KARNATAKA ANTIBIOTICS & PHARMACEUTICALS LIMITED
BENGALURU

M/sKARNATAKA ANTIBIOTICS AND PHARMACEUTICALS LIMITED

UJJAIN, MADHYA PRADESH

BULK DRUG PROJECT

FOR

7-ACA (7-Aminocephalosporanic acid)

TENDER DOCUMENT FOR

HIGH TENSION ELECTRIFICATION WORK

DOC. NO: KAPL/BDP/SR/1482

Document Approval

Prepared By (DCPL)	Reviewed and approved By (DCPL)	Review & Approved By (KAPL)	Review & Approved By (KAPL)	Review & Approved By (KAPL)	Review & Approved By (KAPL)
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Document Revision History

Document No.	Revision	Prepared/Changed by Date	Status / Change note
KAPL/BDP/SR/1482	R-00	SB/03.09.2023	For Tender

SECTION: I -INTRODUCTION

1.1 Purpose

The Tender document aim at detailing the user requirements & technical specifications defined & agreed to between the M/s Karnataka Antibiotics and pharmaceutical Ltd and M/s Doshi DCPLs Pvt. Ltd.

1.2 Scope

The scope of this specification covers Design, Supply, installation and commissioning of high tension electrification work.

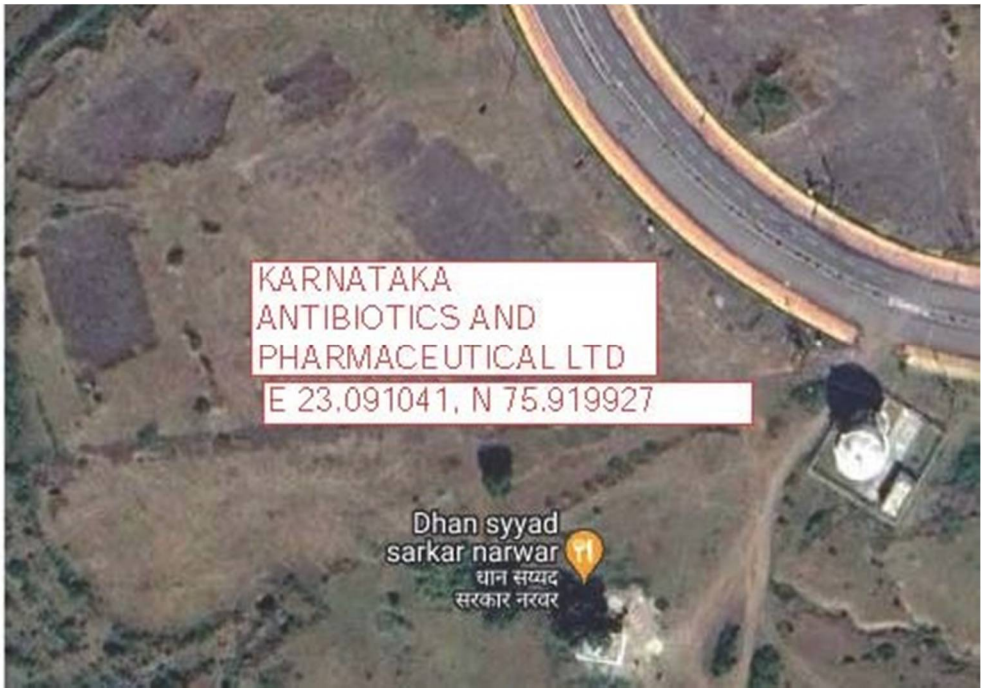
1.3 Objective

This tender document has been prepared to detail out the functional requirements Electrification work as specified by the user. It does not necessarily specify how the system will function, but rather the intentions of the user regarding system functionality. This document will serve as the basis of design of electrification work

1.4 PROJECT INFORMATION

A	Client		**M/s.Karnataka Antibiotics and Pharmaceuticals Ltd** KAPL House "Arka – The Business Centre", Plot No. : 37, Site No.: 34/4, NTTF Main Road, 2nd Phase Peenya Industrial Area, Bangalore-560 058, India.			
B	Plant Location		**M/s Karnataka Antibiotics and Pharmaceuticals Ltd** Plot No;110-116, Vikram udyogpuri, Ujjain, Madhya Pradesh			
C	Project		**Bulk drug project for 7 ACA**			
D	Site Data	Ambient Data		DBT (°F)	WBT (°F)	RH (%)
			Summer	106	77	28
			Monsoon	90	81.3	70
			Winter	50	44.1	65
		Other Data	Altitude	492 M (From Sea Level)		
E	Access to Site	By Road	Indore/ Ujjain City			
		Railway Station	From Ujjain			
		Nearest Airport	Indore Airport			

F	Soil condition		Black cotton / Murram / Soft Rock
G	Safe bearing capacity		17.5 Mt/ sqmt at 3.0 mtr depth



SECTION II - INSTRUCTIONS TO BIDDERS

1. The details of work to be carried out and its scope are given in the specifications and Bill of Quantities in these documents, which also indicate a brief description of the project where work is to be executed. The tenderers are advised to study the same carefully before tendering and they shall be deemed to have fully acquainted themselves with the same.

2. The tenderers in their own interest, are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders in respect of the site conditions including but not restricting to the following which may influence or affect the work or cost thereof under the contract.
   a. Site conditions including access to the site, existing and required roads and other means of transport/communication for use by him in connection with the work.

   b. Requirement and availability of land and other facilities for his enabling works, stores and workshops etc.

   c. Ground conditions including those bearing upon transportation, disposal, handling and storage of material required for the work or obtained there form.

   d. Source and extend of availability of suitable materials including water etc. and labour (skilled and unskilled), required for work and Laws & Regulations governing their use and employment.

   e. Geological, meteorological, topographical and other general figures of the site and its surroundings as are pertaining to and needed for the performance of the work.

   f. The limit and extent of surface and sub surface water to be encountered during the performance of the work, the requirement of drainage and pumping.

   g. The type of equipment and facilities needed preliminary for and in the performance of the work, and for successful completion of work.

   h. All other information pertaining to and needed for the work including information as to the risks, contingencies and other circumstances which may influence or affect the work or the cost thereof under this contract.

3. The Tenderers should note the information, if any, regards to the site and local conditions, as contained in these tender documents has been given merely to assist the Tenderers and is not warranted to be complete.

4. The successful bidder will have to enter into a written Contract / Agreement with the Purchaser, the terms and conditions of which are enclosed herewith.

5. The tender should be signed in long hand, dated, duly stamped and witnessed at all places provided therein. Also all pages, drawings, corrections/alterations should be initialled/stamped.

6. Should have Valid Electrical Contractor's License for carrying out the work in Madhya Pradesh on the date of submission of technical bid of the Tender.

7. Information and Instructions for Bidders posted on website shall form part of bid document.

8. Bidder must be careful to deliver a bonafide tender. Any tender who proposes any alterations to any of the conditions lay down or which proposes any other conditions or any description whatsoever is liable to be rejected.

9. Intimation of tenders' quotation by a telegram/fax will not be considered.

10. Tenders must be accompanied by a certified true copy of the Power of Attorney in favour of the signatory to the tender which should inter alia empower him/her to bind the firm to Arbitration Clause given in the Articles of Agreement and Contract conditions.

11. In case a blank tender is being submitted, it should be marked prominently **'BLANK'** on the envelope and signed by the authorized person.

12. In view of postal and other delays, the tenders should be posted sufficiently in advance of the last date fixed for receipt of tenders or be sent by a special messenger. Tender received late shall be liable for rejection.

13. Prices shall be written in ink and shall be entered both in figures and words. In case of discrepancy the figure quoted in words shall be taken as accurate. In case of any discrepancy in the unit rate and amount, the unit rate shall be taken as accurate.

14. Prices quoted by the bidder shall be firm and valid even if the contract is split in two or more parts among different bidders.

15. Bidder has to check the design, bill of material, layout and confirm the same.

SECTION – III

GENERAL INSTRUCTIONS TO TENDERERS (GIT)
CONTENTS

A. PREAMBLE

1. Definitions and Abbreviations:

1.1 The following definitions and abbreviations, which have been used in these documents shall have the meanings as indicated below:

1.2 Definitions:

(i) "Purchaser" means the **Karnataka Antibiotics and pharmaceutical Ltd (KAPL)** and / or its representatives **M/s DOSHI PVT LTD (DCPL)** (DCPLs) purchasing goods and services as incorporated in the Tender Enquiry document.

(ii) "Tender" means Bids / Quotation / Tender received from a Firm / Tenderer / Bidder.

(iii) "Tenderer" means Bidder/ the Individual or Firm submitting Bids / Quotation / Tender

(iii) "Contractor" means the individual or the firm supplying the goods and services as incorporated in the contract.

(iv) "Goods" means the articles, material, commodities, livestock, furniture, fixtures, raw material, spares, instruments, machinery, equipment, medical equipment, industrial plant etc. which the Contractor is required to supply to the purchaser under the contract.

(v) "Services" means services allied and incidental to the supply of goods, such as transportation, installation, commissioning, provision of technical assistance, training, after sales service, maintenance service and other such obligations of the Contractor covered under the contract.

(vi) "Earnest Money Deposit" (EMD) means Bid Security/ monetary or financial guarantee to be furnished by a tenderer along with its tender.

(vii) "Contract" means the written agreement entered into between the purchaser and/or consignee and the Contractor, together with all the documents mentioned therein and including all attachments, annexure etc. therein.

(viii) "Performance Security" means monetary or financial guarantee to be furnished by the successful tenderer for due performance of the contract placed on it. Performance Security is also known as Security Deposit.

(ix) "Consignee" means the organization/person to whom the goods are required to be delivered as specified in the Contract. If the goods are required to be delivered to a person as an interim consignee for the purpose of despatch to another person as provided in the Contract, then that "another" person is the consignee, also known as ultimate consignee

(x) "Specification" means the document/standard that prescribes the requirement with which goods or service has to conform.

(xi) "Inspection" means activities such as measuring, examining, testing, gauging one or more characteristics of the product or service and comparing the same with the specified requirement to determine conformity.

(xii) "Day" means calendar day.

xiii) In the contract the following expression shall, unless the context otherwise requires, have the meanings hereby respectively assigned to them:-

a) The expression 'Works' or 'Work' shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to

means the works by or by virtue of the contract contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional.

ii) The 'Site' shall mean the land and/or other places on, into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.

iii) The 'Contractor' shall mean the individual, or firm or company, whether incorporated or not, undertaking the works and shall include the legal personnel representative of such individual or the persons composing such firm or company or the successors of such firm or company and the permitted assignees of such individual, or firm or company.

v) The 'Engineer-in-Charge' means Engineer officer who shall supervise and oversee the work

Abbreviations:

(i) "T E Document" means Tender Enquiry Document
(ii) "NIT" means Notice Inviting Tenders.
(iii) "GIT" means General Instructions to Tenderers
(iv) "SIT" means Special Instructions to Tenderers
(v) "GCC" means General Conditions of Contract
(vi) "SCC" means Special Conditions of Contract
(vii) "DGS&D" means Directorate General of Supplies and Disposals
(viii) "NSIC" means National Small Industries Corporation
(ix) "PSU" means Public Sector Undertaking
(x) "CPSU" means Central Public Sector Undertaking
(xi) "LSI" means Large Scale Industry
(xii) "SSI" means Small Scale Industry
(xiii) "LC" means Letter of Credit
(xiv) "DP" means Delivery Period
(xv) "BG" means Bank Guarantee
(xvi) "ED" means Excise Duty
(xvii) "CD" means Custom Duty
(xviii) "VAT" means Value Added Tax
(xix) "CENVAT" means Central Value Added Tax
(xx) "CST" means Central Sales Tax
(xxi) "RR" means Railway Receipt
(xxii) "BL" means Bill of Lading
(xxiii) "FOB" means Free on Board
(xxiv) "FCA" means Free Carrier
(xxv) "FOR" means Free on Rail
(xxvi) "FAS" means Free alongside Ship
(xxvii) "CIF" means Cost, Insurance and Freight
(xxviii) "CIP (Destinations)" means Carriage and Insurance Paid up to named port of destination. Additionally, the Insurance (local transportation and storage) would be extended and borne by the Contractor from warehouse to the consignee site for a period including 3 months beyond date of delivery.
(xxix) "DDP" means Delivery Duty Paid named place of destination (consignee site)

(xxx) "INCOTERMS" means International Commercial Terms as on the date of Tender Opening

(xxxi) "MOH&FW" means Ministry of Health & Family Welfare, Government of India.

(xxxi) "CMC" means Comprehensive maintenance Contract (labour, spare and preventive maintenance)

(xxxii) "RT" means Re-Tender.

2. Introduction

2.1 The Purchaser has issued these TE documents for purchase of goods and related services as mentioned in subsequent paragraphs which also indicates, inter alia, the required delivery schedule, terms and place of delivery.

2.2 This section GIT (Section II - “General Instruction to Tenderers”) provides the relevant information as well as instructions to assist the prospective tenderers in preparation and submission of tenders. It also includes the mode and procedure to be adopted by the purchaser for receipt and opening as well as scrutiny and evaluation of tenders and subsequent placement of contract.

2.3 The tenderers shall also read the Special Instructions to Tenderers (SIT) related to this purchase, as contained in Section III of these documents and follow the same accordingly. Whenever there is a conflict between the GIT and the SIT, the provisions contained in the SIT shall prevail over those in the GIT.

2.4 Before formulating the tender and submitting the same to the purchaser, the tenderer should read and examine all the terms, conditions, instructions, checklist etc. contained in the TE documents. Failure to provide and/or comply with the required information, instructions etc. incorporated in these TE documents may result in rejection of its tender.

3. Language of Tender

3.1 The tender submitted by the tenderer and all subsequent correspondence and documents relating to the tender exchanged between the tenderer and the purchaser, shall be written in the English language, unless otherwise specified in the Tender Enquiry. However, the language of any printed literature furnished by the tenderer in connection with its tender may be written in any other language provided the same is accompanied by an English translation and, for purposes of interpretation of the tender, the English translation shall prevail.

3.2 The tender submitted by the tenderer and all subsequent correspondence and documents relating to the tender exchanged between the tenderer and the purchaser, may also be written in the Hindi language, provided that the same are accompanied by English translation, in which case, for purpose of interpretation of the tender etc, the English translations shall prevail.

4. Eligible Tenderers

4.1 This invitation for tenders is open to all Contractors who fulfil the eligibility criteria specified against SECTION IX in this document.

5. Eligible Goods and Services

5.1 All goods and related services to be supplied under the contract shall have their origin in India or any other country with which India has not banned trade relations. The term “origin” used in this clause means the place where the goods are mined, grown, produced, or manufactured or from where the related services are arranged and supplied.

6. Tendering Expense and Tender fee

6.1 Tendering Expense: The tenderer shall bear all costs and expenditure incurred and/or to be incurred by it in connection with its tender including preparation, mailing and submission of its tender and for subsequent processing the same. The purchaser will, in no case be responsible or liable for any such cost, expenditure etc regardless of the conduct or outcome of the tendering process.

6.2 Tender fee: No tender fees applicable. Tender can be down loaded from CPP-portal (e- publishing module) / KAPL website(www.kaplindia.com)

B. TENDER ENQUIRY DOCUMENTS

7. Content of Tender Enquiry Documents

7.1 `In addition to Section I – "Notice inviting Tender" (NIT), the TE documents include:

Section I	:	Introduction
Section II	:	Instructions to Bidder
Section III	:	General Instructions To Tenderers (GIT)
Section IV	:	Special Instructions To Tenderers (SIT)
Section V	:	General Conditions of Contract (GCC)
Section VI	:	Special Conditions of Contract (SCC)
Section VII	:	Scope of Work
Section VIII	:	Technical Specification
Section IX	:	Qualification Criteria
Section X	:	Tender Form
Section XI	:	Price Schedule
Section XII	:	Questionnaire
Section XIII	:	Manufacturer's Authorisation Form
Section XIV	:	Bank Guarantee Form For Performance Security
Section XV	:	Contract Form
Section XVI	:	Proforma of Consignee Receipt Certificate
Section XVII	:	Proforma of Final Acceptance Certificate by the Consignee
Section XVIII	:	Check List
Section XIX	:	Consignee

Section XX		Integrity Agreement
Section XXI	:	Schedule of Fiscal Aspects

7.2 The relevant details of the required goods and services, the terms, conditions and procedure for tendering, tender evaluation, placement of contract, the applicable contract terms and, also, the standard formats to be used for this purpose are incorporated in the above-mentioned documents. Interested tenderers are expected to examine all such details etc. to proceed further.

8. Amendments to Tender Enquiry documents

8.1 At any time prior to the deadline for submission of tenders, the purchaser may, for any reason deemed fit by it, modify the TE documents by issuing suitable amendment(s) to it. Such an amendment will be notified by client on e-portal of KAPL

8.2 In order to provide reasonable time to the prospective tenderers to take necessary action in preparing their tenders as per the amendment, the purchaser may, at its discretion extend the deadline for the submission of tenders and other allied time frames, which are linked with that deadline.

9. Clarification of Tender Enquiry documents

9.1 A Tenderer requiring any clarification or elucidation on any issue of the TE documents may take up the same during the pre-bid meeting. The purchaser will respond to such request by publishing the response / clarification in the official mail.

