the Center for campus management and Development shall be final and binding on the contractor and the Project Engineer cum Estate officer.

**(d) Penalty for delay**

In respect of the shortfall in progress, assessed as due to the delay on the part of contractor as per **Clause 2(b)** and **2 (c)**, the contractor shall be liable to pay as penalty an amount equal to half percent of the contract value of the balance work assessed according to the programme, for every week that the due quantity of work remains incomplete; provided always that the total amount of penalty to be paid under the provisions of this clause subjected to a maximum of 10 percent of the contract value of the entire work as shown in the tender, provided further that in the event of the contractor making up the shortfall in progress within the stipulated or extended time of completion, the penalty so recovered may be refunded on an application in writing by the contractor.

**Note:** *If the Project Engineer cum Estate officer considers it necessary he shall be entitled to take action as indicated in **Clause 3 (d)** also.*

**d.1 Liquidated damages**

The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the Contract Data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

If the Intended Completion Date is extended after liquidated damages have been paid, the Employer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment of bill.

**(e) Adjustment of excess/over payments.**

Excess/over payments as soon as they are discovered should be adjusted in the next running account bill of the contractor and in case the final bill has already been paid, the excess/over payment made shall be recovered from the Security Deposit of the contractor together with interest at such percentages as Institute may decide from time to time, from the date of such excess or over payment to the date of recovery.

**ACTION WHEN WHOLE OF SECURITY DEPOSIT IS FORFEITED**

**Clause 3.** In any case in which under any clause or clauses of this contract the contractor shall have rendered himself liable to pay compensation and/or penalty amounting to the whole of his security deposit including the amount deducted in installment from his bills as Further Security Deposit, the Project Engineer cum Estate officer on behalf of the Director, IISc shall have power to adopt any of the following courses as he may deem best suited in the interest of Institute.

**(a) Forfeiture of Security Deposit**

Without prejudice to Institute's right to recover any loss from the Contractor under **sub-clauses (b) and (c) of Clause 3** of the Contract, to rescind the contract (of which rescission notice in writing to the contractor under the hand of the Project Engineer cum Estate officer shall be conclusive evidence). And in that case, the security

deposit of the contractor including whole or part of the lump sum deposited by him and also the amount deducted from his bills as Further Security Deposit, shall stand forfeited and be absolutely at the disposal of the Institute.

**(b) Debiting cost of labour and materials supplied.**

To employ labour paid by the Institute 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 (as to the correctness of which cost and price the certificate of the Project Engineer cum Estate officer 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 terms of this contract, and in that case the certificate of the Project Engineer cum Estate officer as to the value of the work done shall be final and conclusive against the contractor.

**(c) Recovery of extra cost on unexecuted work**

To measure up the work of the contractor and to take such part thereof as is remaining unexecuted out of his hands and to give it to another contractor to complete it in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (as to the amount of which excess expenses the certificate in writing of the Project Engineer cum Estate officer shall be final and conclusive) shall be borne and paid by the original contractor and shall be deducted from any money due to him by Institute Otherwise the amount will be treated as outstanding due from the agency.

**(d) Action against unsatisfactory progress**

If the contractor does not maintain the rate of progress as required under **Clause 2** and if the progress of any particular portion of work is unsatisfactory even after taking action under **Clause 2(c)** and **2(d)**, the Project Engineer cum Estate officer shall be entitled to take action under **Clause 3(b)** or **3(c)** at his discretion in order to maintain the rate of progress after giving the contractor 10 days notice in writing whereupon the contractor will have no claim for any loss sustained by him owing to such actions.

**(e) No compensation for loss sustained on advance action**

In the event of any of the above courses being adopted by the Project Engineer cum Estate officer, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased, or procured any materials, entered into any agreements or made any advances on account of, or with a view to the execution of the work or the performance of the contract. And in case the contract shall be rescinded under the provision aforesaid the contractor shall not be entitled to recover or be paid any sum for any work thereof actually performed by him under his contract, unless and until the Project Engineer cum Estate officer shall have certified in writing the performance of such work and the amount payable in respect thereof, and he shall only be entitled to be paid the amount so certified.

**(f) Recovery of 1% of the contract value towards the laborers welfare fund created by the Government of Karnataka will be effected in the running account bills of the contractor.**

**Clause 4. CONTRACTOR TO REMAIN LIABLE TO PAY COMPENSATION IF ACTION IS NOT TAKEN UNDER CLAUSE-3.**

In any case in which any of the powers conferred upon the Project Engineer cum Estate officer by **Clause 3** thereof shall have become exercisable and the same shall not have been exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor for which under any clause hereof he is declared liable to pay compensation or penalty amounting to the whole of his security deposit and the liability of the contractor for past and future compensation or penalty shall remain unaffected.

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

In the event of the Project Engineer cum Estate officer taking action under **sub-clause (a) or (c) of Clause 3**, he may, if he so desires, take possession of all or any tools, plant, materials and stores, in or upon works or the site

thereof or belonging to the contractor, or procured by him and intended to be used for the execution of the work or any part thereof, paying or allowing for the same in account at the contract rates; or in the case of contract rates not being applicable, at current market rates, to be certified by the Project Engineer cum Estate officer whose certificate thereof shall be final. In the alternative, the Project Engineer cum Estate officer may after giving notice in writing to the contractor or his clerk of the works, foreman or other authorised agent, require him to remove such tools, plant, materials or stores from the premises within a time to be specified in such notice; and in the event of the contractor, failing to comply with any such requisition, the Project Engineer cum Estate officer may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and at his risk in all respect, and the certificate of the Project Engineer cum Estate officer as to the expense of any such removal; and the amount of the proceeds and expense of any such sale shall be final and conclusive against the contractor.

**Clause 5. GRANT OF EXTENSION OF TIME**

- (a) If the contractor shall desire an extension of the time for completion of the work, he shall apply in writing to the Project Engineer cum Estate officer before the expiry of the period stipulated in the tender or before the expiry of 30 days from the date on which he was hindered as aforesaid or on which the cause for asking for extension occurred, whichever is earlier and the Project Engineer cum Estate officer or other competent authority may if in his opinion, there are reasonable grounds for granting an extension, grant such extension as he thinks necessary or proper. The decision of such competent authority in this matter shall be final.
- (b) The time limit for completion of the work shall be extended commensurate with its increase in cost occasioned by alterations or additions and the certificate of the Project Engineer cum Estate officer or other competent authority as to such proportion shall be conclusive.

**Clause 6. ISSUE OF FINAL CERTIFICATE – CONDITIONS REGARDING**

On completion of the work the contractor shall report in writing to the Project Engineer cum Estate officer the completion of the work. Then he shall be furnished with a certificate by the Project Engineer cum Estate officer of such completion, but no such certificate shall be given nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall have been executed, all scaffolding, surplus materials and rubbish, and shall have cleaned thoroughly all wood work, doors, windows, wall, floor or other parts of any building, in or upon which the work has been executed, or of which he may have had possession for the purpose of executing the work, nor until the works shall have been measured by the Project Engineer cum Estate officer or other competent authority, or where the measurements have been taken by his Project Engineer until they have received the approval of the Project Engineer cum Estate officer or other competent authority, the said measurements being binding and conclusive against the contractor. If the contractor shall fail to comply with the requirements of this clause as to the removal of scaffolding, surplus materials and rubbish, and cleaning on or before the date fixed for the completion of the work the Project Engineer cum Estate officer or other competent authority may, at the expense of the contractor, remove such scaffolding, surplus materials and rubbish, and dispose of the same as he think fit and clean off such dirt etc., as aforesaid and contractor shall be liable to pay the amount of all expenses incurred but shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

**Note: CLOSURE OF CONTRACT PENDING COMPLETION OF MINOR ITEMS.**

In cases where it is not desirable to keep the building contract open for minor items, such as flooring in the bath rooms, etc., which can be carried out only after installation of sanitary work the main contract may be finalized after getting a supplementary agreement executed in the prescribed form by the same contractor for doing the residual work.

**Clause 7. Contractor to submit bills monthly in printed form**

- (a) A bill shall be submitted by the contractor on or before 15th of each month for all items of work executed in the previous month as required by IISc. The Running account bills will be paid within **three weeks** from the date of submission of the bill in complete acceptable form after duly checked and certified by concerned Engineer, under normal circumstances.

All bills shall be prepared in the prescribed printed and electronic form in PDF format in quadruplicate and handed over to the Project Engineer in charge of the work/ Project Engineer cum Estate officer's Office and acknowledgment obtained.

The charges to be made in the bills shall always be entered at the rates specified in the tender in full or in part as the case may be, in the case of any extra work ordered in pursuance of these conditions, and not mentioned or provided for in the tender, the charges in the bills shall be entered at the rates hereinafter provided for such work.