C. PREPARATION OF TENDERS

10. Documents Comprising the Tender

10.1 The **Two Bid System**, i.e. “Technical Bid” and “Price Bid” prepared by the tenderer shall comprise the following:

a) <u>Technical bid (Un priced Bid)</u>

i. Earnest money furnished in accordance with GIT clause 17.1 alternatively, documentary evidence as per GIT clause 17.2 for claiming exemption from payment of earnest money.
ii. Tender Form as per Section X (Without mentioning the price)
iii. Documentary evidence, as necessary in terms of GIT clauses 4 and 15 establishing that the tenderer is eligible to submit the tender and, also, qualified to perform the contract if its tender is accepted.
iv. Tenderer / Agent who quotes for goods manufactured by other manufacturer shall furnish Manufacturer’s Authorisation Form.
v. Power of attorney in favour of the signatory of the tender document.
vi. Documents and relevant details to establish in accordance with GIT clause 17 that the goods and the allied services to be supplied by the tenderer conform to the requirement of the TE documents.

vii. Supporting documents as per section IX along with relevant copies of orders and end users' satisfaction/completion certificate.

viii. Certificate of country of origin by the bidder from abroad. (Chamber of commerce).

ix. Checklist as per Section XVIII

x. Data sheet and Layouts given as Annexure- I & II, duly filled up and signed and stamped

xi. Vendor should submit all other details like drawings, technical details and as required in tender and Datasheets. Vendor has to specify the make & model of all electrical item ,mention in schedule of quantity

The makes & models should match with those which the Contractor intends to supply for this tender

b) <u>Price Bid:</u>

The Tender form as per Section X & Price schedule as per section XI duly filled should be submitted with the price
s indicated.

10.2 Note to the Bidder(s)

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

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

10.3 The tender should be signed in long hand, dated, duly stamped and witnessed at all places provided therein. Also, all pages, drawings, corrections/alterations should be initialled/stamped.

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

10.5 Tender sent by fax/telex/cable/electronically shall be ignored.

11. Tender currencies

11.1 The tenderer supplying indigenous goods or already imported goods shall quote only in **Indian Rupees**.

11.2 Tenders, where prices are quoted in any other way shall be treated as non - responsive and rejected.

12. Tender Prices

12.1 The Tenderer shall indicate on the Price Schedule provided under Section XI all the specified components of prices shown therein including the unit prices and total

tender prices of the goods and services proposed to supply against the requirement. All the columns shown in the price schedule should be filled up as required. If any column does not apply to a tenderer, same should be clarified as "NA" by the tenderer.

12.2 The price of the schedule complete in all respect will be evaluated and the L1 party will be identified schedule wise.

12.3 While filling up the columns of the Price Schedule, the following aspects should be noted for compliance:

12.4 The prices quoted in the price schedule shall be inclusive of all applicable taxes & duties, insurance, Transportation, loading & unloading etc. The quoted price shall also be inclusive for the services to be provided to obtain the necessary statutory approvals required for this work. However, the client will reimburse the applicable government fees paid on behalf of client by the tenderer.

12.5 For insurance of goods to be supplied, relevant instructions as provided under GCC-Clause 11 shall be followed.

12.6 Unless otherwise specifically indicated in this TE document, the terms FCA, FOB, FAS, CIF, CIP, DDP etc. for imported goods offered from abroad, shall be governed by the rules & regulations prescribed in the current edition of INCOTERMS, published by the International Chamber of Commerce, Paris.

12.7 The need for indication of all such price components by the tenderers, as required in this clause (viz., GIT clause 12) is for the purpose of comparison of the tenders by the purchaser and will no way restrict the purchaser's right to award the contract on the selected tenderer on any of the terms offered.

13. Firm Price

Unless otherwise specified in the SIT, prices quoted by the tenderer shall remain firm and fixed during the currency of the contract and not subject to variation on any account.

14. Alternative Tenders

Alternative Tenders are not permitted.

15. Documents Establishing Tenderers Eligibility and Qualifications

15.1 Pursuant to GIT clause 10, the tenderer shall furnish, as part of its tender, relevant details and documents establishing its eligibility to quote and its qualifications to perform the contract if its tender is accepted.

15.2 The documentary evidence needed to establish the tenderer's qualifications shall fulfil the following requirements:

a) In case the tenderer offers to supply goods which are manufactured by some other firm where the tenderer has been duly authorised by the goods manufacturer to quote for and supply the goods to the purchaser, the tenderer shall submit the manufacturer's authorization letter to this effect as per the standard form provided under Section XIV in this document.

b) The tenderer has the required financial, technical and production capability necessary to perform the contract and, further, it meets the qualification criteria incorporated in the Section IX in these documents.

c) In case the tenderer is not doing business in India, it is duly represented by an agent stationed in India fully equipped and able to carry out the required contractual functions and duties of the Contractor including after sale service, maintenance & repair etc. of the goods in question, stocking of spare parts and fast-moving components and other obligations, if any, specified in the conditions of contract and/or technical specifications.

d) In case the tenderer is an Indian agent/authorized representative quoting on behalf of a foreign manufacturer for the **restricted item**, the Indian agent/authorized representative is already enlisted under the Compulsory Enlistment Scheme of Ministry of Finance, Govt. of India operated through Directorate General of Supplies & Disposals (DGS&D), New Delhi.

16. Documents establishing good's Conformity to Tender Enquiry document.

16.1 The tenderer shall provide in its tender the required as well as the relevant documents like technical data, literature, drawings etc. to establish that the goods and services offered in the tender fully conform to the goods and services specified by the purchaser in the TE documents. For this purpose, the tendered shall also provide a **clause-by-clause commentary on the technical specifications and other technical details incorporated by the purchaser in the TE documents to establish technical responsiveness of the goods and services offered in its tender**.

16.2 No deviations will be entertained towards this tender. In case there is any variation/ deviation between the goods & services prescribed by the purchaser and that offered by the tenderer, the tenderer shall list out the same and get it clarified during the pre-bid meeting.

16.3 If a tenderer furnishes wrong and/or misguiding data, statement(s) etc. about technical acceptability of the goods and services offered by it, its tender will be liable to be ignored and rejected in addition toother remedies available to the purchaser in this regard.

17. Earnest Money Deposit (EMD)

17.1 Pursuant to GIT clauses 7.1 and 10.1 the tenderer shall furnish along with its tender, earnest money for amount as shown in the NIT. The earnest money is required to protect the purchaser against the risk of the tenderer's unwarranted conduct as amplified under sub-clause 17.7 below.

17.2 The tenderers who are currently registered and, also, will continue to remain registered during the tender validity period with National Small Industries

Corporation, New Delhi for the specific goods as per tender enquiry specification shall be eligible for exemption from EMD. Vague stipulations in the Registration Certificate such as "to customers' specification" etc. will not be acceptable for exemption from furnishing of earnest money. In case the tenderer falls in these categories, it should furnish copy of its valid registration details (with NSIC). The EMD should be furnished in the name of **"Karnataka Antibiotics & Pharmaceuticals Ltd.".**

17.3 The earnest money shall be denominated in Indian Rupees or equivalent currencies as per GIT clause 11.2. The earnest money shall be in the form of **Bank Guarantee/demand draft in favour of Karnataka Antibiotics & Pharmaceuticals Ltd, payable at Bengaluru**

17.4 EMD in the form of bank guarantee/Demand draft is to be provided from any scheduled commercial bank in India as per the format specified.

17.5 The earnest money shall be valid for a period of forty-five (45) days beyond the validity period of the tender. As validity period of Tender as per Clause 19 of GIT is 120 days, the EMD shall be valid for 165 days from Technical Bid opening date.

17.6 The EMD of technically disqualified parties shall be returned without any interest after opening of price bids of technically qualified parties. The EMD of unsuccessful bidders in price bid will be returned to them without any interest, after expiry of the tender validity period, but not later than thirty days after conclusion of the resultant contract. Successful tenderer's earnest money will be returned without any interest, after receipt of performance security from that tenderer.

17.7 Earnest Money is required to protect the purchaser against the risk of the Tenderer's conduct, which would warrant the forfeiture of the EMD. Earnest money of a tenderer will be forfeited, if the tenderer withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender or if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged without prejudice to other rights of the purchaser. The successful tenderer's earnest money will be forfeited without prejudice to other rights of Purchaser if it fails to furnish the required performance security within the specified period.

17.8 In the case of Bank Guarantee furnished from banks outside India (i.e. foreign Banks), it should be authenticated and countersigned by any nationalised bank or scheduled bank, but not cooperative banks in India by way of back-to-back counter guarantee.

18. Tender Validity

18.1 If not mentioned otherwise in the SIT, the tenders shall remain valid for acceptance for a period of 120 days (One hundred and twenty days) from the date of tender opening prescribed in the TE document. Any tender valid for a shorter period shall be treated as unresponsive and rejected.

18.2 In exceptional cases, the tenderers may be requested by the purchaser to extend the validity of their tenders up to a specified period. Such request(s) and responses thereto shall be conveyed by surface mail. The tenderers, who agree to extend the tender validity, are to extend the same without any change or modification of their original tender and they are also to extend the validity period of the EMD accordingly. A tenderer, however, may not agree to extend its tender validity without forfeiting its EMD. In such case, the tender shall be treated as unresponsive and rejected.

18.3 In case the day up to which the tenders are to remain valid falls on/ subsequently declared a holiday or closed day for the purchaser, the tender validity shall automatically be extended up to the next working day.

19. Signing and Sealing of Tender

19.1 The tenderers shall submit their tenders as per the instructions contained in GIT Clause 10

19.2 The tender shall either be typed or written in indelible ink and the same shall be signed by the tenderer or by a person(s) who has been duly authorized to bind the tenderer to the contract. The letter of authorization shall be by a written power of attorney, which shall also be furnished along with the tender.

19.3 The tender shall be duly signed at the appropriate places as indicated in the TE documents and all other pages of the tender including printed literature, if any shall be initialled by the same person(s) signing the tender. The tender shall not contain any erasure or overwriting, except as necessary to correct any error made by the tenderer and, if there is any such correction; the same shall be initialled by the person(s) signing the tender.

19.4 The tenderer should seal the tender and write the address of the purchaser and the tender reference number on the envelope. The sentence “NOT TO BE OPENED before..... (*The tenderer is to put the date & time of tender opening)”* are to be written on these envelopes. The inner envelopes are then to be put in a bigger outer envelope, which will also be duly sealed, marked etc. as above. If the outer envelope is not sealed and marked properly as above, the purchaser will not assume any responsibility for its misplacement, premature opening, late opening etc.

19.5 The document seeks quotation following **two Bid System**, in two parts. First part will be known as **‘Technical Bid’**, and the second part **‘Price Bid’** as specified in clause 10 of GIT. Tenderer shall seal **‘Technical Bid’** and **‘Price Bid’** separately and covers will be suitably super scribed. Both these sealed covers shall be put in a bigger cover and sealed and procedure prescribed in Paras 20.1 to 20.3 followed.

D. SUBMISSION OF TENDERS

20. Submission of Tenders

20.1 Unless otherwise specified, the tenders are to be submitted to**, "Address of client to be mentioned"**.

20.2 The tenderers must ensure that they submit their tenders not later than the closing time and date specified for submission of tenders. It is the responsibility of the tenderer to ensure that their Tenders whether sent by post or by courier or by person, reaches the address mentioned in GIT 21.1 by the specified clearing date and time.

20.3 In the event the specified date for submission of tender falls on / is subsequently declared a holiday or closed day for the purchaser, the tenders will be received up to the appointed time on the next working day.

21. Late Tender

21.1 A tender, which is received after the specified date and time for receipt of tenders will be treated as "late" tender and will be ignored and not considered.

22. Alteration and Withdrawal of Tender

22.1 The tenderer, after submitting its tender, is permitted to alter / modify its tender so long as such alterations / modifications are received duly signed, sealed and marked like the original tender, within the deadline for submission of tenders. Alterations / modifications to tenders received after the prescribed deadline will not be considered. In case of alterations / modifications to tender, the latest alteration/modification will supersede information given in earlier tender.

22.2 No tender should be withdrawn after the deadline for submission of tender and before expiry of the tender validity period. If a tenderer withdraws the tender during this period, it will result in forfeiture of the earnest money furnished by the tenderer in its tender. In case of alterations / modifications to tender, the latest alteration/modification will supersede information given in earlier tender.

E. TENDER OPENING

23. Opening of Tenders

23.1 The purchaser will open the tenders at the specified date and time and at the specified place as indicated in the NIT.

In case the specified date of tender opening falls on / is subsequently declared a holiday or closed day for the purchaser, the tenders will be opened at the appointed time and place on the next working day.

23.2 Authorized representatives of the tenderers, who have submitted tenders on time may attend the tender opening provided they bring with them letters of authority from the corresponding tenderers.

The tender opening official(s) will prepare a list of the representatives attending the tender opening. The list will contain the representatives' names & signatures and corresponding tenderers' names and addresses.

23.3 Two - Tender system as mentioned in para 20.5 above will be as follows. The **Technical Bid** is to be opened in the first instance, at the prescribed time and date as indicated in NIT. These Tenders shall be scrutinized and evaluated by the competent committee/ authority with reference to parameters prescribed in the TE document. During the Technical Bid opening, the tender opening official(s) will read the salient features of the tenders like brief description of the goods offered, delivery period, Earnest Money Deposit, Tender Fee and any other special features of the tenders, as deemed fit by the tender opening official(s). Thereafter, in the second stage, the **Price Bid** of only the Technically qualified offers **(as decided in the first stage)** shall be opened for further scrutiny and evaluation on a date notified after the evaluation of the Technical Bid. The prices, special discount if any of the goods offered etc., as deemed fit by tender opening official(s) will be read out.

F. SCRUTINY AND EVALUATION OF TENDERS

24. Basic Principle

24.1 Tenders will be evaluated on the basis of the terms & conditions already incorporated in the TE document, based on which tenders have been received and the terms, conditions etc. mentioned by the tenderers in their tenders. No new condition will be brought in while scrutinizing and evaluating the tenders.

25. Preliminary Scrutiny of Tenders

25.1 The Purchaser will examine the Tenders to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed stamped and whether the Tenders are generally in order.

25.2 Prior to the detailed evaluation of Price Bid, pursuant to GIT Clause 30, the Purchaser will determine the substantial responsiveness of each Tender to the TE Document. For purposes of these clauses, a substantially responsive Tender is one, which conforms to all the terms and conditions of the TE Documents without material deviations. Deviations from, or objections or reservations to critical provisions such as those concerning, EMD (GIT Clause 17), will be deemed to be a material deviation. The Purchaser's determination of a Tender's responsiveness is to be based on the contents of the tender itself without recourse to extrinsic evidence.

25.3 If a Tender is not substantially responsive (non-Responsive), it will be rejected by the Purchaser and cannot subsequently be made responsive by the Tenderer by correction of the nonconformity.

25.4 The tenders will be scrutinized to determine whether they are complete and meet the essential and important requirements, conditions etc. as prescribed in the TE document. The tenders, which do not meet the basic requirements, are liable to be treated as non – responsive and will be summarily ignored. A non-responsive tender is one which deviates technically or commercially from any specific provision in the tender enquiry.

25.5 The following are some of the important aspects, for which a tender shall be declared **non – responsive** and will be summarily ignored:

(i) Tender form as per Section X (signed and stamped) not enclosed
(ii) Tender is unsigned.
(iii) Tender validity is shorter than the required period.
(iv) Required EMD (Amount, validity etc.) / exemption documents tender fee (amount) have not been provided.
(v) Tenderer has quoted for goods manufactured by other manufacturer(s) without the required Manufacturer's Authorisation Form as per Section XIII.
(vi) Tenderer has not agreed to give the required performance security.
(vii) Goods offered are not meeting the tender enquiry specification.
(viii) Tenderer has not agreed to other essential condition(s) specially incorporated in the tender enquiry like terms of payment, liquidated damages clause, warranty clause, dispute resolution mechanism applicable law.
(ix) Poor/ unsatisfactory past performance.
(x) Tenderers who stand deregistered/banned/blacklisted by any Govt. Authorities.
(xi) Tenderer is not eligible as per GIT Clauses 4.1 & 15.1.
(xii) Tenderer has not quoted for the entire quantity as specified in the List of Requirements in the quoted schedule.
(xiii) The signed Integrity Pact not enclosed by the Tenderer.
(xiv) Data sheet and layout given in Annexure-I & II, not duly filled, signed and stamped.

26. Minor Infirmity /Irregularity/Non-Conformity

26.1 If during the preliminary examination, the purchaser find any minor informality and/or irregularity and/or non-conformity in a tender, the purchaser may waive the same provided it does not constitute any material deviation and financial impact and, also, does not prejudice or affect the ranking order of the tenderers. Wherever necessary, the purchaser will convey its observation on such 'minor' issues to the tenderer, asking the tenderer to respond by a specified date. If the tenderer does not reply by the specified date or gives evasive reply without clarifying the point at issue in clear terms, that tender will be liable to be ignored.

27. Discrepancies in Prices

27.1 If, in the price structure quoted by a tenderer, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless the purchaser feels that the tenderer has made a mistake in placing the decimal point in the unit price, in which case the total price as quoted shall prevail over the unit price and the unit price corrected accordingly.

27.2 If there is an error in a total price, which has been worked out through addition and/or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected accordingly.

27.3 If there is a discrepancy between the amount expressed in words and figures, the amount in words shall prevail, subject to sub clause 27.1 and 27.2 above.

27.4 If, as per the judgement of the purchaser, there is any such arithmetical discrepancy in a tender, the same will be suitably conveyed to the tenderer by email/ registered / speed post. If the tenderer does not agree to the observation of the purchaser, the tender is liable to be ignored and rejected.

28. Qualification Criteria

Tenders of the tenderers, who do not meet the required Qualification Criteria prescribed in Section IX, will be treated as non - responsive and will not be considered further.

29. Schedule/ Package -wise Evaluation

29.1 In case the List of Requirements contains more than one schedule / Package, the responsive tenders will be evaluated and compared separately for each schedule/package. The tender for a schedule/ package will not be considered if the complete requirements prescribed in that schedule/ package are not included in the tender. However, as already mentioned in GIT sub clause 12.2, the tenderers have the option to quote for any one or more schedules/ package.

30. Comparison of Tenders

30.1 Unless mentioned otherwise in Section – IV – Special Instructions to Tenderers and Section – VI – List of Requirements, the comparison of the responsive tenders shall be carried out on total price on DDP basis at consignee's site and Total price at consignee's site whichever is applicable. The quoted turnkey (if any) prices will also be added for comparison/ranking purpose for evaluation.

31. Additional Factors and Parameters for Evaluation and Ranking of Responsive Tenders

31.1 The purchaser's evaluation of tender will also take into account the additional factors, if any, incorporated in SIT in the manner and to the extent indicated therein.

32.2 The Purchaser reserves the right to give the price preference to small-scale sectors etc. and purchase preference to central public sector undertakings as per the instruction in vogue while evaluating, comparing and ranking the responsive tenders.

32. Tenderer's capability to perform the contract

32.1 The purchaser, through the above process of tender scrutiny and tender evaluation will determine to its satisfaction whether the tenderer, who's tender has been determined as the lowest evaluated responsive tender is eligible, qualified and

capable in all respects to perform the contract satisfactorily. If, there is more than one schedule/ package in the List of Requirements, then, such determination will be made separately for each schedule/ package.

32.2 The above-mentioned determination will, inter alia, take into account the tenderers financial, technical and production capabilities for satisfying all the requirements of the purchaser as incorporated in the TE document. Such determination will be based upon scrutiny and examination of all relevant data and details submitted by the tenderer in its tender as well as such other allied information as deemed appropriate by the purchaser.

33. Contacting the Purchaser

33.1 From the time of submission of tender to the time of awarding the contract, if a tenderer needs to contact the purchaser for any reason relating to this tender enquiry and / or its tender, it should do so only in writing.

33.2 In case a tenderer attempts to influence the purchaser in the purchaser's decision on scrutiny, comparison & evaluation of tenders and awarding the contract, the tender of the tenderer shall be liable for rejection in addition to appropriate administrative actions being taken against that tenderer, as deemed fit by the purchaser.

G. AWARD OF CONTRACT

34. Purchaser's Right to accept any tender and to reject any or all tenders

34.1 The purchaser reserves the right to accept in part or in full any tender or reject any or more tender(s) without assigning any reason or to cancel the tendering process and reject all tenders at any time prior to award of contract, without incurring any liability, whatsoever to the affected tenderer or tenderers.

35. Award Criteria

35.1 Subject to GIT clause 34 above, the contract will be awarded to the lowest evaluated responsive tenderer decided by the purchaser in terms of GIT Clause 31.

36. Variation of Quantities at the Time of Award/ Currency of Contract

36.1 At the time of awarding the contract, the purchaser reserves the right to increase or decrease by up to twenty five (25) per cent, the quantity of goods and services mentioned in the schedule (s) in the "List of Requirements" (rounded off to next whole number) without any change in the unit price and other terms & conditions quoted by the tenderer.

36.2 If the quantity has not been increased at the time of the awarding the contract, the purchaser reserves the right to increase by up to twenty-five (25) per cent, the quantity of goods and services mentioned in the contract (rounded off to next whole number) without any change in the unit price and other terms & conditions

mentioned in the contract, during the currency of the contract after one year from the Date of Notification of Award.

37. Notification of Award

37.1 Before expiry of the tender validity period, the purchaser will notify the successful tenderer(s) in writing, by registered / speed post/ courier or by fax/telex/cable (to be confirmed by registered / speed post/courier) that its tender for goods & services, which have been selected by the purchaser, has been accepted, also briefly indicating therein the essential details like description, specification and quantity of the goods & services and corresponding prices accepted. The successful tenderer must furnish to the purchaser the required within thirty days from the date of dispatch of this notification, failing which the EMD will forfeited and the award will be cancelled.

37.2 The Notification of Award shall constitute the conclusion of the Contract.

38. Issue of Contract

38.1 Promptly after notification of award, the Purchaser/Consignee will mail the contract form (as per Section XV) duly completed and signed, in duplicate, to the successful tenderer by email/registered / speed post/courier.

38.2 Within twenty-one days from the date of the contract, the successful tenderer shall return the original copy of the contract, duly signed and dated, to the Purchaser by registered / speed post/courier.

38.3 The Purchaser- reserves the right to issue the Notification of Award consignee wise.

39. Non-receipt of Performance Security and Contract by the Purchaser/Consignee

39.1 Failure of the successful tenderer in providing performance security and / or returning contract copy duly signed in terms of GIT clauses 34 ,35 & 38 above shall make the tenderer liable for forfeiture of its EMD and, also, for further actions by the Purchaser/Consignee against it

40. Return of E M D

40.1 The earnest money of the successful tenderer and the unsuccessful tenderers will be returned to them without any interest, whatsoever, in terms of GIT Clause 17.6

41. Publication of Tender Result

41.1 The name and address of the successful tenderer(s) receiving the contract(s) will be mentioned in the notice board/bulletin/web site of the purchaser.

42. Corrupt or Fraudulent Practices

42.1 It is required by all concerned namely the Consignee/Tenderers/Contractors etc to observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Purchaser: -

(a) defines, for the purposes of this provision, the terms set forth below as follows:
   (i) "Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and
   (ii) "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition;

(b) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(c) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract by the purchaser if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing the contract.

43. Integrity Pact (IP)

The Integrity Pact (IP) will be one of the conditions in this tender enquiry. It will be considered to be a material deviation resulting into ignoring and rejecting the tender if the tenderers do not agree to accept it. The detailed terms of the IP are given below:

The Public Authority commits that:

- No official will demand or accept any illicit gratification to give any of the parties an advantage at any stage of the project.
- All necessary and appropriate technical, legal and administrative information related to the contract will be made public
- None of the officials will make available confidential information to a bidder/Contractor to give unfair advantage in the contract
- Declaration by all concerned officials any conflict of interest and disclosure of own and family assets
- Officials will report to appropriate government authority about any breach/attempt to breach a commitment.

The Bidder commits that:

- they will not offer any illicit gratification to obtain unfair advantage
- they will not collude with other parties to impair transparency and fairness
- they will not accept any advantage in exchange for unprofessional behaviour
- will disclose all payments made to agents and intermediaries

- it will demonstrate existence of organization-wide code of conduct forbidding unethical practices

Penalties:

For failure to implement IP, officials will be subject to penal action and bidders will face cancellation of contract, forfeiture of bond, liquidated damages and blacklisting. Action will not require criminal conviction but be based on “no-contest” after the evidence is made available or there can be no material doubts. Disputes in IP implementation would be resolved by arbitration detailed in IP.

Integrity Pact has to be signed and submitted by the Tenderer along with the filled up Tenders, failing which the Tender is liable to be rejected. Integrity Pact is enclosed in Section-XX

44. Paying Authority:

44.1 The payment for the supply’s installation, commissioning and validation and any other payment mentioned in the tender enquiry will be made by “**KARNATAKA ANTIBIOTICS AND PHARMACEUTICALS LTD.”**.

SECTION - IV

SPECIAL INSTRUCTIONS TO TENDERERS (SIT)

Sl. No.	GIT Clause No.	Topic	SIT Provision
A	1 to 6	Preamble	No Change
B	7 to 9	TE documents	No Change
C	10 to 20	Preparation of Tenders	No Change
D	21 to 23	Submission of Tenders	No Change
E	24	Tender Opening	No Change
F	25 to 33, 35,36	Scrutiny and Evaluation of Tenders	Change
G	37 to 47	Award of Contract	No Change

In case of any conflict between the provision in the GIT and that in the SIT, the provision contained in the SIT shall prevail.

32.1 The Tenderer has to mandatorily quote for all the equipment's, items as per the Price Schedule (in Section XI) failing which the Tender shall be disqualified and rejected.

SECTION – V
GENERAL CONDITIONS OF CONTRACT (GCC)

1.0 DEFINITION

In this Contract, the following words and expressions shall have the meanings as stated below:

1.1 **`KAPL'**, shall mean **KARNATAKA ANTIBIOTICS & PHARMACEUTICALS LTD. Bangalore** and shall include their successors and assigns, as well as their authorized representatives.

1.2 **`DCPL'**, shall mean **DOSHI CONSULTANT PVT. LIMITED, (DCPL)** and shall include their authorized representatives of the Engineering DCPLs appointed by the KAPL for the project.

1.3 **`ENGINEER-IN-CHARGE'**, shall mean the engineer appointed by the KAPL to Supervise all activities of the project.

1.4 **`TENDERER',** shall mean the construction company/agency who quotes against the tender enquiry for undertaking the work.

1.5 **`CONTRACTOR',** shall mean the successful bidder whose tender has been accepted by the KAPL and to whom the order is placed by the KAPL and shall include his heirs, legal representatives, successors etc.

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

1.7 **SITE'** shall mean the actual place i.e. KARNATAKA ANTIBIOTICS & PHARMACEUTICALS LTD, PLOT NO 103, 104, 110 TO 116, VIKRAM UDYOGPURI LIMITED - UJJAIN where the project is to be executed.

1.8 **`PROJECT',** shall mean entire work specified in the contract documents inclusive of extra items/ extra quantities (if any) executed during the contract period.

1.9 **`ACCEPTANCE LETTER',** shall mean written consent by a letter of KAPL to the tenderer intimating him that his tender has been accepted.

1.10 **`CONTRACT',** shall mean the articles of Contract Agreement, the conditions of contract,

schedule of quantities, specifications, drawings attached and duly signed by the KAPL and the Contractor.

1.11 **`DATE OF CONTRACT'**, shall mean the date on which the contractor has issued acceptance letter of LOI.

1.12 **`CONTRACT PERIOD'**, shall mean the period (including rainy season) specified in the tender documents during which the contract shall be executed.

1.13 **`COMPLETION CERTIFICATE'**, shall mean the certificate issued by the KAPL to the contractor after successful completion of the project. This certificate will be issued on the basis of DCPL's certificate to KAPL about the completion of the job.

1.14 **'EXTRA ITEMS'**, are those items, which are not appearing in the B.O.Q. but are required to be executed during the project period and for which rates are to be derived as per the CPWD 2020-21, SOR.

1.15 **"PRECEDENCE OF CONTRACT"** The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.

1.15.1 In the case of discrepancy between the schedule of Quantities, the Specifications and/ or the Drawings, the following order of preference shall be observed:-

- Description of Schedule of Quantities.
- Particular Specification and Special Condition, if any.
- Drawings.
- Specifications.
- Indian Standard Specifications of B.I.S.

If there are varying or conflicting provisions made in any one document forming part of the contract, the Engineer In charge shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.

2.0 PROJECT INFORMATION

2.1 GENERAL:

The detailed information of the project given below is as per our present requirement. However, it is not binding on the KAPL in any way and shall not govern the scope of works.

2.2 LOCATION OF SITE

The project site is located at **KARNATAKA ANTIBIOTICS & PHARMACEUTICALS LTD., VUL, UJJAIN, Madhya Pradesh.**

2.3 SITE FACILITIES

Land for offices, go-downs, stores, fabrication areas, temporary toilet, Water point and electric point etc. shall be decided at the site. The Contractor shall construct all temporary buildings /sheds /hutments required for office, site office, and labor accommodation near site at his own cost and provide adequate water-supply and sanitary arrangements. Also, the temporary structures and site should be well maintained and kept clean by the contractor throughout the project execution.

After the completion of the project, the contractor shall remove all the temporary structures constructed by him and clear the site as per the instructions of the DCPL/ KAPL. In case, if the contractor fails to do so, the KAPL has the right to remove the temporary structures and clear the site. The expenses incurred shall be recovered from the contractor from the payments due to him. KAPL may retain if required at mutually agreed price.

The contractor has to remove all left over, excess, scrap material from the site and restore the site to fully clean condition as and when required. In case he fails to do so, the KAPL reserve the right to remove such materials from the site and expenses incurred in this case shall be deducted from the payments due to the contractor. However, no claim for any loss of material in this case shall be acceptable.

3.0 COMMITMENT OF CONTRACTOR

3.1 INTERPRETATION OF CONTRACT DOCUMENTS:

All the documents forming part of the contract are to be taken as mutually explanatory, supplementary and complementary to each other. If there is any error, omission or discrepancy in any of them, it shall be brought to the notice of the KAPL / DCPL. The decision of the KAPL/DCPL shall be final and binding. The contractor shall execute the work accordingly.

The contractor shall examine all the contract documents thoroughly including the scope, nature and magnitude of works he has to execute in accordance with the contract documents and prevailing rules and regulation of MP electrical city board

The contractor shall visit the project site so as to study the site conditions, means of access to the site and other factors governing the work

There may be change in layout of site as per technical requirements and the tenderer shall not be entitled for any claim due to such changes.

3.2 DELAY IN WORK EXECUTION DUE TO REASONS BEYOND CONTRACTOR CONTROL:

FORCE MAJEURE:

If the work(s) be delayed by:-

- force majeure, or
- abnormally bad weather, or
- serious loss or damage by fire, or
- civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
- delay on the part of other contractors or tradesmen engaged by Engineer-in-
  Charge in executing work not forming part of the Contract, or
- Any other cause like above which, in the reasoned opinion of

the Engineer-in- Charge is beyond the Contractor's control.

The contractor shall have no claim of damages for extension of time granted or rescheduling of milestone/s for events listed

If the execution of work is delayed due to force majeure, then KAPL/DCPL as per the affected period may extend the time period.

❖ **Delay by KAPL/DCPL:**

In case work is delayed due to any decision by KAPL/DCPL holding the progress of work, the contractor then upon any such happening causing delay shall immediately but not later than 10 days, give notice thereof in writing to the KAPL/ DCPL, but nevertheless use constantly his best effort to prevent or make good delay. The DCPL / KAPL may in his discretion grant such extension of time as may appear reasonable to him and the same shall be communicated to the contractor in writing and shall be final and binding on him and the contractor shall be bound to complete the work within such extended time.

3.3 TIME SCHEDULE:

The time allowed for execution of the Works as specified in the contractor the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the work shall commence from such time period as mentioned in contract or from the date of handing over of the site, notified by the Engineer-in-Charge, whichever is later.If the Contractor commits default in commencing the execution of the work as aforesaid, the performance guarantee shall be forfeited by the KAPL and shall be absolutely at the disposal of the KAPL without prejudice to any other right or remedy available in law.

- As soon as possible but within 7(seven) working days of award of work and in consideration of
- Schedule of handing over of site as specified
- Schedule of issue of designs as specified,

❖ The Contractor shall submit a Time and Progress Chart for each milestone. The Engineer-in-Charge may within 7 (seven) working days thereafter, if required modify, and communicate the program approved to the contractor failing which the program submitted by the contractor shall be deemed to

be approved by the Engineer-in-Charge. The work programmed shall include all details of balance drawings and decisions required to complete the contract with specific dates by which these details are required by contractor without causing any delay in execution of the work. The Chart shall be prepared indirect relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may beam ended as necessary by agreement between the Engineer-in Charge and the Contractor within the limitations of time imposed in the Contract documents

- In case of non-submission of construction programmed by the contractor, the program approved by the Engineer-in-Charge shall be deemed to be final.
- The approval by the Engineer-in-Charge of such programmed shall not relieve the contractor of any of the obligations under the contract.
- The contractor shall submit the Time and Progress Chart and progress report using the MS Project or in other format decided by Engineer-in-Charge for the work done during previous month to the Engineer-in-charge on or before 5th day of each month.

3.4 COMPENSATION FOR DELAY:

Time is the essence of the contract. If the contractor fails to complete the work and clear the site on or before the dates fixed for completion, he shall without prejudice be liable to pay liquidation damage (LD) i.e. 0.5 percent of the contract value for every week that the whole or the part of work remains incomplete. For the purpose of this condition, the contract value shall be total value of quantities of items in the contract at contract rates plus algebraic sum of the subsequent work ordered. However, if the total amount of LD exceeds 5%, the contractor shall be liable for termination of contract.

3.5 DEFAULT OF CONTRACTOR:

If the contractor fails to maintain progress and quality of work proportionate to time period allotted for the work in spite of notices or complete the work withinthe stipulated time period or extended time period, then the DCPL/KAPL shall have the right:

To determine the contract: ,In this event, the contract shall be terminated by giving written notice to the contractor and the unfinished works shall be got completed by labors engaged by the KAPL or through other agency at the cost of the contractor.

Without determining the contract:, In this event, the remaining works shall be got executed through a fresh contractor in which case the contractor shall not have any objection or claim on this account.

Before determining the contract:, In this event, if the KAPL finds that the defaults of the contractor can be rectified, then an opportunity shall be given to the same contractor to rectify the defects /defaults in the specified time.

Termination of contract for death: 'If the contractor is an individual of a proprietary firm and proprietor of the firm dies and if the contractor is an Attorney of partnership firm and dies, then the KAPL has the right to terminate the contract unless and until the KAPL is satisfied that the surviving partners are capable of executing and completing the remaining contract. In case of termination of contract, the legal representatives of the deceased contractor are not entitled for any compensation or claim. Also, the KAPL shall not levy any penalty against the damage caused by incomplete work

Termination of Contractor in part or in full for contractors default, If the contractor fails to execute the work in the manner described in the contract documents or if he at any time, in the opinion of the KAPL :

- Fails to carry out the works in accordance with the contract conditions or as per the specifications mentioned in the documents.
- Stops the execution of works without giving prior information to the KAPL.

- Fails to carry out the works to the satisfaction of the KAPL / DCPL both with respect to qualities and time schedule.
- Fails to supply sufficient or suitable construction plant, materials and labors etc.
- Commits breach of any of the provisions of the contract.
- Abandons the work.
- Becomes bankrupt during the continuance of the work. Whenever the employer shall exercise his authority to cancel the contract under the above condition, the employer shall be at liberty to hold and retain in their hands materials, tackles, machinery and stores of all kinds on site as they may think proper and may at any time sell any of the materials, tackle, machinery and stores and apply the proceeds of sale in or towards the satisfaction of any loss which may arise from the cancellation of contract as aforesaid. The employer shall also be at liberty to use materials, tackle, machinery and other stores on the site of contractor as they think proper in completing the work and the contractor will be allowed the necessary credit. The value of materials and stores and amount of credit to be allowed for tackle and machinery belonging to contractor and used by employer in completing the work shall be assessed by the DCPL and amount assessed shall be final and binding on the contractor. In case employer completes or decides to complete the work under the provisions of this condition, the cost of completion to be taken into account in determining the excess cost to be charged to the contractor under the condition shall consist of the cost of materials purchased or required to be purchased, labor provided or required to be provided.
- Notice period for the termination shall be two week, The contractor shall be demobilized site with all the resources within the given termination time, If contractor failed to do so KAPL shall remove all material/machinery from own cost same shall be deducted from contractor bill.