**(b) Scrutiny of Bills and measurement of work**

The details furnished by the Contractor in the bill will be completely scrutinized and the said work will be measured by the Project Engineer in the presence of the Contractor or his duly authorized agent. The countersignature of the contractor or the said agent in the measurement book shall be sufficient proof to the correctness of the measurements, along with the Test certificates to be produced with the bill, which shall be binding on the contractor in all respects.

**(c) One copy of the passed bill shall be given to the Contractor without any charge.**

**Clause 8. PAYMENT PROPORTIONATE TO WORK APPROVED AND PASSED.**

No payment shall be made for any work estimated to cost rupees five thousand or less until after the whole of the work shall have been completed and certificates of completion given. But in the case of works estimated to cost more than Rs. 5,000 the contractor shall on submitting the bill and after due verification by the Project Engineer as per **Clause 7(b)** entitled to necessary Payment proportionate to the part of the work then approved and passed by the Project Engineer cum Estate officer or other competent authority whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the contractor i.e. part payment of submitted RA bills is admissible to contractor. Any such reduced payment amount is admissible for adjustment in the successive RA Bills or Final Bill.

### **Payment at reduced rates**

The rates for several items of works agreed to within shall be valid only when the items concerned are accepted as having been completed fully in accordance with the stipulated specifications. In cases where the items of work are not accepted as so completed, The Project Engineer cum Estate officer or other competent authority may make payment on account of such items at such reduced rates as he may consider reasonable in the preparation of final or on account bills.

### **Payment or intermediate certificates be regarded as advances:**

All such intermediate payments shall be regarded as payments by way of advance against the final payments only and not as payments for work actually done and completed, and shall not preclude the Project Engineer cum Estate officer or other competent authority from requiring any bad, unsound imperfect or unskillful work to be removed or taken away and reconstructed or re-erected nor shall any such payment be considered as an admission for the due performance of the Contract or any part thereof in any respect or the accruing of any claim, nor shall it conclude determine or affect in any other way the powers of the Project Engineer cum Estate officer or other competent authority as to the final settlement and adjustment of the accounts, or otherwise or in any other way vary or affect the contract.

### **Submission of Final bill and its settlement**

The contractor shall submit the final bill within one month from the date of actual completion of the work in all respects. His claims shall be settled within five months from the date of submission of the bill in complete acceptable form after duly checked and certified by concerned Engineer, under normal circumstances.

### **Disputed items**

Note: The contractor shall submit a list of the disputed items within 30 days from the disallowance thereof and if he fails to do this, his claim shall be deemed to have been fully waived and absolutely extinguished.

## **Clause 9. Definition of Work :**

- (a) The expression 'Work' or 'Works' where used in these conditions, shall unless there be something in the subject or context repugnant to such construction, be construed to mean the work or works contracted to be executed under or in virtue of the contract, whether temporary or permanent and whether original, altered, substituted or additional.

- (b) **Work to be executed in accordance with specifications, drawings, orders etc.**

The contractor shall execute the whole and every part of the work in the most sound and substantial and workmanlike manner, and in strict accordance with the specifications both as regards materials and workmanship. The contractor shall also conform exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Project Engineer cum Estate officer or other competent authority and lodged in his office and to which the contractor shall be entitled to have access at such office, or on the site of the work for the purpose of inspection during office hours. The contractor shall also be responsible for the delivery of structure in sound conditions and the execution of the work strictly in accordance with the specifications of the work.

- (c) **Action where there is no specification**

In the case of any class of work for which there is no such specification, then in such a case of the work shall be carried out in all respects in accordance with the instructions and requirements of the Project Engineer cum Estate officer or other competent authority.

- (d) **Work as per Specifications and IS Codes.**

The detailed specification, which forms a part of contract, accompanies the tender document. In carrying out the various items of work as described in Schedule B of the tender documents and the additional, substituted, altered items of work these detailed specification shall be strictly adhered to, supplemented by relevant provisions of the Indian standard specifications, the code of practice; etc., The Indian standard specification, National Building

Code and the code of practice to be followed shall be the latest versions of those listed in the detailed technical specifications. Any class of work, not covered by the detailed technical specifications, shall be executed in accordance with the instructions and requirements of the Project Engineer cum Estate officer and the relevant provisions of the Indian standard specifications.

**Clause 10. Alteration in quantity of work, specifications and designs, Additional work, deletion of work**

- (i) The Project Engineer cum Estate officer shall have power to make any alternations in, omissions from additions to or substitutions for the original specification, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work. For that purpose or if for any other reason it shall in his opinion be desirable, he shall have power to order the Contractor to do and the contractor shall do any or all the following: -
  - (a) Increase or decrease the quantity of any work included in the contract.
  - (b) Omit any such work.
  - (c) Change the character or quality or kind of any such work,
  - (d) Change the levels, lines, positions and dimensions of any part of the work,
  - (e) Execute additional work of any kind necessary for the completion of the works and
  - (f) change in any specified sequence, methods or timing of construction of any part of the work.

**Contractor bound by Project Engineer cum Estate officer's instructions**

The Contractor shall be bound to carry out the work in accordance with any instructions in this connection which may be given to him in writing signed by the Project Engineer cum Estate officer or other competent authority and such alteration shall not in any way vitiate or invalidate the contract.

**Standard Quantity Take-off (SQT)**

Contractor within **14 days** of Issue of LOI to submit the Project Manager & seek approval for the Standard quantity Take-off sheets for all the items mentioned in the Tender BOQ, after due referencing the Tender/ GFC drawings and the Technical Specification. Upon approval, the SQT shall remain the base document for initiating any change orders/ variation in accordance to Clause 31, tracking the daily project progress, and for the measurement sheets.

**Orders for variations to be in writing**

- (ii) No such variations shall be made by the Contractor without an order in writing of the Project Engineer cum Estate officer; provided that no order in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is the result of the quantities exceeding or being less than those stated in the 'Schedule B' provided also that if for any reason the Project Engineer cum Estate officer shall consider it desirable to give any such order verbally, the Contractor shall comply with such order without any confirmation in writing of such verbal order given by the Project Engineer cum Estate officer, whether before or after the carrying out of the order, shall be deemed to be an order in writing within the meaning of the clause; provided further that if the Contractor shall within seven days confirm in writing to the Project Engineer cum Estate officer and if such confirmation is not contradicted in writing within fourteen days by the Project Engineer cum Estate officer, it shall be deemed to be an order in writing by the Project Engineer cum Estate officer.
- (iii)
  - a) Any additional work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the Contractor on same conditions in all respects on which he agreed to do the main work and same rates as are specified in the tender for the main work. However, change in the Undertaking rates tendered and accepted shall be considered in respect of items under which the quantity of work performed exceeds tendered quantity by more than 25 percent and this actual change in rate will be restricted only to such excess quantity (i.e. beyond 125 percent of the tendered quantity).
- (b) **Rate for excess quantity beyond 125 percent of tendered quantity**

The Additional quantity which exceeds 125 percent of the tendered quantity shall be paid at the rates entered in or derived from Schedule of Rates prevalent at the time of executing additions and alterations plus or minus



the overall percentage of the original tendered rates over the current Schedule of Rates (KPWD) of the year in which the tender is accepted (as per the comparative Statement prepared at the time of acceptance of the tender).

**(c) Rates for additional, substituted, altered items of work**

If the additional, substituted or altered work includes any class of work for which no rate is specified in the contract, then such work shall be carried out at the rates specified for or derived from similar item of work in the agreement. In the absence of similar items in agreement, rate shall be as specified for or derived from similar items in the schedule of rates of KPWD prevalent at the time of execution of such additional substituted or altered items of works, plus or minus the overall percentage of original tendered rates over the current schedule of rates of (KPWD) the year in which tender is accepted as mentioned in sub clause (b) above. With regard to the question whether the additional, substituted or altered item/items of work/works is / are similar or not, to that/those in the agreement / in the Schedule of Rates of KPWD and the decision of the Center for campus management and Development shall be final and binding on the contractor.

**(D) Determination of rates for items not found in Estimate or Schedule of Rates**

If the rates for additional, substituted or altered work cannot be determined in the manner specified in sub clauses (b) and (c) above, then the contractor shall within 7 days of the date of receipt by him of the order to carry out the work, inform the Project Engineer cum Estate officer of the rates which it is his intention to charge for such class or work, supported by analysis of the rate or rates claimed. Thereupon the Project Engineer cum Estate officer shall determine the rate or rates on the basis of observed data and failing this, on the basis of prevailing market rates. Under no circumstances the contractor shall suspend the work on the plea of non-settlement of rates for items falling under this clause. In the event of any dispute regarding the rates for such items the decision of Project Engineer cum Estate Officer, Center for campus management and Development shall be final.

Working out the data rates for non SR/ non tendered items shall be based on the procedures laid down in the standard rate analysis format of KPWD Bangalore circle Bangalore. The data rates shall be approved by the Project Engineer cum Estate Officer, Center for campus management and Development and shall be binding on the contractor.