3.6 VARIATION IN SCOPE OF WORKS:

3.6.1 VARIATION IN QUANTITY:

The DCPL/KAPL has the right to increase or decrease the quantity of work up to **10% of the total value of contract** or delete/add certain items of work. However such changes shall not entitle the contractor for any compensation, claim regarding the change in scope of work.

3.6.2 **VARIATION IN DRAWINGS AND SPECIFICATIONS:**

The variation in scope may be by way of
changes indrawings regarding dimensions but specification remaining the same. In such a case the contractor shall not be entitled for any claim due to change.
In case of change of specification the difference of amount (on either plus or minus side) shall be established on basis of CPWD SOR 2021 by KAPL in consultation with DCPL and the same shall be acceptable to the contractor.

3.6.3 **EXTRA ITEMS & PRICING:**

In the case of extra item(s) (items that are completely new, and are in addition to the items contained in the contract), the contractor may within fifteen days of receipt of order or occurrence of the item(s) submit market rate claim rates, supported by proper analysis which shall include invoices, vouchers etc. and Manufacturer's specification for the work failing which the rate approved later by the Engineer- in- charge shall be binding and the Engineer-in-Charge shall within prescribed time limit of the receipt of the claims supported by analysis , after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined, failing which it will be deemed to have been approved.

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

- If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market

rates of substituted item and the agreement item (to be substituted).

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

3.6.4 STAFF AND WORKERS:

The contractor shall depute qualified engineers for execution of the project. The technical staff employed by the contractor shall be responsible for the quality and workmanship of the work as per the satisfaction of the DCPL/KAPL. The instructions given by the DCPL or his authorized representative should be followed by the contractor's supervisory staff. If any of the contractor's staff members is incapable or in-experienced, in the opinion of the DCPL/KAPL, then he should be removed immediately and the contractor should do suitable substitution. Technical staff employed should be degree holder 10-15 years' experience from a government recognized institution or equivalent with at least 15-20 years practical experience of work in addition to Diploma holder and other experienced supervisory staff.

If the workers or the supervising staff of the contractor are involved in riotous or illegal activities to such an extent that it becomes necessary to hand over the matter to the police then the contractor would be solely responsible for the case and all the expenses incurred in the legal proceedings shall be borne by the contractor.

3.6.5 SUBLETTING OF CONTRACT:

No subletting of contract is permitted. If the contractor is found subletting part or whole of the contract, the contractor shall be liable for termination.

3.6.6 CO-OPERATION WITH OTHER AGENCIES AT SITE:

The contractor or his authorized representatives must work in close co-operation with the agencies executing other works forming the part of the project and also with the representatives of the DCPL/ KAPL for the execution of works which are not included in the contract. Contractor shall permit free access and generally afford reasonable facilities to other agencies or departmental workmen etc.

The contractor's quote shall be deemed to cater for all the above contingencies and nothing extra shall be admissible on this account.

Contractor should keep his working site clean and the materials brought for work shall be kept in a properly stacked / stored way. The work site should be swept at the end of each working day after removal of debris / left over materials. The contractor has to take full care so as not to spoil or damage other contractor's/ KAPLs job / material.

3.6.7 **SAFETY OF ADJOINING PROPERTIES:**

The contractor or his authorized representatives should conduct all the operations necessary for the execution of works in such a manner that no inconvenience / damage are caused to the properties of other persons & KAPL.

3.7 `ARBITRATION ACT:

3.7.1 All disputes regarding the specifications, designs, drawing instructions and quality of work or quality of materials used for the work or any other matter relating to the work shall be referred to the sole arbitration to be appointed by KAPL.

3.7.2 The party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this together with the amount or amounts claimed in respect of each such dispute

3.7.3 The arbitrator may from time to time with consent of the parties extend the time, for making and publishing the award.

3.7.4 If possible, the work under the contract shall be continued during the arbitration proceedings and no payment due or payable to the contractor shall be withheld on

account of such proceedings.

3.7.5 The Arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties fixing the date of the first hearing. The arbitrator shall give a separate award in respect of each dispute of difference referred to him.

3.7.6 **The venue of arbitration shall be Bengaluru office of Karnataka Antibiotic & Pharmaceuticals Ltd.**

3.7.7 The award of the Arbitrator shall be final, conclusive and binding on all parties relating to this contract.

3.7.8 The cost of arbitration shall be as decided by arbitrator.

3.8 ESCALATION:

No escalation of items or labors allowed.

3.9 INSURANCE:

The contractor shall at his own expense carry and maintain insurance with reputed insurance companies to the satisfaction of the KAPL asunder:

3.9.1 **CONTRACTOR ALL RISK IINSURANCE POLICY:**

The contractor shall take full responsibility for loss, damage and care of plant and works until it is delivered to site, constructed, erected, commissioned and taken over by KAPL. Without limiting such responsibility, the contractor shall in the interest of the work insure the plant and work for their full value plus ten percent until they have been taken over. Such insurance shall cover the equipment's and works against loss, damage or destruction by fire, earthquake, theft or any other cause, throughout the duration of the contract period or extended contract period.

3.9.2 **INSURANCE OF EMPLOYEES:**

The contractor shall accept full and exclusive liability for the compliance of all obligations and responsibilities imposed by the Employees State Insurance Act, 1948 and any liability or penalty which may be imposed by the Central, State or

Local Authorities due to the reason of violation by the contractor or sub-contractor of the Employees State Insurance Act, 1948. The contractor shall agree to fulfill the requirement of the Employees State Insurance Corporation and maintain the declaration forms and all such forms, which may be, required in respect of the contractor's, sub-contractor's employees who are employed in the work provided for or those covered by E.S.I.C. from time to time under the agreement.

The KAPL shall retain such sum as may be necessary from the total contract value until the contractor shall furnish satisfactory proof that all contributions as required by the Employees State Insurance Act, 1948 have been paid by him.

3.9.3 **WORKMEN'S COMPENSATION :**

Insurance shall be affected for all the contractor's employees engaged for this contract. The contractor shall also carry and maintain all other insurance which may be required under any law or regulations from time to time. He should also carry and maintain any other insurance, which may be required by the KAPL.

3.9.4 **TRANSIT INSURANCE:**

The cost of transit insurance relating to the items to be transported by the contractor to the site of work shall be borne by the contractor and the quoted price shall be inclusive of this cost.

3.9.5 **LOSS OR DAMAGE AND INDEMNITY AGREEMENT:**

The contractor shall be responsible during the progress of work as well as maintenance period for any liability imposed by law for any damage to work or any part thereof or to any of the material or other things including those of KAPL used in performing the work or for injury to any person or persons or for any property damaged in or outside the site. The contractor shall indemnify and hold the KAPL and the Engineer harmless against all liabilities, claims, loss or injury, including costs, expenses and attorney's fees incurred in the defense of same, arising from any allegation whether groundless or not, of damage or injury to any person or property resulting from the performance of the work or from any

material used in the work or from any condition of the work or work site or from any cause whatsoever during the progress and maintenance of the work.

3.9.6 **THIRD PARTY INSURANCE**:

Before commencing the execution of the works the Contractor, but without limiting his obligations and responsibilities, shall insure against his liability for any material or physical damage, loss or injury which may occur to any property, including that of the KAPL, or to any person, including any representative of the KAPL, by or arising out of the execution of works or in the work being carried out by the KAPL, by or arising out of the provision hereof. Such insurance shall be affected with an insurer and in terms approved by the KAPL and for at least the amount stated in the Appendix of the Tender.

Note: The contractor's payment shall be clear only after his compliance of all insurance formalities as given above. He shall have to deposit the photocopies of the various policies including Contractor's All Risk Policy and payment receipts with the KAPL's site engineer for this purpose.

3.10 EXECUTION OF WORK

3.10.1 **GENERAL:**

All the works shall be executed in accordance with the detailed drawings, specifications and instructions given by the DCPL or mentioned in the contract document.

3.10.2 **DRAWINGS:**

The drawings give in the tender document are as per our present requirement and are meant for the purpose of giving idea of the type and quantum of work to be executed.

Contractor has to prepare the shop drawing based on tender drawing and detail provided by KAPL / DCPL

All working drawings shall be marked "Released for Execution" and duly approved by the DCPL. All the old drawings shall be discarded and marked with "Superseded by Drawing No.....

If during the execution of the work, any discrepancy occurs in the drawings or between the drawings and specification then the same should be clarified from the DCPL prior to the execution of work. The decision given by the DCPL/KAPL would be final.

After completion work the contractor has to submit the as built drawing which dully certified by DCPL /KAPL

3.10.3 **INSPECTION OF WORKS:**

- The KAPL / DCPL shall have the full authority to inspect the works at any time, at any stage. The contractor shall provide adequate facilities to carry the inspection work. The contractor should present himself or his authorized representative during the inspection so that the DCPL can convey the instruction regarding the works.
- The contractor shall give information to the DCPL before covering up the works so that the same can be inspected and measured jointly & correctly to true dimensions.
- If the contractor fails to get the work inspected before covering it up, then the KAPL/DCPL has full authority to get the work uncovered at the expense of the contractor and if any fault is found then the contractor should rectify the same without claiming any extra payment.

3.10.4 **INADEQUATE/SUBSTANDARD WORKS AND MATERIALS:**

- If any material brought by the contractor is found unsuitable or of sub-standard quality after testing, then the contractor shall remove those faulty materials immediately from the site as per the instructions of the DCPL.
- If any work executed by the contractor is found to be of bad workmanship or not as per the drawings, then the same is to be dismantled and re-executed by the contractor without claiming any extra payment or extension in time period.

3.10.5 **DEFAULT OF CONTRACTOR IN COMPLIANCE :**

If the contractor or his authorized representative fails to follow the instructions given by the DCPL/ KAPL regarding any of the works, then the same shall be got executed by other persons employed by the KAPL and the expenses incurred shall be borne by the contractor.

3.10.6 **DISCREPANCIES BETWEEN INSTRUCTIONS:**

If any discrepancy occurs between the various instructions conveyed to contractor or his authorized representative or if any misunderstanding arises between the contractor's staff and KAPL's staff, the contractor shall report the matter immediately to the DCPL/ KAPL. The decisions of KAPL shall be final and binding. Moreover, no claims for losses due to discrepancies between instructions, doubts or misunderstandings shall be admissible.

3.10.7 **CHANGE IN SPECIFICATIONS AND VALUATION OF EXTRA & DEVIATED ITEMS:**

If there is any variation in specification for any change in make of item, then it has got to be approved from the KAPL/DCPL prior to installation or execution and the financial effect, plus or minus, or impact shall be incorporated accordingly by the KAPL/DCPL. If any of the items to be executed is not included in the schedule of quantities, then the Contractor shall submit the rate analysis of the item specifying the actual landed cost on basis of prevailing rates of material, labor, incidental charges and allowing as per CPWD SOR 2021 norms. The contractor shall submit all necessary supporting in original to the DCPL.

The rates of such items shall be recommended by the DCPL, approved by the KAPL and shall be binding on the contractor. No escalation shall be considered till completion of the project.

3.10.8 **WORK NOT SPECIFIED IN THE SPECIFICATION :**

In the case of any class of work for which there is no such specifications as referred to in Clause 3.10.7, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications. In case there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per

manufacturers' specifications, if not available then as per state/ District Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

3.10.9 **TESTING:**

The Contractor shall agree for testing works as mentioned in the specifications of various items of works involved in the project.

- If the various tests prescribed in the specifications at specified intervals for ascertaining the quality of the work done prove unsatisfactory, the DCPL/KAPL shall have the authority to instruct the Contractor to re-execute the work done or make alterations as per the orders of the KAPL/DCPL.

- The Contractor shall furnish to the KAPL/DCPL, for approval adequate samples of all materials to be used in the works free of cost. Such samples shall be submitted before the work is commenced, giving ample time to permit the tests. All materials furnished in actual works shall be of the same quality of that of approved samples.

- The testing of various materials to be used in works shall be tested in NABL approved laboratories as directed by the KAPL/DCPL and the expenses incurred shall be borne by the Contractor.

3.10.10 **PROGRESS REPORT:**

During execution of the contract, the contractor shall furnish daily progress report (DPR) to the DCPL and in the format as specified by the DCPL. MPR Monthly progress report indicating the progress achieved during the months and the total progress up to the date as against **scheduled** and anticipated completion dates in respect of key phases of the work. The contractor shall also furnish any other information in order to ascertain progress, if called for by the DCPL. The contractor shall submit every month photographs of the work executed at site to highlight the progress of work.

3.10.11 **LIABILITIES FOR DEFECTS AND RECTIFICATIONS:**

If it shall appear to the KAPL/DCPL that any work has been executed with imperfect or unskilled workman or with materials of any inferior description, or of quality inferior to that contracted for, or otherwise not in accordance with the contract, the Contractor shall on demand in writing from the KAPL/DCPL or his representative specifying the work, materials or articles complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify or remove and reconstruct that work so specified and provide other proper and suitable materials or articles at his own charges and cost, and in the event of failure to do so within a period to be specified by the KAPL/DCPL or his demand aforesaid, the KAPL/DCPL may on expiry of notice period rectify or remove, re-execute the work at the risk of Contractor and the cost shall be recovered from the Contractor. The decision of the KAPL/DCPL as to any question arising under this clause shall be final and conclusive.

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

Any sum of money due and payable to the contractor (including the security deposit returnable to him) under the contract may be withheld or retained by way of lien by the Engineer-in- Charge or the KAPL or any other contracting person or persons through Engineer-in- Charge against any claim of the Engineer-in-Charge or KAPL or such other person or persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Engineer-in-Charge or the KAPL or with such other person or persons. It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Engineer-in-Charge or the KAPL will be kept withheld or retained as such by the Engineer-in-Charge or the KAPL or till his claim arising out of the same contract or any other contract is either mutually settled or determined by the arbitration clause or by the competent court, as the case may be and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

3.10.12 **PERIOD OF LIABILITY:**

The liability period of the work shall be 12 months from the date of issue of provisional completion certificate of the work as certified by the KAPL and this date will be the date on which the final installment of the payment is made to the contractor against the final bills of amount. If any damage or defect occurs in the work during this period then the contractor shall rectify the damage or defect at his own expense to the satisfaction of the DCPL/KAPL. If the contractor fails to do so, then the KAPL shall have the authority to get the work done by other means and the expenditure incurred shall be recovered from the contractor.

3.10.13 **SUSPENSION OF WORK:**

The contractor shall suspend the progress of work, on receipt of the written order from the KAPL / DCPL for any of the following reasons:

- On account of any default on the part of the contractor. In this case the contractor shall not be entitled for the any extension of time, nor have any claim for payment of compensation if allowed for re-execution of faulty works.

- For execution of the works for reasons other than the default of the contractor. In this case the contractor shall be entitled for the any extension of time, but shall not have any claim for payment of compensation.

- For safety of the works. In this case the contractor shall not be entitled for the any extension of time, nor have any claim for payment of compensation.

IN CASE OF SUSPENSION OF WORK:

- The contractor shall during such suspension, properly protect and secure the works and carry out the instructions of the DCPL.

- If the suspension is ordered for the reasons as stated in above clause 10.4.13 (ii), the contractor shall be entitled for extension of time equal to the period of every such suspension but no compensation for damages etc. shall be admissible on account of suspension of work.

3.10.14 **POSSESSION PRIOR TO COMPLETION:**

The KAPL/DCPL shall have authority to take possession of any completed or partially completed works. Such possession shall not be deemed to be acceptance of any work completed in accordance with the contract. If such prior possession delays the progress of works then the adjustment in the time of completion shall be done accordingly. The decision of the DCPL regarding the extent of delay shall be final and binding.

3.10.15 **CARE OF WORKS:**

From the commencement to the completion of works, the contractor shall take full responsibility for the care of all works including all temporary works and in case any damage or loss occurs then the contractor shall at his own cost repair and make good the same so that on completion of the work, the same shall be in good order in every respect in accordance with the contract and to the satisfaction of the DCPL/KAPL.

3.11 CERTIFICATE AND PAYMENT

3.11.1 **SCHEDULE OF RATES:**

- The payments to be made to the contractor for various items of works shall be as per the finalized rates in tender document and the rates of extra items finalized from time to time.
- The rates finalized in the tender document shall remain firm till the completion of the work including extension of time, if any.
- **After the completion of work, the contractor will have to submit the clearance certificate for all statutory payments etc.**
- Contractor shall submit the basic rates of material to be used in the construction.
- The contractor shall provide all Material reconciliations as deemed by the engineer in charge.

3.11.2 **MEASUREMENT:**

Joint measurements of the various items of the work shall be taken by the contractor's authorized representative in presence of the KAPL's and DCPL's authorized representative from time to time for maintaining the records and preparing the bills. If the contractor fails to send his representative then the measurements taken by the KAPL's and DCPL's authorized representative shall be final and no claim shall be entertained in this regard.

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract.

All measurements of all items having financial value shall be entered by the contractor and compiled in the shape of the Computerized Measurement Book having pages of A-4/A 3 size as per the format of the department so that a complete record is obtained of all the items ofworksperformedunderthecontract.

All such measurements and levels recorded by the contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the contractor from the Engineer-in-Charge or his authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his authorized representative. After the necessary corrections made by

the Engineer-in-Charge, the measurement sheets shall be returned to the contractor for incorporating the corrections and for resubmission to the Engineer-in- Charge for the dated signatures by the Engineer-in- Charge and the contractor or their representatives in token of their acceptance.

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

The final, fair, computerized measurement book given by the contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the contractor shall have to submit a fresh computerized MB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the department. Thereafter, the MB shall be taken in the Divisional Office records, and allotted a number as per the Register of Computerized MBs. This should be done before the corresponding bill is submitted to the Division Office for payment. The contractor shall submit two spare copies of such computerized MB's for the purpose of reference and record by the various officers of the department.

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

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

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

The contractor shall give not less than seven days' notice to the Engineer-in-Charge or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of checking and/or test checking the measurement of any work in order that the same may be checked and/or test checked and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of checking and/or test checking measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of checking and/or test checking measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

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

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

from liabilities from any over measurement or defects noticed till completion of the defects liability period.

3.11.3 **MODE OF MEASUREMENT:**

All measurements shall be in the metric system and in accordance with Indian Standard Specifications and in accordance with standard engineering practice.

If the contractor has any objection regarding the measurements, then he shall inform the KAPL/DCPL immediately. The decision given by the DCPL shall be final and binding on the contractor. In case of mode of measurement of any item is not specified; then CPWD mode of measurement (as applicable during contract period) shall be followed.

3.11.4 **BILLING:**

- The monthly running account (RA) bills to be submitted by the contractor before 30th of every month to the Site Engineer In charge/DCPL along with all supporting documents. The bill should be in the pro-forma approved by the DCPL / KAPL giving abstract and detailed measurements of various items of works executed and material along with test report (MTR) brought by the contractor for execution of work.
- The billing shall be cumulative billing given details of previous bill amount, advance paid & deductions, security deduction and clearly showing the actual claimed amount due against the submitted bill.
- Separate bill should be submitted for each structure along with material reconciliation statement separately.
- All material test report and certificate (MTR) should be attached with each RA bill.
- Advance shall be deducted between 10% of the billing and up to 80% of Billing of the contract value.
- All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsoundand imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-Charge relating to the work done or materials delivered forming part of such payment,

may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-Charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

3.11.5 **COMPLETION PLANS**

The contractor shall submit completion plans for Internal and External Civil, Electrical and Mechanical Services within thirty days of the completion of the work, provided that the service plans having been issued for execution by the Engineer-in-Charge, unless the contractor, by virtue of any other provision in the contract, is required to prepare such plans. In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum of 0.1 % (zero point one percent) of accepted Tendered Value or limit prescribed in Schedule F whichever is more as may be fixed by the authority as mentioned in Schedule F and in this respect the decision of the that authority shall be final and binding on the contractor.

3.11.6 **LUMP SUM IN TENDER:**

For the items in tender where it includes lump sum in respect of parts of works, the contractor shall be entitled to payment in respect of the items at the same rates as are payable under this contract for such items. If in the opinion of the DCPL, any part of the work is not susceptible to measurement, the DCPL may at his discretion pay the lump sum amount for the work and the decision of the DCPL/KAPL shall be final and binding on the contractor.

- **IDLE CHARGES:**

  Idle charges for unutilized resources (Man/Machineries etc.) will not be entertained**.**

- **MOBILIZATION ADVANCE:**

Mobilization advance shall be 10% on submission of all required documents. The BG for Mobilization advance shall be in the form of Advance BG from nationalized banks only and the same shall be provided within 14 days of LOI.

- **RETENTION MONEY:**

The person/persons whose tender(s) may be accepted (hereinafter called the contractor) shall permit KAPL at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 5% of the gross amount of each running and final bill till the sum deducted will amount to security deposit of 5% of the tendered value of the work.

The security deposit shall be returned along with the provisional completion certificate before the start of defect liability period.

- **PERFORMANCE BANK GUARANTEE:** 10% of the contract value shall be paid in the form of bank guarantee from nationalized banks only. THE BG shall be submitted before releasing the security deposit. The validity of the bank guarantee shall remain till the end of DLP. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor.

- The Engineer-in-Charge shall make a claim under the performance guarantee except for amounts to which the KAPL is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:
- Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.
- Failure by the contractor to pay KAPL any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-Charge.

- ❖ In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the KAPL.
- ❖ On substantial Completion of any work which has been completed to such an extent that the intended purpose of the work is met and ready to use, then a provisional Completion certificate shall be recorded by the Engineer-in-Charge. The provisional certificate shall have appended with a list of outstanding balance item of work that need to be completed in accordance with the provisions of the contract.
- ❖ This provisional completion certificate shall be recorded by the concerned Engineer- in-charge with the approval of KAPL, if required.

3.11.7 **PAYMENTS OF FINAL BILL:**

All running account payments shall be regarded as payments by way of advances against the final payment only and not as payment for work actually done and completed, and shall not prelude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the performance of the contract or nor shall it conclude, determine or affect in any way the powers of the KAPL under these conditions or any of them as to the final settlement of the accounts or otherwise, or in any other way vitiate or affect the contract. The final bill shall be submitted by the contractor within one month from the date of actual completion of the work, to the DCPL, otherwise the DCPL's and KAPL's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on the contractor. The payment of final bill shall be done within three months after duly certified by the DCPL including period of one month of terms of payment.

3.11.8 **PAYMENT OF CONTRACTOR'S BILLS:**

- ➢ The payment due to the contractor shall be made only in Indian Currency by Crossed Account Payee CHEQUE or NEFT/RTGS. In no case the KAPL will be held responsible if the Cheese is misled or misappropriated by the contractor or

his representatives. The Cheese shall be released only against submission of duly signed and revenue stamped receipt.

- The KAPL reserves the right to carry out post payment audit and technical examination of the bills and work executed including all supporting vouchers etc. The KAPL further reserves the right to enforce recovery of over-payment when detected. Similarly, if any under payment is discovered, the amount shall be paid to the contractor.
- Where ever any claim for the payment against the contractor arises as per the contract, the same may be deducted from the bill of the contractor or from his security deposit.

3.11.9 **PROVISIONAL COMPLETION CERTIFICATE:**

When the contractor successfully completes the works as per the contract, he shall be eligible to apply for provisional completion certificate in respect of the works. The KAPL shall issue to the contractor the provisional completion certificate after verifying from the completion documents submitted by the DCPL and satisfying himself that the work has been completed in accordance with the construction drawings and the contract document. The contractor, after obtaining the provisional completion certificate, is eligible to present the final bill for the work executed by him under the terms of the contract. The work will not be considered as complete and taken over by the KAPL until all the temporary works, labor hutments etc. are removed and the work site cleared to the satisfaction of the DCPL.

If the contractor fails to comply with the requirements of the above on or before the date for the completion of the works, the KAPL may, at the expense of the contractor, remove the tools and plants and surplus materials and dispose of the same and the contractor shall pay the amount of all expenses incurred.

3.11.10 **TERMS OF PAYMENT**

The terms of payment shall be 30 days from the submission of the bill to the DCPL or KAPL. The certification of bill shall be done in 15 days by the DCPL and the payment for the same shall be done in 15 days from the Date of certification.

3.11.10.1 On completion of work and upon obtaining the provisional completion certificate from the KAPL, the contractor shall submit the final bill with revised total measurement sheet, at one time and the payment shall be released within three month from the date of receipt of verified final bill from the DCPL.

3.11.10.2 The amount deposited as earnest money shall be refunded only after 3 month for successful bidders from date of acceptance of LOI.

3.11.10.3 Tax deduction : All statutory deduction like GST, Income Tax, TDS, E.S.I., P.F. or any other government-imposed liability shall be borne by the contractor (as applicable at the time of execution of job) and shall be deducted from each bill submitted by the contractor.

3.11.10.4 Certified material reconciliation statement should be attached along with each RA bill and DCPL should also certify the same along with their certificate of payment.

3.12 LABOR LAWS AND SAFETY REGULATIONS

3.12.1 LABOR LAWS:

Labor below the age of 18 years shall not be employed on the work.

3.12.1.1 The contractor shall not pay less than what is specified by the law to labors engaged by him on the work.

3.12.1.2 The contractor shall, at his own expenses, comply with all labor laws and the KAPL shall not be responsible for any recovery/penalty imposed by the respective authorities for violating the labor laws.

3.12.1.3 If the contractor is covered under the Contract Labor (Regulation &Abolition) Act, he shall obtain a license from the licensing authority (i.e. the Office of Labor Commissioner), by payment of the necessary prescribed fee and deposit, if any, before starting the work.

3.12.1.4 The contractor shall furnish to the DCPL/KAPL, the details of the workers employed on the works.

3.12.1.5 The contractor shall comply with the provisions of the existing rules and regulations relating to labor laws.

3.12.1.6 The DCPL shall on a report having been made by an inspecting officer as defined in Contract Labor (Regulation and Abolition) Act, 1980, have the power to deduct from the amount due to the contractor any sum required or estimated to be required for making good the losses suffered by a worker or workers by reason of non-fulfillment of the conditions of the contract for the benefit of the workers, or if deductions made from his or their wages which are not justified by the terms of contract or non-observance of the said regulations.

3.12.1.7 In every case in which by virtue of the provisions of the Contract Labor (Regulation and Abolition) Act, 1970, and of the Contract Labor (Regulation and Abolition) Central Rules, 1971, KAPL is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the rules under Clause 19H or under the C.P.W.D. Contractor's Labor Regulations, or under the Rules framed by KAPL from time to time for the protection of health and sanitary arrangements for workers employed by C.P.W.D. Contractors, KAPL will recover from the contractor, the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of the KAPL under sub-section(2) of Section 20, and sub-section (4) of Section 21, of the Contract Labor (Regulation and Abolition) Act, 1970, KAPL shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by KAPL to the contractor whether under this contract or otherwise KAPL shall not be bound to contest any claim made against it under sub- section (1) of Section 20, sub-section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the KAPL full security for all costs for which KAPL might become liable in contesting such claim.

3.12.1.8 The contractor shall obtain a valid license under the Contract Labor (R&A) Act, 1970, and the Contract Labor (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and

continue to have a valid license until the completion of the work.

3.12.1.9 The contractor shall also comply with provisions of the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979.

3.12.1.10 The contractor shall also abide by the provisions of the Child Labor (Prohibition and Regulation) Act, 1986.

3.12.1.11 The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Workers Welfare Cass Act, 1996.

3.12.1.12 Any failure to fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.

3.12.1.13 In respect of all labor directly or indirectly employed in the works for the performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with all the rules framed by KAPL from time to time for the protection of health and sanitary arrangements for workers employed by the Central Public Works Department and its contractors.

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

3.12.1.15 The contractor shall submit by the 30TH of every month, to the Engineer-in-Charge, a true statement showing in respect of the second half of the preceding month and the first half of the current month respectively:-

- ❖ the number of laborers employed by him on the work,
- ❖ their working hours,
- ❖ the wages paid to them,
- ❖ the accidents that occurred during the said for night showing the circumstances under which they happened and the extent of

damage and injury caused by them, and

- ❖ the number of female workers who have been allowed maternity benefit according to Clause 19F and the amount paid to them

FailingwhichthecontractorshallbeliabletopaytoKAPL,asumasdecidedbytheauthority for each default or materially incorrect statement. ThedecisionoftheDivisionalOfficershallbefinalindeductingfromanybilldduetothecontract or;theamountleviedasfineandisbindingonthecontractor.

3.12.1.16 MINOR ACCIDENT ON DUTY:

For cases of minor accident on duty not covered under compensation by insurance, the contractor shall have to compensate the affected person by reimbursing these medical expenses against submission of actual expenditure document. The absence from duty, if takes place, due to such accident shall be considered as special leave and full payment shall have to be made for duration of such absence.

3.12.1.17 PROVIDENT FUND:

It shall be solely the contractor's responsibility to complete all provident fund formalities as per statutory regulations.

3.13 SAFETY CODE

3.13.1.1 SAFETY AND PROTECTION:

The contractor shall adhere to safe construction practice and guard against hazardous and unsafe working conditions. While carrying out the work, the contractor should provide for;

- ➢ Safety of personnel engaged in the construction.
- ➢ Protection and safety of works and materials during their progress.
- ➢ Sanitary and hygienic conditions of working and living for his workers, as required by the DCPL.

3.13.1.2 USE OF SAFETY GADGETS:

The contractor shall have to ensure availability and use of all desired safety gadgets like safety shoes , belts, helmets, goggles, hand gloves, gum boots etc.

3.13.1.3 UNSAFE WORKING CONDITION :

If any activity is found to be progressing without proper and complete safety measures (including use of safety gadgets) being implemented, the contractor may be asked to stop the work unless he fulfills the desired safety norms. Such delays shall not be allowed to be considered for extension in duration of the allotted time period. If any work is to be carried out in night shift prior written permission should be taken.

3.13.1.4 **FIRST AID:**

The contractor shall provide first aid facilities for his employees and those of his sub-contractors. The requisite first aid box and medicines should always be available at work site. Contractor follow strictly follow safety guidelines.

3.13.1.5 **CONTRACTOR'S BARRICADES:**

The contractor shall erect and maintain barricades required in connection with his operations to guard or protect:-

- Excavations
- Hoisting Areas
- Areas adjudged hazardous by the contractor's or DCPL's representatives.
- Charged electrical panels.
- KAPL's existing property liable to get damaged by contractor's operation.

3.13.1.6 **PRESERVATION OF PEACE:**

The contractor shall take precautions to prevent any riotous or unlawful behavior by his workers, for the preservation of peace and protection of inhabitants and the security of property in the neighborhood of the work.

3.14 DETAILS OF WORK EXECUTION

- The work shall be done in such a manner so as to clear work front availability for other agencies working at site.

- The contractor shall submit the Method of Statement / Risk Assessment / Shop drawing to the DCPL before execution of any work.
- Finish of work shall be as per drawings & details given by KAPL/DCPL.
- In general the complete work is to be done as per CPWD and Indian Standard norms as specified and detailed in Tender.

4.0 **SITE**

The site is located at **M/s KARNATAKA ANTIBIOTICS & PHARMACEUTICALS LTD., Plot # 110-116, VUL, UJJAIN, Madhya Pradesh;** the contractor shall be responsible for the movement of his men, material and equipment at no extra cost.

5.0 ELECTRICITY & WATER

Electrical power & Water for construction activities shall be procured & arranged by the Client at one point free of cost. Further arrangements shall be done by contractor at his own cost. For the consumption for both electricity and water separate meters should be provided by the Contractor.

6.0 CONTRACTOR'S SCOPE OF SUPPLY

All materials required for executing the jobs specified in the BOQ, inclusive of all tools, tackles, scaffolding, consumables & testing equipment's shall be procured and supplied by the contractor at his own cost except for any items specified as KAPL supplied.

7.0 RECOVERY FROM THE CONTRACTOR

- If the contractor or his employees damage or destroy the property of the KAPL, then the same shall be replaced/refunded by the contractor, otherwise the expenses may be recovered from his bill or security deposit.

- All compensation & recoveries to be made as per terms of the contract shall be deducted from the contractor's bill

- The contractor will make fence around the area given for labor hutment to avoid unauthorized entry.

SECTION – VI

SPECIAL CONDITIONS OF CONTRACT (SCC)

The Special Conditions of Contract (SCC) will apply for this contract. The corresponding clauses of General Conditions of Contract (GCC) relating to the SCC stipulations have also been incorporated below.

These Special Conditions will modify/substitute/supplement the corresponding (GCC) clauses.

Whenever there is any conflict between the provision in the GCC and that in the SCC, the provision contained in the SCC shall prevail.

1. GENERAL

These special conditions shall be read in conjunction with the General Conditions of contract, Job Specifications, Drawings and other documents forming part of this contract wherever the context so requires.

Notwithstanding the sub-division of the documents into these sections and volume every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the context in so far as it may be practicable to do so.

The several documents forming the contract are to be taken as mutually explanatory of one another. In case of discrepancy the following order of precedence shall be observed:

The works described in latest approved documents like drawings, design qualification and notes thereon.

- The items in the schedule of quantities.
- Specifications (given in Tender documents)
- Special conditions of contract.
- General conditions of contract.
- Special Instructions to tenderers

- General Instructions to tenderers

The intending Contractor shall be deemed to have visited the site and familiarized himself thoroughly with the site conditions before submitting the tender or before signing the contract. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the work in strict conformity with the drawings and specifications.

The prices quoted should include supply, installation, testing & commissioning at site & should include all applicable taxes & duties.

2. COMPLETION TIME & LIQUIDATED DAMAGES

Over all completion time shall be as mentioned in the Schedule of Fiscal Aspect. The Liquidated Damages (LD) shall be levied at the rate of 0.5% per week maximum being 5% of Total Contract Value, if the work is delayed beyond the stipulated completion time.

3. FAILURE TO ARRANGE COMMITTED MANPOWER /MACHINERY

The Contractor shall submit manpower and machinery / equipment proposed to be deployed to carry out the work within the stipulated time period of completion. Such committed manpower/machinery shall be considered as minimum requirement and failure to maintain the same at site shall be treated as deemed unfit. In such cases, the purchaser reserves the right to terminate the contract as per GCC clause 3.10.4.

4. ACCESS TO SITE

All necessary access to working area will have to be made and maintained by the Contractor. Such temporary constructions shall have to be removed after completion of the work or if so advised by Purchaser at any point of time at no extra cost.

5. PROPERTY RIGHTS

All materials / goods / items at site whether free issue or otherwise, other than the Contractor's construction machinery, will be property of KAPL, which shall not be removed from site of work and shall be open to inspection by KAPL. The Contractor shall be responsible for any theft, loss and damage to such material, items, goods etc.

6. LABOUR AT SITE

Contractor will not allow any temporary or permanent hutments or colonies at the Work Site. The Contractor will have to make his own arrangement for such labour camp(s) away from site at his own cost.

7. WATER AND ELECTRICITY FOR CONSTRUCTIONS

The electricity and water, if available at site will be provided to the Contractor at a single point

8. OTHER CONTRACTS / CONCURRENT WORKS

Contractor reserves the right to let other Contractor's work in the same area in connection with his work under similar Agreement. The Contractor shall afford other Contractors' reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and co-ordinate his work with theirs. If any part of Contractor's or sub- Contractor's work depends for proper execution or results upon the work if any other Contractor or Sub- Contractor, the KAPL/DCPL shall inspect and promptly report to Contractor any defects in such work that render it unsuitable for such proper execution and results. Failure of the Contractor to so inspect and report shall constitute an acceptance of the other Contractor's work as fit and proper for the reception of his work.

During the progress of this contract, other construction works will also be concurrently in operation. The Contractor shall co-operate with the other Contractor s fully working at site and shall allow reaching other every facility and co-operation for execution of this work, simultaneously and satisfactorily during the erection of machinery or execution of any other activity. Contractor may have to suspend his work partially or totally in the interest of the whole project. He may also be required to dismantle or to shift his construction plant and equipment's for erection of machinery and /or any other operation. In such cases, he shall not be given any compensation on account of reduction or stoppage of labour force or dismantling, shifting of his construction plant and equipment's, etc.