**Clause 11. TIME LIMITS UNFORSEEN CLAIMS**

Under no circumstances whatever shall the contractor be entitled to any compensation from Institute on any account unless the contractor shall have submitted claim in writing to the Project Engineer cum Estate officer or other competent authority within 30 days of the cause of such claim occurring.

**Clause 12. NO CLAIM TO ANY PAYMENT OR COMPENSATION FOR DELETION OF WHOLE OR PART OF WORK**

- (a)** If at any time after the execution of the contract documents, the Project Engineer cum Estate officer or other competent authority shall, for any reason whatsoever, require the whole or any part of the work as specified in the tender, to be stopped for any period or require the whole or part of the work (i) not to be carried out at all or (ii) not to be carried out by the tendered contractor, he shall give notice in writing of the fact to the contractor who will thereupon suspend or stop the work totally or partially as the case may be. In any such case, except as provided hereunder, the contractor shall have no claim to any payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not so derive in consequence of the full amount of the work not having been carried out, or on account of any loss that he may be put on account of materials purchased or agreed to be purchased, or for unemployment of labour recruited by him. He shall not also have any claim for compensation by reason of any alterations having been made in the original specifications, drawings, designs and instructions, which may involve any curtailment of the work, as originally contemplated.

**(b) Payment for materials already purchased or ordered by contractor.**

Where, however, materials have already been purchased or agreed to be purchased by the contractor before receipt by him the said notice the contractor shall be paid for such materials, at the rates determined by the

Project Engineer cum Estate officer or other competent authority provided they are not in excess of requirements and are of approved quality, and/or shall be compensated for the loss, if any, that he may be put to, in respect of materials agreed to be purchased by him, the amount of such compensation to be determined by the Project Engineer cum Estate officer or other competent authority whose decision shall be final.

**(c) Labour charges during stoppage of work**

If the contractor suffers any loss on account of his having to pay labour charges during the period during which the stoppage of work has been ordered under this clause, the contractor shall on application, be entitled to such compensation on account of labour charges as the Project Engineer cum Estate officer or other competent authority, whose decision shall be final, may consider reasonable. Provided that the contractor shall not be entitled to any compensation on account of labour charges if in the opinion of the Project Engineer cum Estate officer or other competent authority, the labour could have been employed in the same locality by the contractor for the whole or part of the period during which the stoppage of the work has been ordered as aforesaid.

**(d) Time limit for stoppage of work**

The period of stoppage ordered by the Project Engineer cum Estate officer or other competent authority should not ordinarily exceed six months. Thereafter the portion of works stopped may be treated as deleted from this agreement if a notice in writing to that effect is given to the Project Engineer cum Estate officer or other competent authority by the contractor within seven days after the expiry of the above period.

**Execution of work deleted**

The portion of work thus deleted may be got executed from the same contractor on supplemental agreement on mutually agreed rates, which shall not exceed current Schedule of Rates plus or minus tender percentage,

**Clause 13. ACTION AND PENALTY IN CASE OF BAD WORK**

If at any time before the security deposit is refunded to the contractor, it shall appear to the Project Engineer cum Estate officer or other competent authority that any work has been executed with unsound, imperfect or unskillful workmanship or with materials of inferior quality, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for, or are otherwise not in accordance with the contract, it shall be lawful for the Project Engineer cum Estate officer or other competent authority to intimate this fact in writing to the contractor and then notwithstanding the fact that the work, materials or articles complained of may have been paid for, the contractor shall be bound forthwith to rectify, or remove and reconstruct the work so specified on whole or in part as the case may require, or if, so required shall remove the materials or articles at his own charge and cost and in the event of his failing to do so within a period to be specified by the Project Engineer cum Estate officer or the competent authority in the written intimation aforesaid, the contractor shall be liable to pay a penalty not exceeding one percent on the amount of the estimate for every day not exceeding ten days during which the failure, so continues and in the case of any such failure the Project Engineer cum Estate officer or other competent authority may rectify or remove, and re-execute the work or remove and replace the materials or articles complained of, as the case may be at the risk and expense in all respects of the contractor should the Project Engineer cum Estate officer or other competent authority for any valid reasons consider that any such inferior work or materials as described above is to be accepted or made use of, it shall be within his discretion to accept the same at such reduced rates he may fix thereof.

**Clause 14. WORK TO BE OPEN TO INSPECTION - CONTRACTOR OR RESPONSIBLE AGENT TO BE PRESENT**

- (a)** All works under or in course of execution or executed in pursuance of the contract shall at all time be open to the inspection and supervision of the Project Engineer cum Estate officer or other competent authority and his Engineer-in-charge, and the contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Project Engineer cum Estate officer or other competent authority Project Engineer to visit the work shall have been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing present for the purpose.

Orders given to the contractor duly authorized agent shall be considered to have the same force and effect as if they had been given to the contractor himself.

**(b) Employment of Minimum technical staff**

The Contractor shall employ the following technical staff during execution of this work:

- (i)** One qualified Graduate Engineer & One qualified Diploma Engineer, when the cost of the work to be executed up to 1 Crore,
- (ii)** Two qualified Graduate Engineer & Three qualified Diploma Engineer, when the cost of the work to be executed from 1 Crore to 10 crores;  
  
Three qualified Graduate Engineer & Six qualified Diploma Engineer, when the cost of the work to be executed above 10 crores;
- (iii)** In addition to (i) and (ii) above, the contractor shall employ different types of such technical personnel as may be required and sufficient for execution of work and directed by the Project Engineer cum Estate officer to ensure efficient execution of work.

The technical staff so employed, should be available at site whenever required by Engineer in-charge to take instructions.

- (c)** If the contractor fails to employ the technical staff as aforesaid, he shall be liable to pay a sum of Rs. 25000 (Rupees Twenty thousand only) for each month of default in the case of Graduate Engineers and Rs. 15000 (Rupees Ten thousand only) for each month of default in case of Diploma Holders.
- (d)** If the Contractor himself possesses the required qualification and is available at the site for receiving instructions from the Project Engineer cum Estate officer and other competent authority vide **sub-clause (a)** above it will not be necessary for the technical staff to be available at site for receiving instructions.

**Clause 15. NOTICE TO BE GIVEN BEFORE WORK IS COVERED UP**

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

**Clause 16. CONTRACTOR LIABLE FOR DAMAGE DONE, AND FOR IMPERFECTIONS FOR TWELVE MONTHS AFTER CERTIFICATE OF COMPLETION**

If the Contractor or his workmen or servants shall break, deface, injure or destroy any part of a building in which they may be working, or any building, road fence, enclosure or grassland or cultivated ground contiguous to the premises on which the work or any part thereof is being executed, or if any damage shall be done to the work, while it is in progress from any cause whatever or if any imperfections become apparent in it within Twelve months of the grant of a certificate of completion, final or otherwise, by the Project Engineer cum Estate officer or other competent authority the contractor shall make good the same at his own expenses, or in default the Project Engineer cum Estate officer or other competent authority may cause the same to be made good by other workmen, and deduct the expenses (of which the certificate of the Project Engineer cum Estate officer or other competent authority shall be final) from any sums that may be due or may thereafter become due to the contractor, or from his Security Deposit or the proceeds of sale thereof, or of a sufficient portion thereof.

The Defects liability period shall be extended for as long as defects remain to be corrected. Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Institute.

**Clause 17. CONTRACTOR TO SUPPLY PLANT, LADDERS, SCAFFOLDINGS, ETC., AND IS LIABLE FOR DAMAGES ARISING FROM NON-PROVISION OF LIGHT, FENCING ETC**

The contractor shall supply at his own cost all materials, plant, tools, appliance, implements, ladders, scaffolding, and temporary works required for the proper execution of the work whether in the original, altered or substituted form and whether included in the specification, or other documents forming part of the contract or referred to in these conditions or not, and which may be necessary for the purpose of satisfying or complying with the requirements of the Project Engineer cum Estate officer or other competent authority as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore, to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials necessary for the purpose of setting out works, and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or the materials. Failing this, the same may be provided by the Project Engineer cum Estate officer or other competent authority at the expense of the contractor and expense may be deducted from any money due to the contractor under the contract or from his security deposit or the proceeds of sale thereof, or of a sufficient portion thereof. The contractor shall provide necessary fencing and lights required to protect the public from accident, and shall also be bound to bear the expense of defense of every suit, action or other legal proceedings, that maybe brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any suit, action or proceedings to any person, or which may with the consent of the contractor be paid for compromising any claim by any such person.

**Clause 18. Measures for prevention of fire**

The contractor shall not set fire to any standing jungle, trees, brushwood or grass without a written permit from the Project Engineer cum Estate officer. When such permission is given, and also in all cases when destroying cut or dug up trees, brushwood grass, etc., by fire the contractor shall take necessary measures to prevent such fire spreading to or otherwise damaging surrounding property.