9. SAFETY PRECAUTIONS AT WORK

The Contractor shall make all necessary arrangements for safety of personnel working at site and ensure that all safety precautions in line with established industry practices are taken and Guide Lines issued by Statutory Authorities are complied with.

10. PROTECTION AND CLEANING

The Contractor shall protect and preserve the work from all damage or accident providing any temporary roof, window and door coverings, boxing or other construction as required by the KAPL / DCPL . This protection shall be provided for all property adjacent to the site as well as on the site.

The Contractor shall properly clean the work as it progresses and shall remove all rubbish and debris from the site from time to time as is necessary and as directed. On completion, the Contractor shall ensure that the premises and / or site are cleaned, surplus materials debris, sheds etc. removed, areas under floors cleared of rubbish, gutters and drains cleared, doors and sashes eased, locks and fastenings oiled, keys clearly labelled and handed over to the In Charge of Works so that the whole is left fit for immediate occupation or use and to the satisfaction of the KAPL/DCPL.

11. PROTECTION OF WILD LIFE

The Contractor shall ensure the safety of wild life animals in and around the site and ensure that all Statutory Regulations are complied with. He shall indemnify KAPL/DCPL against violation of Wild Life Protection Act or any such Government Regulations.

12. VALIDITY OF OFFER/RATES / PRICES

The Offer remains valid for a period of 120 days from the date of opening of tender.

After placement of Order all the rates/prices quoted by contractor shall remain valid till the Final Acceptance Certificate / Measurement Certificate is issued by KAPL/DCPL

The unit rates / prices quoted by the contractor in the offer shall be firm irrespective of variation in any quantity of individual items and/or in the total contract price.

Prices and unit rates shall be valid even if the contract is split.

Prices and unit rates of any or each item shall be valid irrespective of whether the item to be executed is located at any height/depth, any floor, inside or outside the building unless otherwise specifically mentioned.

Necessary deductions towards the Employee's State Insurance as per the Act, will be made in the contractor bills if necessary. The contractor shall provide the proof of ESI payments and its adherence. The Contractor should maintain all records of labour payments (including sub-Contractors) and product as and when required by the KAPL/DCPL or ESI Authorities for assessment and recovery. In case any additional amount is demanded from the Contractor by the authorities on any account, the KAPL/DCPL shall have the right to recover the same from the contractor.

13. CONFIDENTIALITY

The Contractor shall not reveal the scope of supply/rates/quantities/facilities appearing in the order to anybody without the knowledge of Contractor. Violation of this Clause will be treated as breach of Contract, in which case Contractor will reserve the right to take necessary punitive action against the Contractor.

14. TESTING OF MATERIAL

KAPL/DCPL reserves the right to ask for any kind of test to be carried out on any construction material / consumables / finished structures / operation / performance or goods or items / bought outs. The Contractor shall bear all necessary charges for all such tests. Such tests shall be carried out by a laboratory / person approved by KAPL/DCPL .

15. ESCALATION

The rates of Contractor shall remain firm till the completion of work and no price escalation on any account will be admissible. However any increase in taxes, duties during the agreed completion period will be borne by KAPL. In case work is delayed and increase in tax and duties take place during the delayed period, same shall be borne by the contractor.

16. CONTRACTOR INABILITY TO SUPPLY MATERIAL/ PROVIDING THE SERVICE

In case of Contractor fails to supply any item of material / services covered under contract then KAPL/DCPL will be at liberty to procure the same from open market / engaging other parties to perform the required services at the risk & cost of the Contractor and recover the same from forthcoming running bill or Security Deposit/Bank Guarantee.

17. PUNITIVE MEASURES

KAPL/DCPL will decide on punitive measures wherever reference to punitive measures or otherwise due to breach of contract is indicated in the clauses above. Decision of KAPL/DCPL in such matters shall be binding on the contractor.

18. AMBIGUITIES IN TERMS & CONDITIONS/ QUANTITIES.

In case of any dispute or ambiguity in the interpretation of any condition contained both in the Agreement and the Special Conditions of Contract the interpretation of the Special Conditions of Contract shall prevail.

In case of interpretation of any item description in the schedule of quantities and the equivalent specifications, the item description given in the schedule of quantities shall prevail.

19. CHANGES IN CONSTITUTION

Before any change is made in the constitution of the firm, the prior approval is to be obtained by the Contractor in writing of the Accepting Authority. If the contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the Contractor is a partnership concern and one of the partners dies, then the Accepting

Authority reserves the right to cancel the contract, if the Accepting Authority is not satisfied that the legal representatives of the individual firm or the proprietor of the proprietary concern and in the case of partnership, the surviving partners are capable of carrying out and completing the contract.

20. UNDER PAYMENT / OVER PAYMENT

The KAPL/DCPL reserves the right to carry out past payments, audit and technical examinations of the trial bill including all supporting vouchers, abstracts, etc., If as a result of such audit and technical examination any overpayment is discovered, it shall be recovered from any other sum due to the contractor , which may be available with the Contractor or he shall pay the claim on demand.

Any amount due to the contractor under this Contract for underpayment may be adjusted against any amount then due or which may at any time thereafter become due before payment is made to the Contractor.

21. TECHNICAL APPROVALS / PAYMENT CERTIFICATE

21.1 After getting the order successful bidder has to submit all shop drawings, , GA drawing of equipment/accessories along with technical data sheet with supporting document, Quality assurance plan, stage inspection schedule for approval from both DCPL and KAPL

21.2 Once successful bidder gets approval then only purchase/manufacture the material

21.3 Successful bidder shall submit the all-material test certificate before supply of material and approval from both DCPL and KAPL

21.4 Successful bidder has to take approval of make makes also as listed in section VIII,if make is not listed then he has taken prior approval before use from both DCPL and KAPL

21.5 After issuing of payment certificate by DCPL,KAPL will release the payment in 30 to 45 days from date of issue of payment certificate

22. In case of any conflict between the description of items in schedule of quantities, specifications, drawings and other tender documents, the decision of the Contractor, in writing, shall be final and binding and conclusive for the purpose of this contract. The Contractor in any case shall not delay or stop the work for the questions or disputes being referred to arbitration but shall proceed with work with all diligence until the decision of the arbitrator and shall abide by arbitrators' decision.

23. The Contractor shall be responsible, in all respects, for the co-ordination of all the services work including electrical, piping and modular works or works of other Contractor appointed agencies. Contractor shall ensure proper co-ordination for the inter-dependent / related activities between himself, services sub-Contractors and other nominated, Specialist Contractors etc.

24. The Contractor shall be responsible to work out a co-ordinated work schedule with the HVAC, Civil, Mechanical &Piping, and other nominated Contractors.

25. No other claim shall be entertained from the contractor on the plea that the work has been executed in the above circumstances or under difficult conditions. It shall be the responsibility of the contractor to enforce necessary discipline among his workers and staff to ensure smooth working at the site in a spirit of co-operation and amity with all other agencies. In case of any dispute, decision of KAPL/DCPL shall be final and binding to the contractor

26. The contractor is made explicitly clear that the work is to be carried out in co-ordination with all other nominated Contractors/ agencies, which shall be engaged to execute other services of the project. The contractor shall submit to the KAPL/DCPL approval, immediately the following information in order to proceed with the work :

- Exact Layout and details of the temporary work that the contractor wants to carry out to fulfil his obligations under the contract.

- A general layout of storage space for material for the execution of work within stipulated time period.

27. Depending on the exigencies at the site the temporary offices, stores etc. may have to be moved or shifted and the Contractor shall do so, if so required by the KAPL / DCPL at no extra cost to the Contractor.

28. KAPL/DCPL shall have full power to get any materials of work to be tested by an independent agency at Contractor expense in order to prove the soundness and adequacy.

29. If any material / equipment are supplied by the KAPL to the contractor free of cost, the Contractor shall receive the same at site, handle with care and store them as directed. The Contractor shall be responsible for the safe custody and shall insure all materials against theft and damage by fire. The Contractor shall maintain records of consumption on daily basis.

30. The Contractor shall ensure cleanliness and keep the site free from all debris, hazardous material, loose wires, open fires or any other materials and avoid damage due to accidents, negligence etc. All the above measures including fencing etc. required to be provided during the time period of the contract, shall be provided by the Contractor at no expense to the Contractor. The provision of all these measures does not absolve the Contractor of his liabilities as per the contract.

31. It shall be the responsibility of the Contractor to ensure that his workmen do not trespass into areas and buildings adjacent to the construction site. The Contractor shall enforce proper discipline in this regard by making proper arrangements.

32. To facilitate satisfactory completion of the work under this contract, and to co-ordinate work with other agencies working at the site, meetings will be held at the time and venue decided by the DCPL / Contractor. During these meetings progress of various works will be reviewed and those matters needing clarifications / decisions to expedite the work will be taken up.

33. During progress of the work, completed portion of the building may be occupied and put to use by the Contractor. The Contractor shall however remain fully responsible for the

maintenance of all the work till the entire work covered by the Contractor is satisfactorily completed and handed over to the Contractor.

34. Safe custody of all materials and products supplied by the Contractor shall be his own responsibility till the final taking over by the Contractor. He should therefore employ sufficient staff for watch and ward at his own expenses.

35. It shall be the responsibility of the Contractor to study carefully all the drawings, instructions etc and point out discrepancies and obtain clarifications, if any, in writing before taking up the work. He shall also be responsible to ensure that the work is carried out in accordance with Local Bye-Laws in all respects, and to ensure that he obtains all prior sanctions from all the Competent Local Authorities before he takes up the work. If, as a result of his failure to do so, in spite of the works having been carried out as per the drawings and instruction issued by the DCPL/KAPL, and/or in the presence of the representative(s) of the DCPL / KAPL, the Contractor himself shall be solely responsible and if so directed, dismantle and reconstruct at his own cost the work/item(s) of work as per such directions. No claims in this regard will be entertained.

36. It shall be the sole responsibility of the Contractor to ensure all safety measures giving proper prior notices etc. and obtaining prior permission from concerned local authorities as per Bye-Laws or directions issued by them, all at his own cost. No claim of the Contractor in this regard shall be entertained.

37. With the submission of the tender, the Contractors declares and agrees that all the labour and requisite materials required for the work are available for completion of the work within the period stipulated for completion of the work.

38. Any material / item / fitting / fixtures rejected by the KAPL / DCPL shall be removed from the site within 48 hours of issue of instructions to this effect by the KAPL / DCPL. Failing this, the Contractor shall have the rights to get these so removed at the Contractor's cost and the Contractor shall have no claim whatever in this regard.

39. The Contractor is alone responsible, for any discrepancy arising out of the definition / interpretation etc. of any matter connected with the execution of the work, which has not

been got clarified prior to submission of tenders as required and all consequences arising there from.

40. The Contractor shall also include in his quoted rate barricading / fencing of construction activity area. All materials, fabrication yards, stores, manpower are to be contained within the barricaded area. The Contractor shall not be allowed to extend his activities beyond this area.

41. Electricity and water available at site will be provided to the KAPL/DCPL at a single point

42. The Contractor will be provided with open space free of cost for constructing temporary site office near the construction area.

43. It is essential that the works site be always kept in an orderly and neat manner. Stacking of materials, arrangement of fabrication yards, water tank for construction, equipment etc. shall be free from obstructions and easy to survey and inspect. The KAPL/DCPL should have the right to get such work as is necessary to ensure proper maintenance of the works site at the Contractors cost, in case the Contractor fails to comply with the requirements.

44. The Contractor has to meet all safety requirements as laid down by KAPL/DCPL at their own cost.

45. The Contractor shall use only steel scaffolding and not bamboos for any kind of work.

46. SPECIAL CONDITIONS & INSTRUCTIONS

- ✓ All materials to be used in execution of project shall be of first-class quality; I.S.I. marked and shall be approved by KAPL/DCPL before its application.

- ✓ The work should be carried out in truly professional manner, neatly finished with proper line, level and plumb. Cleanliness and finishing of the job is of utmost importance. Hence the job should be done most carefully with best workmanship.

For all finishing jobs samples should be approved from the KAPL/DCPL before completely executing the work.

- ✓ The KAPL/DCPL should be immediately informed for any discrepancy in drawings, specifications, and instructions in the execution of job at site before actual execution of item having discrepancy.

- ✓ Any item found to be having been executed with poor workmanship or materials of inferior quality then the contractor shall have to rectify /reconstruct the work as specified by KAPL/DCPL. No extra charge will be admissible in such case. If contractors fail to do so, the KAPL/DCPL reserved the right to rectify/reconstruct the work through some other agency at the expenses of contractor.

- ✓ The schedule of activities as submitted by the contractor shall have to be strictly adhered to. Regular progress reports shall have to be submitted by the contractor giving all details for monitoring of the schedule.

- ✓ The contractor shall take charge of site and if site clearance is involved, he shall attend to it. (If such type of unforeseen and unavoidable situation occurs, in that case actual labour employed for such job shall be paid including overheads and profit).

- ✓ Special care is to be taken for cleanliness of the site. After the end of day's work, the site should be cleaned immediately.

- ✓ The contractor shall have to co-operate with the agencies executing other works in the same area.

- ✓ While executing the work, the contractor shall ensure safety and security of the property of the KAPL so as to avoid theft etc.

- ✓ Absolute cleanliness is must while working.

- ✓ All care to be taken not to damage existing structure and related things. All the dismantled debris to be carted away immediately from the site.

- ✓ For any kind of discrepancy or unforeseen happenings, inform the DCPL immediately.

47. Lighting Facility

Adequate lighting facilities such as flood lamps, low volt hand lamps and area lighting shall be arranged by the contractor at the site of construction, contractor's material storage area etc. at his cost.

48. Tools and tackles(T & T)

48.1 All T &T required for the satisfactory execution of work shall be arranged by contractor at his cost

48.2 All the T &T arranged by contractor including electrical connections wherein required shall be reliable/proven/tested and necessary test certificate.

48.3 All the T &T arranged by contractor including electrical connections wherein required shall be reliable/proven/tested and necessary test certificate.

48.4 All instruments, measuring tools etc. are to be calibrated periodically as per the requirement of KAPL and necessary calibration certificates are to be submitted to KAPL before use.

49. SUPERVISORY STAFF AND WORKMEN

49.1 The Contractor shall deploy experienced Engineers, Supervisors all the skilled workmen like A claas electrican ,electricians, wireman, Riggers, Serangs, Erectors, etc. in addition to other skilled semi-skilled and unskilled workmen required for all the works of handling and transportation from site storage to erection site, transportation, erection, testing and commissioning contemplated under this specification. Only fully trained and competent men with previous experience of the job shall be employed. They shall hold valid certificates wherever necessary.

49.2 KAPL/DCPL reserves the right to decide on the suitability of the workers and other personnel who will be employed by the contractor, KAPL/DCPL reserves

right to insist on removal of any employee of the contractor at any time, if they find him unsuitable and the contractor shall forthwith remove him.

49.3 The supervisory staff employed by the contractor shall be qualified Engineers and experienced in the area of work. They shall ensure proper out-turn of work and discipline on the part of labour put on the job by the contractor and in general see that the works are carried out in safe and proper manner and in coordination with other labour and staff employed directly by KAPLor other contractor's of KAPL client.

49.4 The Contractor shall also furnish DAILY & MONTHLY report showing the number of employees engaged in various categories of work and a progress report of work as required by KAPL Engineer.

49.5 The work shall be executed under the usual conditions existing in major HT work and in conjunction with numerous other operations at site. The bidder and his personnel shall co-operate with other personnel contractor coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

49.6 The contractor's supervisory staff shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work, good workmanship and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship conform to the dimensions and tolerances given in the drawings/instructions given by KAPL Engineers from time to time.

49.7 The contractor shall employ the necessary number of qualified and approved full time electricians at his cost to maintain his temporary electrical installation till the completion of work.

49.8 It is the responsibility of the bidder to carryout the work for achieving the target set by KAPL and also during erection, commissioning and testing period. The contractor's quoted rate shall include all these contingencies.

49.9 If the contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road, kerb, fence, enclosure, water pipes, cables, drains, electric or telephone posts or wires, trees or any other property or to any part of erected components etc. The contractor shall make the same good at his own expense or in default.

49.10 KAPL may cause the same to be good by other workmen or by other means and deduct the expenses (of which KAPL's decision is final) from any money due to the contractor.

49.11 Contarctor shall obtain all statutaroy permission required for the work from the MP elctricity board and other goverment agencies.

50. SITE CLEANLINES AND SAFETY REQUIREMENTS

50.1 Contractor shall strictly follow all safety regulations/conditions.

50.2 Non-conformity of safety rules and safety appliances will be viewed seriously and the KAPL has right to impose fines on the contractors KAPL. Engineer's decision is final and binding in this regard.

50.3 The contractor should exclusively deploy one Safety Engineer along with a safety supervisor for effective implementation and co-ordination of safe working conditions.

50.4 Contractor shall necessarily fill up the safety plan format available in general conditions of contract booklet enclosed with this tender and submit along with their offer.

50.5 CONTRACTOR SHALL DEPLOY A SAFETY OFFICER EXCLUSIVELY TO HANDLE SAFETY REQUIREMENT**.**

51. HSE SPECIFIC REQUIREMENT OCCUPATIONAL HEALTH & SAFETY MANAGEMENTSYSTEM

51.1 CONTRACTOR TO ENSURE COMPLIANCE OF THE FOLLOWING HEALTH RELATED POINTS

51.1.1 Contractor to identify nearest hospital for Health check-up of his staff and workers and intimate KAPL site office & PSSR HQ.

51.1.2 To arrange for occupational health check-up / screening of contractor's staff and workers engaged in sub-contracting activities. In this, category of workmen such as Electrician, welders, gas cutters, grinders, radiographers, crane operators are to be given exclusive attention in respect of health screening.

51.1.3 Contractor to arrange an ambulance vehicle or emergency vehicle on a continuous basis to meet any emergency situation arising at site work in which his staff and workers are engaged.

51.1.4 To provide appropriate facilities for prompt first aid treatment of injuries and illness at work. One first Aider for each contractor to be provided. First Aider should undergo training on first aid.