**Clause 19. Liability of contractor for any damages done in or outside work Area.**

Compensation for all damages done by contractor or his men whether in or beyond the limits of Institute property including any damage caused by spreading of fire mentioned in Clause 18 shall be estimated by the Project Engineer cum Estate officer and the estimate of the Project Engineer cum Estate officer, subject to the decision of the Center for campus mangement and Development on appeal shall be final and the contractor shall be bound to pay the amount of the assessed compensation on demand failing which the same will be recovered from the contractor as the damages in the manner prescribed in clause 1(c) or deducted by the Project Engineer cum Estate officer or other competent authority from any sums that may be due or become due from Institute to the contractor under this contract or otherwise.

The contractor shall bear the expenses of defending any action or other legal proceedings that may be brought by any person for injury sustained by him owing to neglect of precautions to prevent the spread of fire and shall pay any damages and cost that may be awarded by the court in consequence.

**Clause 20. Work on Notified Holiday**

No work shall be done on any notified holiday without the sanction in writing of the Project Engineer cum Estate officer or other competent authority

**Clause 21. WORK NOT TO BE SUBLET**

- (a) The contract shall not be assigned or sublet by the contractor,. However, any specific portion of the work which is of a specialized nature and normally not executable by a general contractor could be got done by the

specialized agencies which are executing such works, after obtaining the specific approval of the Project Engineer cum Estate officer in writing in each case. Such consent to sublet the work, if given, shall not relieve the contractor from any liability or obligation under the contract and he shall be responsible for the acts, defaults and neglects of any sub-contractor or his agents, servants or workmate as fully as if they were the acts, defaults or neglects of the contractor, his agents, servants or workmen.

**Consequences of subletting work without approval, becoming insolvent, bribing etc., by contractor and action against the contractor.**

If the contractor shall assign or sublet his contract or any portion thereof without the specific approval of the Project Engineer cum Estate officer or attempts to do so or become insolvent or commence any proceedings to get himself adjudicated as insolvent or make any composition with his creditors or attempts so to do or if any bribe, gratuity, or indirectly be given, promised or offered by the contractor or any of his servants or agents to any officer or person in the employ of Institute in any way relating to his office or employment or if any such officer or person in the employment or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Project Engineer cum Estate officer or other competent authority may thereupon by notice in writing rescind the contract and the security deposit of the contractor shall thereupon stand forfeited and be absolutely at the disposal of Institute and the same consequences shall ensure as if the contract had been rescinded under Clause 3 here of and in addition, the contractor shall not be entitled to recover or be paid for any work actually performed under contract.

**(b) Recovery of excess payments based on excess measurements and action against contractor.**

Whenever it is noticed that excess payments have been made to the contractor based on excess measurements recorded by the Project Engineer in the measurement book and countersigned by the contractor or his duly authorized agent, action shall be taken to recover the excess payments together with interest immediately. Action may also be taken to remove the name of the contractor from the approved list of contractors and also to black-list him.

**Change in classification of excavations accepted not permitted.**

Once the measurements mentioning the classification of the excavations are recorded in the measurement book and the same is signed by the contractor or his authorized agent in token of acceptance, no request for reclassification by the contractors shall be entrained.

**(c) Criminal proceedings against IISc Officer and Contractor for the lapses.**

Institute also reserve the right to initiate criminal proceedings against the concerned Institute Officers who are directly responsible for the lapse and the contractors who have colluded with the officers of the Institute in the lapse and fraudulently received amounts not due to them legitimately.

**Clause 22. SUM PAYABLE BY WAY OF COMPENSATION TO BE CONSIDERED AS REASONABLE COMPENSATION WITHOUT REFERENCE TO ACTUAL LOSS.**

All sums payable by a contractor by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied for the use of Institute without reference to the actual loss or damage sustained and whether any damage has or has not been sustained.

**Clause 23. SETTLEMENT OF DISPUTES -TIME LIMIT FOR DECISION**

- (a)** If any dispute or difference of any kind whatsoever were to arise between the Project Engineer cum Estate officer and the contractor regarding the following matters namely,
- (i)** The meaning of the specification's designs, drawing and instructions herein before mentioned,
  - (ii)** The quality of workmanship or materials used on the work and
  - (iii)** Any other question, claim right, matter, thing whatsoever, in any way arising out of or relating to the contract, designs, drawings, specification, estimates, instructions, or orders, or those conditions, failure to execute the same whether arising during the progress of the work, or after the completion, termination or

abandonment thereof, the dispute shall, in the first place, be referred to the Center for campus management and Development who have jurisdiction over the work specified in the contract. The Center for campus management and Development shall within a period of fifteen days from the date of being requested by the Contractor to do so give written notice of its decision to the Contractor.

If the decision of the Center for campus management and Development is not acceptable to the contractor he may approach the **Director, IISc** within a period of 15 days for settlement.

**(b) Director's decision final.**

Subject to other form of settlement hereafter provided, the Director's decision in respect of every dispute or difference so referred shall be final binding upon the contractor. The said decision shall forthwith be given effect to and contractor shall proceed with the execution of the work with all due diligence.

**(c) Remedy when Director's decision is not acceptable to contractor**

In case the decision of the Director is not acceptable to the contractor, he may approach the Law Court at Bangalore for settlement of dispute after giving due written notice in this regard to the Director within a period of ninety days from the date of receipt of the written notice of the decision of the Director. Further, the Bangalore courts alone shall have the exclusive jurisdiction.

**(d) Time limit for notice to approach Court of law by contractor**

If the Director has given written notice of his decision to the contractor and no written notice to approach the law court has been communicated to him by the contractor within a period of ninety days from receipt of such notice, the said decision of Director shall be final and binding upon the contractor.

**(e) Time limit for notice to approach law court by contractor when decision is not given by Director, IISc as at (b).**

If the Director fails to give notice of his decision within a period of ninety days from the receipt of the contractor's request in writing for settlement of any dispute or difference as aforesaid, the Contractor may within ninety days after the expiry of the first named period of ninety days approach the Law Courts at Bangalore giving due notice to the Director.

**(f) Contractor to execute and complete work pending settlement of dispute.**

Whether the claim is referred to the Director or to the Law Courts, as the case may be, the contractor shall proceed to execute and complete the works with all due diligence pending settlement of the said dispute or differences.

**(g) Obligations of the Project Engineer cum Estate officer and contractor shall remain unsettled during considerations of dispute.**

The reference of any dispute or difference to the Director or the Law Court may proceed notwithstanding that the works shall then be or be alleged to be complete, provided always that the obligations of the Project Engineer cum Estate officer and the contractor shall not be altered by reason of the said dispute or difference being referred to the Director or the Law Court during the progress of the works.

**Clause 24. CONTRACTOR TO PAY COMPENSATION UNDER WORKMEN'S COMPENSATION ACT.**

**(a) The contractor shall be responsible for and shall pay any compensation to his own workmen payable under the relevant Workmen's Compensation Act for injuries caused to the workmen. If Institute pays such compensation on behalf of the contractor it shall be recoverable by Institute from the contractor under as per relevant clauses.**

**(b) Contractor to pay expenses of providing medical aid to workmen.**

The contractor shall be responsible for and shall pay the expenses of providing medical aid to any workman who may suffer a bodily injury as a result of an accident. If Institute incurs such expenses, the same shall be

recoverable from the contractor forthwith and be deducted without prejudice to any other remedy of Institute, from any amount due or that may become due to the contractor.

**Clause 25. CONTRACTOR TO PROVIDE PERSONAL SAFETY EQUIPMENT FIRST AID APPARATUS, TREATMENT etc.**

The contractor shall provide all necessary personal safety equipment and first aid apparatus for the use of the persons employed on the site and shall maintain the same in good condition suitable for immediate use, at any time and shall comply with the following regulations in connection therewith: -

- (i) The worker will be required to use the equipment so provided by the contractor and the contractor shall take adequate steps to ensure proper use of the equipment by those concerned.
- (ii) When work is carried on in proximity to any place where there is a risk of drowning; all necessary steps shall be taken for the prompt rescue of any person in danger.
- (iii) Adequate provision shall be made for prompt first - aid treatment of all injuries likely to be sustained during the course of the work.

**Clause 26. Minimum age of persons employed by contractor**

**(a): No contractor shall employ**

- (i) Any person who is under age of 15 years.
  - (ii) Who does not produce a valid certificate of vaccination against epidemic diseases in respect of himself/ herself as well as all the members of his/her family.
- (b)** The contractor shall provide potable water facilities to the workers. Similar amenities shall be provided to the workers engaged on large works in urban area.
- (c)** Removal of persons not satisfying conditions (a) (i) & (ii)

The Project Engineer cum Estate officer or other authority is authorized to direct the removal or to remove through - his own agency, from the work any person referred to in sub-clauses (a) above not satisfying these conditions and no responsibility shall be accepted by the Institute for any delay caused in the completion of the work by such directions for removal.