51.1.5 To provide filtered drinking water at selected place in a clean container.

51.2 **CONTRACTOR** TO ENSURE COMPLIANCE OF THE FOLLOWING SAFETY RELATED POINTS

51.2.1 Personnel protective equipment (PPES): Required number of following PPES (Confirming to Relevant is Standards) to be made available to workmen at site and ensured that they are used .

- Helmet
- Safety goggles
- Welding face shields
- Safety belts for working at heights
- Safety shoes
- Ear plugs
- Rubber gloves and mats for low tension and high tension electrical works
- Gum boots & aprons
- Other items as required by KAPL site

51.2.2 Contractor to liaise with nearest fire station and inform contact telephone number and contact person to meet any emergency.

51.2.3 To provide appropriate firefighting equipment at designated work place and to provide firefighting training to selected persons in his group of workmen to meet emergencies.

51.2.4 To provide adequate number of 24 V power supply points to work in a constrained and enclosed space.

51.2.5 All power tapping points / switch boards /power & control cabling should fulfil required electrical safety aspects as per relevant IS standard.

51.2.6 ELCH's (Earth leak circuit breakers) at all electrical distribution points to be provided.

51.2.7 Red and white caution tape of proper width (1.5 to 2 inch) to be used for cordoning unsafe area such as open trench, excavated area, etc.

51.2.8 To provide sub-contractors company logo or clothing to all staff and workers for identification including identity cards with photographs approved by KAPL/DCPL

51.2.9 High pressure and structural welders to be identified with colour clothing and to display copy of welders certificate with photographs of welder at the work place. They also should be in possession of valid welding procedure.

51.2.10 To display safe handling procedure for all chemicals such as lube oil, grease, sealing compound, kerosene, diesel etc. At stores & respective work place.

51.2.11 Contractor should authorize a person at site to stop work if there is an unsafe work noticed as per his knowledge.

51.2.12 Fitness for use of erected scaffolding to be certified by the contractor's approved scaffolder and the certificate should be displayed on the scaffolding itself. If the scaffolding is unsafe , the same will not be used. the certificate to be updated daily. The scaffolding to be made as per the relevant is standard.

51.2.13 For making platform on the scaffolding , proper thickness and size of the plank of required quality wood to be used. The safe working

load of the platform to be displayed on the scaffolding itself. Proper use of platform to be explained to the user.

51.2.14 All plant equipment should have inspection report before put in to use.

51.2.15 All Tools & tackles should be of reputed brand and having quality certificates.

51.2.16 All IMTEs should have valid calibration certificate from recommended institution / testing lab and these should be in place.

51.2.17 All lifting tackle and plant equipment should have safe working load certificate.

51.2.18 The right worker should be deployed for right job and the resume of site in charge, supervisors, and key workers to be submitted before commencement of work.

51.2.19 Contractor should submit inspection / testing matrix of all tools and plant machinery and to be approved by KAPL/DCPL

51.2.20 Contractor todisplay safety slogan, safety board, caution boards wherever required in consultation with KAPL./DCPL.

51.2.21 Contractor to provide gas detectors of reputed make at desired locations.

51.2.22 Contractor to conduct emergency mock drills. one drill per 6 month and submit report to KAPL/DCPL

51.2.23 Safe handling and storing of all equipment with adequate space to be ensured.

51.2.24 Contractor to deploy safety supervisor till the completion of the project.

51.2.25 Contractor to comply the safety reporting procedure of KAPL/DCPL as practiced at present and also additional requirements that may arise out of future improvements in the safety management system. This includes computation of safety indices such as frequency rate, severity rate & incident rate.

51.2.26 Contractor to identify probable emergency situations such as electric shocks to workmen , caving in of shored earth , fall from height, collapse of scaffolding fire etc., and should have clear action plan to overcome them. Contractor to take required guidance from KAPL/DCPL in this regard.

51.2.27 Contractor to identify hazardous activities which he may carry out and should train his workmen in those activities with the relevant operation control procedures. Contractor to take required guidance from KAPL/DCPL in this regard.

51.2.28 Safe work permit system to be followed while working in confined space / near electric systems.

51.3CONTRACTOR TO ENSURE COMPLIANCE OF THE FOLLOWING ENVIRONMENT RELATED POINTS

51.3.1 HOUSE KEEPING : Contractor to carry out daily housekeeping of work areas / stores through a check list prepared in consultation with KAPL

51.3.2 Contractor shall adopt pollution prevention / reduce /control approach in all his site activities. this shall include:

51.3.3 Transporting of oil / chemicals from stores to site safely without causing spillage. In case of any spillage, the area shall be cleaned and the remanent spilled oil disposed of to a safe place, identified for such disposal.

51.3.4 To use required containers / cans / safety gadgets /appliances for transporting and for usage of oil / chemicals at site.

51.3.5 Contractor shall arrange for segregation / collection of scraps and dispose off to the identified place meant for scrap collection.

51.3.6 Contractor to adopt good erection practices / procedures with the objective of reduction of waste generation / rework

51.4OTHER HSE REQUIREMENTS TO BE COMPLIED BY CONTRACTOR

51.4.1 Contractor to clearly understand and accept the HSE policy of PSSR with a commitment to comply the requirements of the policy.

51.4.2 Contractors to arrange for daily meeting of their supervisors and work force before they disperse for their daily planned activities where in the relevant health , safety and environment aspects of the job and use of PPES are explained

51.4.3 Contractor to conduct monthly HSE meeting (internal) and submit the report to KAPL.

51.4.4 HSE slogans to be displayed in a proper board – hoarding at designated places in consultation with KAPL.

51.4.5 Contractor to submit a structured programme for training & occupational Health Screening of their work force at site after the Award of LOI.

SECTIONVII

SCOPE OF WORK

1. Scope of Vendor

- The scope of vendor would be to comply with the enclosed Technical Datasheet Plan, supply, install, commission and validate the system as per Specification and BOQ and drawings.

- Quote for the unit against the datasheet. The price should include all spare parts; documentation; packing; freight charges; start-up & commissioning; validation; complete qualification package (SAT, DQ, IQ, OQ) and training and charges whatsoever required to complete the task in all respects to ensure the equipment operation is in accordance with the requirements of design documents.

- The complete system should be supplied, installed and commissioned as per the statutory regulations and as per the requirement.

- Quality and Project Planning: The Quality and Project Plan should define the activities to be performed, their timing, who will perform them, the control mechanisms to be used, and the deliverable items. Project Time Schedule must be submitted for that purpose. This document should define:

  - ✓ Project Milestones
  - ✓ Project Activities
  - ✓ Planned start and end date of each activity

- Quality Assurance activities during supply and execution:

- The Scope of work
  - ✓ Supply, installation and commissioning of 4 pole structure
  - ✓ Supply, laying and termination of HT cable and control cable
  - ✓ Supply, installation and commissioning of HT VCB panel
  - ✓ Supply, installation and commissioning of transformer and allied works
  - ✓ Supply, installation and commissioning of work as stipulated in schedule of quantity and drawing or instructed by KAPL/DCPL
  - ✓ Preparation of all Shop drawing, layout of equipment
  - ✓ All type of liaising work required for the work shall be in contractor scope
  - ✓ All statutory approval required for the work from MP electricity board and other government agencies
  - ✓ Quality assurance plan to be submitted along with offer
  - ✓ Vendor to supply and install item which is required for completing the work as per requirement of KAPL/DCPL / statutory regulation

2. Exclusion of work
   - Civil work such as foundation of equipment, excavation etc which is not included in this tender
3. Preparation of as built drawing and submission of dully approved drawing in soft and hard copy (6 Sets) to KAPL/DCPL .
4. Taking approval from local authority /Electricity board

SECTION – VIII

TECHNICAL SPECIFICATIONS OF ELECTRICAL WORKS

Note 1: Tenderer's attention is drawn to GIT clause 17 and GIT sub-clause 10.1 under heading (c) preparation of tenders. The tenderer is to provide the required details, information, confirmations, etc. accordingly failing that it's tender is liable to be ignored.

Note 2: OPTIONAL ITEMS: Bidders are requested to quote for all the available options as asked in the bidding document with reasonable pricing. However the pricing for optional items will not be considered for price comparison for ranking purpose. If the firm has not quoted for any optional item (except the items of turnkey - if any) their offer will be treated as TECHNICALLY RESPONSIVE if otherwise meeting the specification.

Refer the following Annexures for the details, Data sheet and Layout

Annexure I: Technical data sheet of equipment
Annexure II: Tender drawing
Annexure III: Price schedule

Note:

1. The Layout of the proposed plant is here-with enclosed. Vendors to check suitability of installing their equipment's in this available area and height and revert back with their views. The vendor shall check the specification, bill of material, SLD's etc and confirm the suitability of the same for the specified requirement If required then bidder may add the item as optional which can be discuss during pre-bid meeting.

   If no views are received from any vendors before or during the pre-bid meeting, it is assumed that the vendor is confident of the suitability of the specification and installing the same to meet specified requirement. No further claims shall be entertained.

2. The extent of automation and optional additional features may vary during the pre-bid discussion.

3. The quantity of equipment mentioned in the list may vary during ordering and execution. The variation in the quantity shall be adjusted at the unit rate quoted in the tender.

SECTION- VIII A

1.0 CODES AND STANDARDS

The work shall be carried out as per the tender specifications confirming to following codes and standards for equipment and installation thereof.

IS: 732 - 1989	Code of practice for electrical wiring installations
IS: 4648 – 1968	Guide for electrical layout in residential buildings
IS: 8061 - 1976	Code of practice for design, installation and maintenance of service lines upto and including 650V.
IS: 8884 - 1978	Code of practice for installation of electric bells and call system.
IS: 5578 - 1985	Guide for marking of insulated conductor.
IS: 11353 - 1985	Guide for uniform system of marking and identification of conductors and apparatus terminals.
IS: 10118 (Part-1) - 1982	Code of practice for selection, installation and maintenance of switchgear and control gear: General.
IS: 4201 - 1983	Application guide for current transformers.
IS: 2309 - 1989	Code of practice for the protection and allied structures against lightning.
IS: 3043 - 1987	Code of practice for earthing.
IS: 5216 (Part-2) - 1982	Guide for safety procedures and practices in electrical work: General.
IS: 5216 (Part-2) - 1982	Recommendation on safety procedure and practices in electrical works – life saving techniques.
IS: 374 - 1979	Electric ceiling type fans and regulators.
IS: 11037 - 1984	Electronic type fan regulators.

Low voltages switchgear and control gear

IS: 12155 - 1987	General and safety requirements for fans and regulators for household and similar purposes.
IS: 8828 - 1996	Electrical accessories – circuit breakers for over current protection for household and similar installation.
IS: 13032 - 1991	A.C.Miniature circuit breaker boards for voltages upto and including 1000 volts AC.
IS: 12640 – Part I 1988	Residual current operated circuit breakers without integral over current protection.
IS: 12640 – Part II 1988	Residual current operated circuit breakers with integral over current protection.
IS: 2959 - 1985	Contactors for voltages not exceeding 1000 V AC or 1200 V DC.
IS: 8623 (Part-2) - 1993	Particular requirements for bus bar trunking system.

Power cable

IS: 694 - 1990	PVC insulated cables for working voltage upto and including 1100V.
IS: 1554 (Part –1) - 1988	PVC insulated (heavy – duty) electric cables: For working voltages upto and including 1100V.
IS : 7098& 7098 P	XLPE Cables LV and HV side
IS: 3961 (Part –5) - 1968	Recommended current ratings for cables: PVC insulated light duty cables.

Electric wiring accessories

IS: 9537 (Part –1) – 1980	Conduits for electrical installations General requirements.
IS: 9537 (Part –2) - 1981	Conduits for electrical installations: Rigid steel conduits.
IS: 3480 – 1966	Flexible steel conduits for electrical wiring.

IS: 2667 - 1988	Fittings for rigid steel conduits for electrical wiring.
IS: 3837 - 1976	Accessories for rigid steel conduits for electrical wiring.
IS: 9537 (Part –3) - 1983	PVC conduit for electrical installation rigid PVC conduit.
IS: 3854 - 1997	Switches for domestic and similar purposes.
IS: 4615 - 1968	Switch socket outlets (non-interlocking type)
IS: 4160 - 1967	Interlocking switch socket outlet.
IS: 1293 – 1988	Plugs and socket outlets of rated voltage up to and including 250 volts and rated current upto and including 16 amperes.

Electrical lamps and their auxiliaries

IS: 418 - 1978	Tungsten filament general service electric lamps.
IS: 2418 (Part –1) - 1977	Tubular fluorescent lamps for general lighting service: Requirements and tests.
IS: 2215 - 1983	Starters for fluorescent lamps.
IS: 1534 (Part –1) - 1977	Ballast for fluorescent lamps: For switch start circuits.
IS: 1569 - 1976	Capacitors for use in tubular fluorescent high-pressure mercury and low-pressure sodium vapor discharge lamp circuits.

Miscellaneous

IS: 2551 - 1982	Danger notice plates.

Safety

IS: 4770 – 1991	Rubber gloves for electrical purposes.
IS: 5424 – 1969	Rubber mats for electrical purposes.

2.0 In addition to the codes and standards specifically mentioned in the relevanttechnical specifications for the equipment / plant / system, all equipment parts,systems and works covered under this specification shall comply with allcurrently applicable statutory regulations

and safety codes relevant of the locality where they willbe installed, including but not limited the following:

2.1 Indian Electricity Act

2.2 Indian Electricity Rules

2.3 Indian Explosives Act

2.4 Indian Factories Act and State Factories Act

2.5 Regulations of the Central Pollution Control Board, India

2.6 Regulations of the Ministry of Environment & Forest (MoEF), Government ofIndia

2.7 Pollution Control Regulations of Department of Environment, Government ofIndia

2.8 State Pollution Control Board.

2.9 Rules for Electrical installation by Tariff Advisory Committee (TAC).

SECTION –VIII B

1.0 GENERAL SPECIFICATIONS

1.1 Drawings:

The work shall be carried out in accordance with the drawings enclosed with the tender documents and in accordance with modification thereto from time to time as approved by the Owner / DCPL

1.2 Conformity to IE Act, IE Rules and Standards:

All Electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 1910 and Indian Electricity Rules, 1956 amended up to date (Date of call of tender unless specified otherwise).

1.3 Quality of Materials:

All materials and equipment's supplied by the contractor shall be new. They shall be of such design, size, and materials as to satisfactorily function under the rated conditions of operation and to withstand the environmental conditions at site.

1.4 Inspection of Materials and Equipment's:

a) Materials and equipment's to be used in the work shall be inspected by the KAPL / DCPL. Such inspection will be of following categories:

i) Inspection of materials/equipment's to be witnessed at the Manufacturer's premises in accordance with relevant BIS/ Agreement Inspection Procedure.

ii) To receive materials at site with Manufacturer's Test Certificate(s).

ii) To inspect materials at the Authorized Dealer's Go-downs to ensure delivery of genuine

materials at site. .

iv) To receive materials after physical inspection at site.

b) The DCPL /KAPL will take adequate care to ensure that only tested and genuine materials of proper quality are used in work.

c) Similarly, for fabricated equipment's, the contractor will first submit dimensional detailed drawings for approval before fabrication is taken up in the factory. Suitable stage inspection at factory also will be made to ensure proper use of materials, workmanship and quality control.

d) The tender specifications will stipulate the Inspection requirements or their waiver for norms of inspection in specific cases.

1.5 Ratings of Components:

a) All components in a wiring installation shall be of appropriate ratings of voltage, current, and frequency, as required at the respective sections of the electrical installation in which they are used. .

b) All conductors, switches and accessories shall be of such size as to be capable of carrying the maximum current, which will normally flow through them, without their respective ratings being exceeded.

1.6 Conformity to Standards:

a) All components shall conform to relevant Indian Standard Specifications, wherever existing. Materials with ISI certification mark shall be preferred.

1.7 Interchangeability:

Similar parts of all switches, lamp holders, distribution boards, switch gears, ceiling roses, brackets, pendants, fans and all-other fittings of the same type shall be interchangeable in each installation.

1.8 WORKMANSHIP:

Good workmanship is an essential requirement to be complied with. The entire work of manufacture/fabrication, assembly and installation shall conform to sound engineering practice.

1.9 Proper Supervision/Skilled Workmen:

The contractor shall be a licensed electrical contractor of appropriate class suitable for execution of the electrical work. He shall engage suitably skilled/licensed workmen of various categories for execution of work supervised by supervisors / Engineer of appropriate qualification and experience to ensure proper execution of work. They will carry out instructions of KAPL/ DCPL/ Project Manager during the progress of work.

1.10 Use of quality materials:

Only quality materials of reputed make as specified in the Approved List of Makes will be used in work. Any other item to be used but not specified in the list shall be approved by Client/DCPLs.

1.11 Fabrication in Reputed Workshop:

Switch boards and LT panel shall be fabricated in a factory/workshop having modern facilities like quality fabrication, seven tank process, powder/epoxy paint plant, proper testing facilities, manned by qualified technical personnel.
The tender shall specify some quality makes of fabricators with modern facilities of design, fabrication and testing capable of delivering high quality LT panels and switch boards after

testing as per relevant specifications

1.12 TESTING:

All tests prescribed in these General Specifications, to be done before, during and after installation, shall be carried out, and the test results shall be submitted to the Project Manager in prescribed Performa, forming part of the Completion Certificate.

1.13 COMMISSIONING ON COMPLETION:

After the work is completed, it shall be ensured that the installation is tested and commissioned.

1.14 GUARANTEE

The installation will be handed over to the Client after necessary testing and commissioning. The installation will be guaranteed against any defective workmanship. Similarly, the materials supplied by the contractor will be guaranteed against any manufacturing defect, inferior quality.

SECTION – VIII C

1.0 HT PANEL 11KV (VCB)

1.1 GENERAL

The technical specification cover the supply of 11 KV Switchboards suitable for 11 KV, 3 Phase earthed system 50 HZ AC supply with a fault level of 21KA at 11 KV. The equipment shall be suitable for continuous operation at the stipulated ambient conditions.

1.2 STANDARDS AND CODES

The following Indian Standards Specifications and Codes of Practice shall apply to the equipment covered by this Contract. In additions, the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Ruled 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and /or IEC Standards shall be applicable.