**(d) Payment of fair and reasonable wages by contractor.**

The contractor shall pay fair and reasonable wages, which shall not be less than the minimum wages fixed by Govt. of Karnataka from time to time to the workmen employed by him in the contract undertaken by him. In the event of any dispute arising between the contractor, and his workmen on the ground that the wages paid are not fair and reasonable the dispute shall be referred without delay to the Project Engineer cum Estate officer or other competent authority, who shall decide the same. The decision shall not in any way affect the conditions in the contract regarding the payment to be made by Institute at the agreed tender rates.

**Clause 27. CONTRACTOR NOT ENTITLED TO ANY CLAIM OR COMPENSATION FOR DELAY IN EXECUTION OF WORK IN BORROW PITS.**

The contractor shall not be entitled to claim compensation if there is any delay in the execution of the work on account of water standing in borrow pits and Compartments. The rates are inclusive for hard or cracked soil, excavation in mud, sub-soil water or water standing in borrow pits and no claim for extra rate shall be entertained, unless otherwise specified.

**Clause 28. METHOD OF PAYMENT OF BILLS**

Payment to contractors shall be made by cheques drawn by the Institute

**Clause 29. SET OFF AGAINST ANY CLAIM OF INSTITUTE**

Any sum of money due and payable to the contractor (including the security deposit refundable to him) under this contract may be appropriated by the Institute and set off against any claim of Institute in respect of a payment of a sum of money arising out of or under any other contract made by the contract with the Institute.

**Clause 30. RATES INCLUSIVE OF SALES TAX AND LABOUR CESS AND ROYALTY**

- (a) The rates to be quoted by the contractor shall be inclusive of all taxes like GST , Labour cess, Royalty etc., No extra payment on this account will be made to the contractor. Any statutory levies imposed by the central Government/ state Government/ local body from time to time are to the contractors account only.
- (b) When there is a change in existing taxes from time to time i.e. upward or downward is admissible accordingly
- (c) All quarry fees, octroi dues levied by the state or any local body or authority and ground rent, if any, charged by the Project Engineer cum Estate officer for stacking materials should be paid by the contractor.

**Clause 31. IMPORTANCE OF SAFETY**

In addition to Contractor's Contractual Obligations on Safety as per the relevant clauses stated, The Contractor shall comply with all safety standards to the satisfaction of the Employer's Representative.

In respect of all labour, directly or indirectly employed on the project for the performance and execution of the Contractor's Work under the Contract, the Contractor shall at its own expense arrange for all the safety provisions as listed in (i) Safety codes of C.P.W.D. and Bureau of Indian Standards, (ii) The Electricity Act, (iii) The Mines Act, and Regulations, Rules and Orders made there under and such other acts as applicable. Precautions as stated in the safety clause are the minimum necessary and shall not preclude the Contractor taking additional safety precautions as may be warranted for the particular type of work or situations. Also mere observance of these precautions shall not absolve the Contractor of his liability in case of loss or damage to property or injury to any person including but not limited to the Contractor's labour, the Employer's, Architect's, Employer's Representative's and Project Manager's representatives or any member of the public or resulting in the death of any of these.

The Contractor shall institute and implement to the satisfaction of the Project Manager a construction safety programme, including:

- Preparing a Site-specific written safety programme consistent with the EHS Plan, Indian law and best practices. As a minimum, the programme shall require applicable safety equipment for all workers, use of barriers and barricades around potentially dangerous areas, protection of workers working under elevated conditions, accident reporting, first aid provisions etc.
- Weekly safety reviews and 'risk assessments' shall be carried out in conjunction with the Project Manager and the Employer in order to identify potential safety hazards and to mitigate against them.
- Attending weekly or as scheduled safety meetings at site conducted by the site safety representative of project manager
- The Contractor will be required to provide all personnel entering the Site an Identity and safety rules card and verbal explanation of the safety programme.
- Requiring all Sub-Contractors and other workers under the responsibility of the Contractor (including the Vendors or later phases of the construction of the Project) to adhere to the written safety programme as per approved format.

Experienced safety officers with adequate number of supporting personnel shall be appointed by the Contractor for full time on the site during the Contract period.

**NON-COMPLIANCE OF REGULATIONS**

If the Project Manager or the Employer's Representative notifies the Contractor of non- compliance with the foregoing regulations, the Contractor shall immediately, if so directed, or in any event not more than eighteen (18) hours after receipt of such notice, make all reasonable efforts to correct such non-compliance. If the Contractor fails to do so, the Employer may suspend all or any part of the Work. When the Contractor has undertaken satisfactory corrective action, Employer shall lift the suspension of the Work. The Contractor shall not claim any extension of time to complete the Work or additional fees due to any such work



suspension.

The Client reserves the right to levy penalty if the safety norms such as not wearing helmets, safety gloves/belts/shoes/jackets. etc., even after a written notice by the enforcing authority, a penalty of Rs. 10,000/- per day per event or till the safety norms are adhered to in addition to stopping of work till the safety norms are adhered

### **Clause 32 Refund of Security Deposit (EMD & FSD):**

The Security Deposit lodged/paid by a Contractor shall be refunded to him after the final bill is paid or after the successful completion of defect liability period, during which period the work should be maintained by the Contractor in good order, whichever is later.

### **Clause 33. PENALTY FOR DELAY**

#### **(a) Written Order to Commence Work**

After acceptance of the tender, The Project Engineer cum Estate Officer, CCMD shall issue a written order to the successful tenderer to commence the work. The Contractor shall enter upon or commence any portion of work only with the written authority and instructions of The Project Engineer cum Estate Officer, CCMD. Without such instructions the Contractor shall have no claim to demand for measurements of or payment for, work done by him.

#### **(b) Programme of work**

The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor. It shall be reckoned from the date of handing over the site to the Contractor not less than 75 percent of work site area comprising a continuous block. The work shall throughout the stipulated period of the contract be proceeded with, all due diligence (time being deemed to be the essence of the contract on the part of the Contractor). 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) to comply with the time schedule according to the programme of execution of the work as agreed upon and enclosed to the agreement.

#### **(c) Review of progress and responsibility for delay etc.,**

The Project Engineer cum Estate Officer, CCMD shall review the progress of all works with the contractor during the first fortnight of every month. Such a review shall take into account the programme fixed for the previous month, obligations on the part of the Contractor.

#### **(d) Apportioning of responsibility for delay between Contractor and Institute.**

In case the progress achieved falls short by more than 25 percent of the cumulative programme, the reasons for such shortfall shall be examined and a record made thereof apportioning the responsibilities for the delay between the contractor and the Institute. This record should be signed in full and dated both by The Project Engineer cum Estate Officer, CCMD and the Contractor.

### **Clause 34 BAR CHART / CPM CHART:**

BAR chart /CPM chart shall be produced during agreement by the contractor. According to the bar chart work is to be executed otherwise penalty will be levied for the delay of work

## THE ARTICLES OF AGREEMENT

This Agreement is made at Bangalore, on this \_\_\_\_\_ day of \_\_\_\_\_ (month) in the year \_\_\_\_\_

BY AND BETWEEN

**INDIAN INSTITUTE OF SCIENCE**, a Trust registered under the Charitable Endowments Act, 1890, a deemed University and an autonomous Institution funded by the Ministry of Human Resource Development, Government of India having its office at **Sir C.V Raman Road, Malleswaram, BANGALORE 560 012**, (hereinafter referred to as the EMPLOYER which expression shall unless repugnant to the context or meaning thereof, mean and include its successors in interest, trustees and permitted assigns) of the ONE PART

AND

\_\_\_\_\_, hereinafter referred to as the "CONTRACTOR", (which expression shall unless repugnant to the context or meaning thereof, mean and include their partners, their respective heirs, executors, administrators and assigns) on the OTHER PART.

WHEREAS the Employer is desirous of getting the work of **"Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore"**

(hereinafter called the work) executed by the Contractor at the rates quoted by him amounting to **Rs. 151,30,000/- (Rupees one hundred one lakh and thirty thousand Only)** which is the estimated amount put to tender.

**AND WHEREAS the Contractor has agreed to execute the aforesaid work on terms and conditions mentioned herein and subject to Tender Conditions of Contract and in accordance with the particular specifications, general notes and the schedule of quantities, schedule of rates, payment and penalty condition.**

**AND WHEREAS the contractor has deposited a sum of Rs 2,26,950/- (Rupees Two Lakh twenty six thousand and nine hundred and fifty Only) with Employer as security for the due performance of this Contract.**

NOW it is hereby agreed and declared by and between the parties hereto as follows;

1. In consideration of the payment to be made to them as hereinafter provided, the contractor shall, subject to the terms, conditions, specifications, schedule of quantities, drawings, etc., more particularly stated in the Schedules aforesaid, execute and complete the work within **5 (Five) Months** starting after 10 days of issuance of work order or from the date of handing over of site, whichever is later.
2. The Employer shall pay to the contractor such sums as shall become payable hereunder at the time and in the manner specified in the conditions contained in the schedule aforesaid.
3. The time allowed for carrying out the work as entered in the tender Agreement shall be strictly observed by the contractor and shall be deemed to be the essence of the contract on the part of the contractor and shall be reckoned from 10 days after the date on which the order to commence the work is issued to the Contractor or the date of handing over of site, whichever is later. The work shall throughout the stipulated period of the contract be proceeded with all due diligence and the Contractor shall pay as compensation an amount equal to one percent, or such smaller amount, as the Director, Indian Institute of Science (whose decision in writing shall be final) may decide on the amount of estimated cost of the whole work as shown in the tender for every day that the work remains un commenced or unfinished, after proper dates.

4. The contractor shall 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 work before, one-fourth of the whole time allowed under the contract has elapsed, three-eighths, of the work before one-half of such time has elapsed, and three-fourths of the work before three-fourths 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 Architects/ Project Engineer-cum-Estate Officer, CCMD the contractor shall comply with the said schedule. In the event of the Contractor failing to comply with the conditions he shall be liable to pay as compensation an amount equal to one percent or such smallest amount, as the Director, Indian Institute of Science (Whose decision in writing shall be final), may decide on the said estimated cost of the whole work for every day that the due quantity of work remains incomplete; provided always that the entire amount of compensation to be paid under the provisions of this clause shall not exceed seven and a half (7 ½) percent of the estimated cost of the work as shown in the tender.

5 The Director of the Indian Institute of Science, without prejudice to his rights under the contract in any respect of any delay or inferior workmanship or otherwise, or to any claim for damages in respect of any breaches of the Contract and without prejudice to any rights of remedies under any of the provisions of this contract or otherwise and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:-

- (i) If the contractor having been given by the Architects/Project Engineer-cum-Estate Officer, CCMD a notice in writing to rectify reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improper or un workmanlike manner, shall omit to comply with the requirements of such notice for a period of seven days of such notice thereafter or if the contractor shall delay or suspend the execution of the work so that in the judgment of the Project Engineer-cum-Estate Officer, CCMD (which shall be final and binding) either he will be unable to secure completion of the work by the date for completion of the work or he has already failed to complete the work by that date.
- (ii) If the Contractor being a company passes a resolution or if the Court passes an order to wind up the company or if a receiver or a manager is appointed on behalf of the creditors of the company or under circumstances which entitles the Court or the creditors to appoint a receiver or manager which would entitle the Court to make a winding up order.
- (iii) If the Contractor commits breach of any of the terms or conditions of this contract;
- (iv) If the contractor assigns or sublets without written approval of the Project Engineer-cum-Estate Officer, CCMD or becomes insolvent.

When the Contractor has made himself liable for action under any of the cases aforesaid, the Project Engineer-cum-Estate Officer, CCMD on behalf of the Director of the Institute shall have powers:

- (a) To determine or rescind the Contract as aforesaid (in which termination or recession notice in writing to the Contractor under hand of the Project Engineer-cum-Estate Officer, CCMD shall be conclusive evidence) Upon such determination or recession the security deposit of the Contractor shall be liable to be forfeited and shall absolutely be at the disposal of Institute.
- (b) To employ labor paid by the Institute and supply materials to carry out the work or any part of the debiting the Contractor with the cost of the labor and the price of the materials (of the amount of which cost and price certified by the Project Engineer-cum-Estate Officer, CCMD shall be final and conclusive against the Contractor) and crediting him with the value of the work done in all respect on the same manner and at the same rates as if it has been carried out by the contractor under the term of his contract. The certificate of the Project Engineer-cum-Estate Officer, CCMD as to the value of the work done shall be final and conclusive against the contractor, provided always that action under the sub-section shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the Institute are less than the amount payable to the contractor at his agreement rates, the difference shall not be paid to the Contractor.

- (c) After giving notice to the contractor to measure up the work of the contractor and to take such part thereof as shall be un-executed out of his hands and to give it to another contractor to complete in which case any expenses which may be incurred in excess a sum of which would have been paid to the original contractor if the whole work had been executed by him (of the amount of which excess the certificate in writing of the Project Engineer-cum-Estate Officer, CCMD shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any monies due to him from the Institute under this contract or any other account whatsoever, of from his security deposit or the proceeds of sales thereof, or a sufficient part thereof as the case may be.

In the event of any one or more of the above courses being adopted by the Project Engineer-cum-Estate Officer, CCMD, 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, this contractor shall not be entitled for recover or be paid any sum for work thereto/for actually performed under this contract unless the Architect/ Project Engineer-cum-Estate Officer, CCMD 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.

6. The schedules above mentioned including the General Rules and Directions to Contractors and the following documents, viz.,

- i) Letter of Intent
- ii) Conditions of Contract – Volume I
- iii) Contractor's Bid – Bill of Quantities – Volume II
- iv) Technical Specifications – Volume III
- v) Drawings
- vi) The pre-Bid meeting proceedings and corrigendum
- vii) Any other document listed in the Contract Data as forming part of the contract

shall form an integral part of agreement and the decision of the Project Engineer-cum-Estate Officer, CCMD in reference to all matters of dispute as to material and workmanship shall be final and binding on both the parties.

7. The employer reserves to himself the right of altering the drawings of the works and of adding to or omitting any item of work from or of having portions of the same carried out departmentally or otherwise and such alterations or variations shall not vitiate this agreement.

8. This agreement comprises the work aforesaid and all subsidiary works connected therewith even though such works may not be shown on the schedule appended hereto.

9. Notwithstanding anything contained in the tender submitted by the contractor, all the clauses of this agreement shall be binding on both the parties.

10. Where counter terms and conditions, printed or copied, are offered by the contractor, the same shall not be deemed to have been accepted by the Employer, unless specific written acceptance thereof is furnished by the Employer. Notwithstanding the foregoing, no verbal agreement or inference from conversation with any office members/representatives/employees of the Employer before, during or after the execution of the agreement, shall in any way affect or modify any of the terms/obligations contained herein.

11. In the event the contract is terminated by the Employer due to any aforementioned act/omission on the part of the contractor, or for any reason whatsoever, the Employer shall be entitled to engage the services of any other person, agency or Contractor to meet its requirement, without prejudice to its rights including claim for damages against the Contractor.

12. The Employer shall be indemnified for all losses due to commissions and omissions of persons deployed by the contractor. If any loss or damage is caused to the Employer on account of any negligence, carelessness, acts of omissions, commissions of contractors, his employees or staff, the same shall be made good by the contractor. The contractor shall defend, indemnify and hold the Institute harmless from any liability or damage, lawsuits, penalties imposed by any State or Central Government Department or statutory body or by a third party for reasons of violation of any of statutory provisions or requirements by the contractor. The Employer shall not be liable for any damage or compensation payable to any workmen or to any person as a consequence of this work and the Employer shall be completely indemnified accordingly.

13. In case of disputes including all questions relating to the performance of the obligations under this agreement and all the dispute and differences which shall arise either during or after the agreement period or other matters arising out of or relating to this agreement or payments to be made in pursuance thereof shall be decided by the Director of IISc whose decision shall be binding on the contractor. The Contractor hereby agrees to be bound by the decision of the Director.

IN WITNESS WHEREOF the parties hereto have set their respective hands the day and the year here in above written.

In the presence of:

Signed by for and on behalf of the said Contractor.

In the presence of:

Signed by for and on behalf of the said Employer.

REGISTRAR  
INDIAN INSTITUTE OF SCIENCE  
BANGALORE-12

**INDIAN INSTITUTE OF SCIENCE, BANGALORE-12**  
**ITEM RATE TENDER FOR WORK**

I/We, hereby tender for the execution for the Indian Institute of Science, Bangalore-12 of the works specified in the under mentioned memorandum within the time specified in such memorandum at the rates specified therein and in accordance, in all respects, with the specifications, designs, drawings and instructions in writing which have been read by me/read and explained to me and with such materials as provided for by and in all other respects in accordance with such conditions as for as possible.

**MEMORANDUM OF WORK**

1.	GENERAL DESCRIPTION	<b>Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore</b>
2.	ESTIMATED COST	<b>Rs. 151,30,000/-</b>
3.	EARNEST MONEY	<b>Rs. 2,26,950/-</b>
4.	FURTHER SECURITY DEPOSIT	6.0% on the running account bills and final bill in addition to Earnest Money Deposit. When the F.S.D. deducted from the RA bills of the Contractor @ 6.0% of the bill amount exceeds Rs.1.00 lakhs, the amount in excess of Rs.1.00 lakh may, at the request of the Contractor, be released to him against the production of a bank guarantee issued by a Nationalised /Scheduled Bank only for an equal amount in the prescribed form. The bank guarantee should be valid till the completion of the defect liability period.
5.	TIME ALLOWED FOR THE COMPLETION OF WORK IN ALL RESPECTS FROM THE DATE OF COMMENCEMENT OF WORK	<b>5 (Five) Months</b>
6.	BILLS OF QUANTITIES.	Enclosed.
7.	SPECIFICATIONS.	The work shall be carried out strictly in accordance with the enclosed specifications and wherever items are not covered by those specifications in accordance with specifications/drawings/designs/requirements and directions of the Project Engineer-cum-Estate Officer, CCMD or his representatives.

I/We hereby agree to abide by and fulfill all the terms and provisions of the conditions contained in the articles of agreement, which have been read by me/us or in default thereof to forfeit and pay to the Registrar, Indian Institute of Science or his successors the sums of monies mentioned in the said conditions.

The sum of **Rs. 2,26,950/- (Rupees Two Lakh twenty six thousand nine hundred and fifty Only)** has been deposited in cash/Bank draft as Earnest Money the full value which is to be absolutely forfeited to the Registrar or his successors in Office should I/We fail to commence the work specified in the above memorandum and complete the same.

Dated this .....

**Signature of the Contractor/s**

Witness to Contractor/s Signature:

NAME

ADDRESS

OCCUPATION

The above tender is hereby accepted by me on behalf of the Indian Institute of Science, Bangalore-12.

**REGISTRAR  
INDIAN INSTITUTE OF SCIENCE  
BANGALORE.**

**Indian Institute of Science, Bangalore-12****A P P E N D I X**

1.Name of the work	<b>Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore</b>
2.Date of commencement of work	Within Ten days from the date of issue of work order or the date of handing over the site whichever is later
3.Time of Completion	<b>5 (Five) Months</b>
4.Frequency of interim Certificate and payment	Once every month.
5.Further Security deposit	6.0% on the running bills and final bill in addition to earnest money deposit. When the F.S.D. deducted from the R.A. Bills of the contractor @ 6.0% of the bill amount exceeds Rs.1.00 Lakhs, the amount in excess of Ra.1.00 Lakh may, at the request of the contractor, be released to him against the production of bank guarantee issued from a Nationalised /Scheduled Bank only for an equal amount in the prescribed form. The bank guarantee should be valid till the completion of the defect liability period.
6. Defects liability period / retention amount from the final bill/release of balance of deposit.	The security deposit lodged/paid by a contractor shall be refunded to him after the final bill is paid or after twelve months from the date of completion of the work, during which period the work so executed should be maintained by the contractor in good order, whichever is later.
7. Penalty for delay	In respect of the shortfall in progress, assessed as due to the delay on the part of contractor as per clause 2(b) and 2(c), the contractor shall be liable to pay as penalty an amount equal to one percent of the estimated cost of the balance work assessed according to the programme, for every day that the due quantity of work remains incomplete, provided always that the total amount of penalty to be paid under the provisions of this clause shall not exceed 7 ½ percent of the estimated cost of the entire work as shown in the tender, provided further that in the event of the contractor making up the shortfall in progress within the stipulated or extended time of completion, the penalty so recovered may be refunded on an application in writing by the contractor.
8. Period for payment of Running Bill.	Three weeks from the date of submission of each Running account bills by the Contractor.
9. Period for submitting the final Bill.	One month from the date of virtual completion of the work by the Contractor.



### **GENERAL RULES AND DIRECTIONS TO CONTRACTORS**

1. A Schedule of Quantities (Bill of Quantities) is attached herewith. It should however, be clearly understood that these quantities are liable to alterations by omission, addition or variation, at the discretion of the Architects/Project Engineer Cum Estate Officer
2. The tenderer shall insert all rates and amounts and the totals in the schedule of quantities. Rate for alternative items, when asked for, shall be entered in red ink and shall not be included in the total.
3. The drawings together with specifications and conditions of contract are enclosed. These should be studied carefully by the intending tenderers. In the absence of specifications for any item of work, material or ingredient in the specifications, PWD specifications shall be followed and in the absence of specification for any item, materials are ingredient shall be fixed in all respects in accordance with the instructions and requirements of the Project Engineer Cum Estate Officer, the work will be the best of the kind.
4. The tenderer is expected to inspect the site and acquaint himself with the local conditions and will be deemed to have so done before submitting the tender.
5. The successful tenderer is required to sign an agreement for the due fulfillment of the contract and start the work immediately on of the acceptance of his tender. A draft of the Articles of the Agreement is enclosed. The Earnest Money referred to in item No.3 of Memorandum contained in the "Item Rate Tender for Works", will be forfeited and at the absolute disposal of the Employer if the Contractor defaults from signing the Agreement of in starting the work.
6. The rates quoted shall be for finished work and shall include for all necessary incidental work. Sales or any other tax on materials in respect of this contract will be payable by the Contractor. The Contractors cannot presume any details regarding the contract.
7. Water supply: The Contractor has to make his own arrangement for water supply. However, if water supply to the site at one convenient point is made available by the Institute, the charges for the consumption of water will be borne by the Contractor at 1.50% of the value of the work.
8. Supply of Electricity-electricity required for construction shall be arranged by the contractor itself. Electricity if supplied to the contractor by the institute will be metered and amounted will be recovered in the bills as per actual at rate fixed by the Institute. Supply of electricity from the institute is not mandatory. Non supply of electricity by the institute cannot be held as reason for short fall in progress.
9. The duration of the work is **5 (Five) Months.**
10. Institute reserves the right to accept or reject any tender without assigning reasons thereof. He further reserves the right of deleting any item of work in this contract at his discretion.
11. The tenders are valid for a period of 6 (three) months from the date of opening.
12. This "General Rules and Directions to Contractors" shall also form part of the tender document.
- 12.1 Cement to be procured by contractor only, adhering to the following conditions.
  1. Only 43 grade OPC cement is to be used for the projects.
  2. The cement shall conform to IS 8119-1976.
  3. ACC, L&T, Coromandel, Birla brands only to be used.
  4. Test certificate is to be produced for every procurement made for.

13. This contract comprises:
  - a) General Builders work (Civil works).
  - b) Water supply and Sanitary installations.
  - c) Electrical Installations.
  - d) Sump and overhead tanks.
14. The General Builder should get the water supply and sanitary installations and the Electrical installations executed through licensed sub-contractor having good experience and qualified and competent tradesmen in the respective fields and approved by the Project Engineer Cum Estate Officer.
15. It is entirely the responsibility of the Contractor to arrange for and provide all materials required for successful completion of the work except such special materials that may be supplied if any.
16. The Brand, size and colour of vitrified/ceramic/glazed tiles shall be got approved from the Competent authority before procurement of materials. Brands recommended are Johnson, Naveen, Kazaria.
17. Water supply/Sanitary fixtures like Bibcocks, pillarcocks, Health-faucet, anglecock, bottle traps, EWC, IWC, urinal basins shall be as per approval from competent authority.
18. Tenders determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows
  - a) Where there is discrepancy between the rates in figures and in words, the lower of the two will be governed and
  - b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will be governed.
  - c) Where there is a discrepancy in entries of unit rate between the Original and Duplicate, the lower will govern.
19. Tol tax, Royalty for collecting earth, gravel, sand stone etc., GST or any other tax payable on account of this contract will have to be met from contractors account.
20. The Contractor should make his own arrangements to cover the all-round construction area, by providing polyester net/polythene sheet/barricading to avoid inconvenience to other surrounding departments, as directed by the Project Engineer-cum-Estate Officer of the work.
21. The debris arise during the period of construction will have to be cleared then and there to keep the surroundings clean and tidy. Such debris shall, if not cleared, be cleared at his risk and cost.
22. Work done as a sub- contractor under a prime contractor will not be considered for qualification.
23. "Prime Contractor" means a firm that performs a construction work itself and that the work is directly entrusted to the firm by the owner/ government/ local body/ quasi government/ Government undertaking bodies.
24. The contractor shall vacate the campus premises with all his men/ materials immediately after completion of the project.

## REFERENCES OF CODE BOOK

<b><u>I.S SPECIFICATIONS</u></b>	
A general list of IS Specifications applicable to this contract is appended here with	
IS CODE NO	
SP 7-1970	National Building Code
1885	Symbols
4648	Guide for electrical layouts
5578	Marketing of insulated conductors
5216	Guide for safety in installations
374	Ceiling fans
5077	Decorative light fitting
1913	Safety requirement of fittings
1536 & 6616	Ballasts
3323	Bi-pin lamp holders
2215	Starters for fittings
2418	Flourescent lamps
1569	Discharge lamps
3324	Holders
5513	Boxes for enclosures for Ele Accessories
Sp-7-2675	Fuse distribution boards
371	Ceiling roses
2667 & 3387	Metal conduits – fittings and accessories
1653	Rigid metal conduits
3854	Switches for lighting circuit control
1293	Three pin plugs
2351	Danger Board
3106	Instalation and selection of fuses
3043	Earthing
2147	Degree of protection by switch and control gear
4237	Requirement for switch and control gear
40437	Heavy duty air break switch and Sf units
2208	HRG fuses
375	Switch gear bus bars
2607	Air break isolators
1951	PVC sleeveings
1255	Code of practice for laying cables.
1694	PVC insulated cables.
1554	PVC cables.
3961	Current rating of cables.

Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore

PRICE SCHEDULE for Indigenous Items: Notes for bidder								
1. Bidder must mandatorily quote basic rate and GST percentage for each item.								
2. For all general notes full description and other details Bidder must refer BOQ in tender document and quote accordingly.								
Sl. No.	Item Description	Quantity	Unit	Basic Rate per Unit	GST in %	GST Rate per Unit	Amount Including GST	Total Rate in Words
1	2	4	5	13	16	17	54	55
1	<p><b>Supplying, installing, testing and commissioning of 625 KVA Diesel Generator set: (full specification is available in Tender document - BOQ, since portal has Limitation of specification length).</b></p> <p><b>Engine:</b> Diesel generating set are rated at 1500 RPM and conform to ISO 8528 specifications. The engines are radiator cooled, four stroke and multi cylinder, conforming to ISO 3046. The scope of supply includes: Electrical starter motor 12V DC Battery charging alternator, Bosch fuel system with mechanical governor, A1 Class. Spin-on lube oil filter, Spin-on dual fuel filter with water separator, Turbocharger, Charge air cooler, Silencer (Hospital grade), Dry type air cleaner, Shutoff coil, Flywheel and flywheel housing, First fill of lube oil and coolant, Safety for low lube oil pressure, Safety for high water temperature, Permissible overload of 10% for oain alternator output frequency. Controller provide configurable time delay of 0-300 secs to start after remote start signal and time delay of 0-600secs prior to shut down after stop signal. <b>Sleep mode increase</b> battery life. Configurable current settings from low to minimize current draw when genset is not working. <b>Engine Protective</b> functions include, Configurable alarm output, Emergency stop: Annunciate whenever an emergency stop signal is received by the control. Low lube oil pressure warning and Shutdown, High engine water temp warning / Shutdown, Low coolant temp warning, Sensor failure indication, Low and high battery voltage warning, Weak battery warning, Fail to start shut down, Cracking lockout: Control will not allow the starter to engage or to crank the running engine. <b>Cyclic cranking:</b> Configurable for the number of starting cycle, <b>(1 to 7) and duration</b> of crank and rest periods. Alternator Protective functions includes, - High and Low AC voltage shut down, Under and Over frequency shutdown / warning, Loss of sensing voltage input shut down.</p> <p>Acoustic enclosure: The acoustic enclosure shall be made of 1.6 mm thick CRCA sheets in suitable approved shade and a structural/ sheet metal base frame painted in black. The walls of the enclosure are insulated with fire retardant foam so as to comply with the 75dBA at 1 mtr sound levels specified by Ministry of Environment &amp; Forest. The enclosure has the following features: Specially designed to meet stringent MOEF/ CPCB norms of 75dBA @ 1mtr at 75% load under free field conditions, <b>Two point lifting</b> for easy handling at customer site, Designed to have optimum serviceability, Air inlet louvers specially designed to operate at rated load made on special purpose CNC machines for consistency in quality and workmanship, Powder coated for long lasting service life and superior finish, With UV resistant powder coating, can withstand extreme environment. Use of special hardware for longer life, Insulation material meets exacting IS 8183 specifications for better sound attenuation, Flush styling - no projections, Fluid drains for lube oil and fuel, Fuel filling point inside the enclosure. <b>Light</b> <b>Full</b></p> <p><b>Operator interface :</b> Provide a record of most recent fault conditions. Fault history stored in the control non volatile memory, Provide Alternator Data, Voltage (1 ph or 3 ph line to line and line to neutral voltage, Current (1 ph or 3 ph), kVA (3 ph and total), Frequency, Provide Engine Data, Starting battery voltage, Engine running hours, Engine Temp, Engine oil pressure, Control includes provision for Service adjustment and calibration of DG control functions, Voltage, frequency selection, Configurable input and output set up, Meter calibration, Engine controls, Power Start operates on 12 VDC batteries,- Auto start mode accepts a ground signal from remote devices to automatically start the DG set. The remote start will also wake up the control system from sleep mode.</p> <p><b>Engine Starting</b> -The control system supports automatic engine starting, Primary and back up start disconnects are achieved by battery charging alternator feedback or main alternator output frequency. Controller provide configurable time delay of 0-300 secs to start after remote start signal and time delay of 0-600secs prior to shut down after stop signal. Sleep mode increase battery life. Configurable current settings from low to minimize current draw when genset is not working. Engine Protective functions include, Configurable alarm output, Emergency stop: Annunciate whenever an emergency stop signal is received by the control. Low lube oil pressure warning and Shutdown, High engine water temp warning / Shutdown, Low coolant temp warning, Sensor failure indication, Low and high battery voltage warning, Weak battery warning, Fail to start shut down, Cracking lockout: Control will not allow the starter to engage or to crank the running engine. <b>Cyclic cranking:</b> Configurable for the number of starting cycle, (1 to 7) and duration of crank and rest periods. Alternator Protective functions includes, - High and Low AC voltage shut down, Under and Over frequency shutdown / warning, Loss of sensing voltage input shut down.</p> <p><b>Acoustic enclosure:</b> The acoustic enclosure shall be made of 1.6 mm thick CRCA sheets in suitable approved shade and a structural/ sheet metal base frame painted in black. The walls of the enclosure are insulated with fire retardant foam so as to comply with the 75dBA at 1 mtr sound levels specified by Ministry of Environment &amp; Forest. The enclosure has the following features: Specially designed to meet stringent MOEF/ CPCB norms of 75dBA @ 1mtr at 75% load under free field conditions, Two point lifting for easy handling at customer site, Designed to have optimum serviceability, Air inlet louvers specially designed to operate at rated load made on special purpose CNC machines for consistency in quality and workmanship, Powder coated for long lasting service life and superior finish, With UV resistant powder coating, can withstand extreme environment. Use of special hardware for longer life, Insulation material meets exacting IS 8183 specifications for better sound attenuation, Flush styling - no projections, Fluid drains for lube oil and fuel, Fuel filling point inside the enclosure.</p>	3	Job			0.00	0.00	INR Zero Only
2	<p><b>AMF Panel:</b> Supply, Erection, testing and commissioning of AMF cum Auto Synchronizing Auto Load Sharing, Auto Load Depended start /Stop panel suitable for 3 x 625 KVA DG set as per the detailed specification attached. The necessary bus bar modification in the existing AMF cum Synchronizing panel to be done. (Make: Woodward or similar approved make)</p>	1	Job			0.00	0.00	INR Zero Only
3	<p><b>Exhaust Pipe:</b> Manufacture, testing, Supply, Transportation, Installation, Testing, Commissioning of MS exhaust piping with rain water cap, bends&amp; painting with 2 coats of Heat resistance antirust epoxy paint suitable to exhaust temperature. The sizes of the Exhaust piping shall be as per manufacturer"s guidelines/recommendations. The exhaust pipe shall be with 50mm thick Glass wool insulation covered with 26 SWG Aluminium cladding for Exhaust piping - <b>8 inch dia</b></p>	40	Mtr			0.00	0.00	INR Zero Only
4	<p><b>10 inch dia</b></p>	10	Mtr			0.00	0.00	INR Zero Only
5	<p>Supply, fabrication and erection &amp; Installation of MS support suitable for exhaust pipe, residential silencer, etc. using angles/ channels, steel sections, U Clamps etc. complete with one coat of zinc chromate primer and 2 coats of black enamel paint.</p>	500	Kgs.			0.00	0.00	INR Zero Only

Supply, Installation, Testing and Commissioning of 3 x 625 KVA Diesel Generator set at Biological Science Building in IISc, Bangalore

Sl. No.	Item Description	Quantity	Unit	Basic Rate per Unit	GST in %	GST Rate per Unit	Amount Including GST	Total Rate in Words
6	<b>Earthing:</b> Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required	8	Nos			0.00	0.00	INR Zero Only
7	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	80	Mtrs			0.00	0.00	INR Zero Only
8	<b>Cabling:</b> Supplying of 1.1 KV LT UG cable XLPE or Heat resistant PVC insulated, PVC extruded Inner sheath armoured UG LT cable as per IS-1554 (Part-1) or IS-7098 Part-1, Armouring strip thickness in average +5% and resistivity 14 Ohms/Kms (Max) as per IS-3975 - <b>3.5 core 300 sqmm</b>	150	Mtrs			0.00	0.00	INR Zero Only
9	3.5 core 400 sqmm	150	Mtrs			0.00	0.00	INR Zero Only
10	Labour charges for laying of 1.1 KV class UG cable in existing trench/ GI pipe / stoneware pipe / on wall / on pole as required.In existing trench/duct for 3.5 core 300 sqmm / 400 sqmm	300	Mtrs			0.00	0.00	INR Zero Only
11	Supplying and fixing of heavy duty cable glands suitable for UG cable of 3.5 core 300 sqmm / 400 sqmm, 1.1 KV class (metal only) ,	4	Nos			0.00	0.00	INR Zero Only
<b>Total in Figures</b>							<b>0.00</b>	
<b>Quoted Rate in Words</b>		<b>INR Zero Only</b>						