BIS certified equipment shall be used as a part of the contract in line with Government Regulations. Necessary Test Certificates in support of the certification shall be submitted prior to supply of the equipment.

It is to be noted that updated and current Standards shall be applicable irrespective of those listed below.

- 11000-volt Circuit Breaker IS 13118:1991
- Metal Enclosed Switchgear and Control gear for voltages above1000 volts IS 3427:1969
- Electrical Relays for Power System Protection IS 3231:1986
- Voltage Transformers IS 3156:1978
- Current Transformers IS 2705:1981
- Rubber Mats for Electrical Works IS 5424:1983
- Danger Notice Plate IS 2551:1982

2.0 11000 VOLTS CIRCUIT BREAKERS

2.1 Technical Parameters

The 11000-volt circuit breakers shall be triple pole Vacuum type suitable for indoor mounting and shall comply with the requirements of the relevant Indian Standards. The Circuit Breakers shall be suitable for operation at 11000 volts 3 phase 50 Hz supply system and shall have a certified symmetrical breaking capacity of 21KA at 11000 volts or as stipulated in schedule of quantities.

2.2 Technical Specifications.

The Circuit Breaker shall be Vacuum type and shall consist of three identical single pole vacuum interrupter units which shall comprise of a pair of butt contacts enclosed within a sealed ceramic body with SS end plates. The moving contacts shall be sealed into the enclosure via a SS steel bellow which shall permit axial movement of the contact. The contact arrangement shall be surrounded by SS sputter shield to prevent condensation of metal on the inside of the insulating envelop and also to provide good voltage grading across the gap and the outer envelope. The contact material and the contact geometry shall be suitable for the purpose so as to attain current chopping at minimum current to prevent build-up of unduly high over voltages and to prevent the are to cause localized high sports on the contact.

The Circuits Breaker shall be suitable for switching duty of Transformers

3.0 CIRCUIT BREAKER CONSTRUCTIONAL FEATURES.

The 11000-volt circuit breaker shall be flush front, metal clad, truck mounted, draw out type and fully interlocked. The truck that carries the Circuit Breakers shall be of rigid fabricated construction. Each Circuit Breaker shall be housed in a separate compartment enclosed on all side.

Each with draw-able truck shall have its own Circuit Breaker.

All electrical connections on the truck shall be brought to secondary plugs which engage similar sockets in the housing.

The Circuit Breakers shall be of the double break type. Interphase barriers and tank lining of insulation material shall be provided.

The draw out mechanism shall be so designed and constructed as to permit smooth withdrawal and insertion. The movement shall be free of jerks, easy to operate and positive.

All current carrying parts in the Circuit Breaker shall be silver plated and suitable arcing contacts shall be provided to protect the main contacts.

Isolating contacts of the spring loaded self-aligning pattern shall be provided for the Circuit Breaker. Suitable are control devices shall be mounted around the fixed contacts.
Terminal insulators of synthetic resin bonded paper shall be provided suitable for the specified short circuit level.

Sheet steel barriers shall be provided between.
Instrument Panel and Potential Transformer.
Instrument Panel and Current Transformers.
Bus bar Chamber and Circuit Breaker compartments.

4.0 CIRCUIT BREAKER OPERATING MECHANISM.

The Circuit Breaker shall be trip free and equipped with a motor power operated closing mechanism. The operating mechanism shall be such that the Circuit Breaker is at all times free to open immediately the trip coil is energized.
Mechanical ON/OFF position indication shall be provided on the front of the circuit breaker.
The operating mechanism shall be mounted on the front panel of the truck.
The operating handle and the mechanical trip push button shall be at the front of and integral with the Circuit Breaker.

The operating mechanism shall provide four distinct and separate positions of the Circuit Breaker on the cradle.

- Service
- Test

- Isolated
- Maintenance

5.0 CIRCUIT BREAKER INTERLOCKING

Each Circuit Breaker shall be provided with the following mechanical safety interlocks to ensure protection to the equipment and the operator.

The Circuit Breaker cannot be closed unless it is in the 'PLUGGED IN' position.

The Circuit Breaker cannot be withdrawn form or pushed into the housing unless the main contacts are open.

The Circuit Breaker cannot be put into service without making the secondary connections between the truck and housing.

The cover of the draw out voltage transformer cannot be opened unless the transformer is isolated.

6.0 CIRCUIT BREAKER AUXILIARY CONTACTS.

The Circuit Breaker shall have minimum of 12NO+12NC auxiliary contacts rated at 5 amps. These contacts shall close before the main contacts when the Circuit Breaker is plugged in and vice versa when the Circuit Breaker is lowered.

7.0 PROTECTIVE RELAYS.

The Circuit Breaker shall have over current, earth fault protection and auxiliary relay devices as specified in the Schedule of Quantities. These relays shall be mounted flush on a separate compartment with access from the rear for wiring and maintenance.

8.0 POTENTIAL AND INSTRUMENT TRANSFORMERS

A draw out type cast resin voltage transformer shall be mounted in the panel and connected to

the line. The tank shall be arranged for horizontal isolation. The Circuit Breaker shall have the required current transformers as specified in the Schedule of Quantities for metering and protection mounted outside the Circuit Breaker compartment but within the free-standing cubicle. The transformers shall comply to the relevant Indian Standard. All current transformers for metering shall be Accuracy Class I and of capacity and ration as required. Separate sets of current transformers shall be provided of metering and protection.

9.0 INSTRUMENTATION

Instruments and indicating lamps as required in the Schedule of Quantities shall not be mounted on the Circuit Breaker compartment door. A separate adequate compartment shall be provided. The instruments and relays shall be accessible for testing and maintenance without danger of accidental contact with live parts in the Switchgear Panel.

Square pattern flush mounting meters and selector switches of the three way and OFF pattern complying with the requirements of the relevant Indian Standards shall be used.

The current transformers for metering and protection shall be mounted on the solid copper busbars with proper supports.

Neon type indication lamps shall be provided for phase and other operational indications.

10.0 TYPE TEST CERTIFICATES.

The Contractor shall submit type test certificates of the Circuit Breaker complying to the relevant Indian Standards form a recognized Test House.

11.0 11 KV SWITCHGEAR PANEL

11.1 General

The switchgear panels shall be suitable for operation at 11000-volt 3 phase 50 Hz supply system with a short circuit withstand of 21 KV at 11,000 volts and a corresponding short time rating for I second.

The Switchgear panels shall comply with the requirements of the latest edition with upto date

amendments of the relevant Indian Standards Specification, Indian, Electricity Rules and Regulations.

11.2 Switchgear Configuration.

The panel shall be configured with 11,000-volt Circuit Breakers, associated metering and protective devices and other equipment as called for in the Bill of Quantities.

11.3 Equipment Specifications.

All equipment used to configure the Switchgear Panel shall comply to the relevant Standards and Codes of the Bureau of Indian Standards and the detailed technical specifications as included in this tender document.

11.4 Constructional Features.

The 11000 volts Switchgear Panel shall be totally enclosed, dead front, metal clad, cubicle pattern, floor mounting, extensible on both sides and suitable for indoor use.
The Switchgear Panels shall be totally enclosed and completely dust and vermin proof. Synthetic rubber gaskets between all adjacent units and beneath all covers shall be provided to render the joints dust and vermin proof. All doors and covers shall also be fully gasketed with synthetic rubber and shall be lockable.

The Switchgear Panels shall be fabricated with CRCA sheet steel of thickness not less than 2.0 mm and shall be folded and braced as necessary to provide a rigid support for all components. The doors and covers shall be constructed from CRCA Sheet Steel of thickness not less than 1.6 mm. Joints of any kind in sheet steel shall be seam welded and all welding slag ground off and welding pits wiped smooth with plumber metal.

All panels and covers shall be properly fitted and square with the frame. The holes in the panels hall are correctly positioned.

Fixing screws shall enter holes tapped into an adequate thickness of metal or provided with hank nuts. Self-threading screws shall not be used in the construction of the Switchgear Panels.

11.5 Switchgear Panel Limitations.

A base channel of 75 mm x 5 mm thick shall be provided at the bottom.

The Switchgear Panel height shall normally be restricted to a maximum of 2300 mm.

11.6 Switchgear Panel Compartmentalization.

The Switchgear Panels shall be divided into distinct separate compartments comprising.

A completely enclosed ventilated dust and vermin proof bus bar compartment for the vertical and horizontal busbars.

Each Circuit Breaker shall be housed in a separate compartment enclosed on all sides.

Separate and adequate compartments shall be provided for accommodating instruments, indicating lamps, protective relays, control fuses etc as required. These shall be accessible for testing and maintenance without any danger of accidental contact with live parts.

A horizontal wire way with screwed covers shall be provided at the top to take interconnecting control wiring between vertical sections.

Cable compartment shall be of adequate size for easy termination of all incoming and outgoing cables. Adequate and proper supports shall be provided in the compartment for supporting the cables.

11.7 Switchgear Panels Busbars.

The main horizontal and vertical interconnection busbars shall be of hard drawn high conductivity electrolytic copper and of rectangular cross sections suitable for full rated current. The current density for copper shall be 1.6 amps per sq. mm and suitable to withstand the electromagnetic and thermal stresses of a 21 kV fault level at 11000 volts for 1 second.

The bus bars and interconnections shall be insulated glass sleeves.

The busbars shall be extensible on either side of the Panels.

The busbars shall be supported on non-breakable, non-hygroscopic insulated supports at regular intervals to with stand the stresses of a 21-kAfault level.

All busbars and interconnections shall be color coded.

The main horizontal busbars shall run through the entire length of the Switchgear Panels.

11.8 Switchgear Panel Interconnections.

All interconnections shall be with solid electrolytic copper of adequate size to carry the full rated current and fiber glass insulated.

11.9 Draw out Features.

All Circuit Breakers shall be provided in fully draw out cubicles. These cubicles shall be such that draw out is possible without disconnection of the wires and the cables. The power and control circuits shall have self aligning and self-isolating contacts which shall be easily accessible for maintenance. Mechanical interlocks shall be provided on the draw out cubicles to ensure safety and compliance to the relevant Standards.

11.10 Switchgear Panel Interlocks.

Each group of busbars and feeder connections shall be fitted with automatically operated safety shutters with positive opening and closing when the Circuit Breaker is raised or lowered. Facility shall be provided for hand operation of the shutters and latching in either open or closed position.

Padlocking provision of the shutter in the closed positions shall be included for maintenance purposes.

11.11 Instruments and Protection Relays.

Instruments, indicating lamps and all protection and control relays shall not be mounted on the Circuit Breaker compartment door. A separate adequate compartment shall be provide. The instruments and relays shall be accessible for testing and maintenance without danger of accidental contact with live parts in the Switchgear Panel.

11.12 Switchgear Panel Internal Wiring

All wiring for relays and metering shall be with PVC insulated copper conductor wires. The wiring shall be coded and labeled with approved ferrules for identification. The minimum size of copper conductor control wires shall be 2.5 sq. mm.

11.13 Cable Terminations.

Knock out holes of appropriate size and number shall be provided in the Panels in Conformity with the location of the incoming and outgoing cables.

The cable terminations of the Circuit Breakers shall be brought out to terminal cables sockets suitable located in the cable chamber at the rear of panels.

11.14 Space Heaters.

The Switchgear Panel shall have in each panel thermostatically controlled space heaters with a controlling 16-amp 230-volt socket outlet with MCB to eliminate condensation.

11.15 Earthing

Two main earth bars of G.I./ copper as required shall be provided throughout the length of the Switchgear Panels with a provision to make connections on both sides to the sub-station earth.

11.16 Designation Labels.

Suitable engraved white on black name plates and identification labels of metal for all Panels

and circuits shall be provided. Theses shall indicate the feeder number and the designation.

11.17 Sheet Steel Treatment and Painting

Sheet steel materials used in the construction of the Switchgear Panels should have undergone a rigorous rust proofing process comprising of alkaline degreasing, descaling in dilute sulphuric acid and a recognized phosphate process. The sheet steel work shall then receive two coats of oxide filler primer before final painting. Castings shall be scrupulously cleaned and fettled before receiving a similar oxide primer coat.

All sheet steel work shall after metal treatment by spray or powder painted with two coats of shade 692 to IS 5 on the outside and white on the inside. Each coat of paint shall be properly stored and the paint thickness shall be not less than 50 microns.

SECTION – VIII D

OIL TYPE TRANSFORMER

1.0 SCOPE :

This specification generally describes the power transformers and associated auxiliary equipment for use on the electrical power distribution system and covers the design, manufacture, testing at works, supply and delivery, site erection, testing and commissioning aspects of the same. The details are given in the data sheet.

2.0 STANDARDS :

2.1 The equipment and accessories covered by this specification shall be designed, manufactured and tested in compliance with the latest relevant standards published by the Indian Standards institution wherever available in order that specific aspects under Indian conditions are taken care of.

2.2 The equipment and accessories for which Indian Standards are not available shall be designed, manufactured and tested in accordance with the latest standards published by any other recognized national standards institution.

2.3 The equipment shall also conform to the latest Indian Electricity Rules as regards safety, earthing and other essential provisions specified therein for installation and operation of electrical plants.

2.4 Generally the transformer shall conform to IS:2026 and unless otherwise stated following standards shall be applicable.

- IS: 1180
- IS: 3839
- IS: 6600
- IS: 335
- IS: 1271

- IS: 2099
- IS: 3639
- IS: 2147
- IS: 3202
- IS: 2705

3.0 GENERAL DESIGN AND CONSTRUCTIONAL FEATURES:

3.1 All materials used shall be of best quality and of the class most suitable for working under the site conditions and shall withstand the variations of temperature and atmospheric conditions, overloads, over-excitation, short circuits as per applicable standards, without distortion or deterioration or the setting up of undue stresses in any part, and also without affecting the strength and suitability of the various parts for the work which they have to perform.

3.2 The design shall be such that the risk of accidental short-circuit due to birds or vermin's are obviated. All apparatus, including bushing insulators and fittings shall be so designed that water cannot collect at any point. Marshaling kiosks, boxes etc. shall be adequately ventilated to prevent condensation of moisture and so treated internally as to prevent growth of fungi on any coils, wires and insulating materials used.

3.3 The transformers shall operate with minimum noise and vibration. The cores, tank and other structural parts shall be properly constructed so that the mechanical vibrations are kept to the minimum, thus reducing the noise.

3.4 The design of the transformer shall be such that changes in transformer connection can be made by a simple change of link connection inside the tank. The transformers shall be designed to suppress harmonic voltages, specially the third and fifth, so as to eliminate distortion in wave form, and the possibility of circulating currents between the neutrals at different transformer stations.

3.5 All transformers shall be of the latest design, oil filled as called for in the main specification. Unless otherwise specified, all transformers shall be suitable for indoor installation. The type of cooling and the corresponding ratings for each transformer shall be as indicated in the main

specification.

3.6 The magnetic circuit of each transformer shall be so designed as to minimize eddy-current and hysteresis losses in the core.

3.7 All electrical connections and contacts shall be of ample section for carrying the rated current without excessive heating.

3.8 All mechanisms shall be of stainless steel, brass, gunmetal, or other suitable material to prevent sticking due to rust or corrosion.

3.9 **TANK :**

3.9.1 The transformer tank shall be made of steel plate, shaped in such a way that minimum of welding is required. The tank shall be electrically welded and all welding stresses shall be properly relieved. Tank walls shall be reinforced by adequate stiffeners to ensure mechanical rigidity permitting hoisting of complete transformers filled with oil and also to damp transformer-noise. The tank shall be sufficiently strong to withstand shocks likely to be encountered during transport of the transformer without any deformation or weakening of joints. The joints shall be oil-tight. Guides shall be welded on the inner side of the tank to facilitate tanking and un-tanking of the transformer core and coil assembly.

3.9.2 Tank cover shall be bolted on to the flanged rim of the tank with a suitable weather-proof, hot-oil-resistant gasket in between for oil-tightness. The bolted tank cover shall be so arranged that it can be removed and the core inspected without removal of the radiators. All requisite access and inspection holes shall be provided with bolted oil-tight, gasket-seated cover-plates. Bushing-turrets, covers of access holes, covers of pockets to prevent leakage of water into the tank shall be provided.

3.9.3 The exterior of tank and other steel surface exposed to the weather shall be thoroughly cleaned and have a priming coat of zinc chromate applied. The second coat shall be of an oil and weather resistant nature preferably of distinct color from the prime and finish coats. The final coat shall be of a glossy, oil and weather resisting non-fading paint of specified shade. The interior of the tank shall be cleaned by shot blasting and painted with two coats

of heat resistant and oil insoluble paint.

3.9.4 Steel bolts and nuts exposed to atmosphere shall be galvanized however, surfaces of the transformer or other parts of the transformer or auxiliary equipment which are in contact with oil shall not be galvanized.

3.9.5 The transformer tank, auxiliary equipment and fittings shall be provided with necessary devices for lifting and haulage facilities. The tank shall be mounted on a substantial under-carriage.

3.9.6 Unless otherwise stated the tank together with radiators, conservator, bushings and other fittings shall be designed to withstand without permanent distortion the following conditions.

a) Full vacuum of 760mm of Hg for filling oil by vacuum.

b) Internal gas pressure of 0.35 Kg/Sq.cm. with oil at operating level.

Valves shall not leak nor any welded joints sweat under above conditions.

3.9.7 Adequate space shall be provided at the bottom of the tank for collection of sediments.

3.10 CORE:

3.10.1 The magnetic circuit shall be built of transformer grade cold rolled grain oriented low loss steel stampings having high permeability and conforming to adopted standards. Stampings shall be insulated from each other with material having high inter-lamination insulation resistance and rust inhibiting property and capable of withstanding pressure, mechanical vibration and action of heat and oil, thus reducing the possibility of sludge formation to a minimum.

3.10.2 The framework, clamping arrangement and general structure of the cores of each transformer shall be of robust construction and shall be capable of withstanding any shock to which they may be subjected during transport, installation, and service. The assembled core shall be securely clamped, on the limbs and the yoke, to build up a rigid structure. The

clamping pressure shall be uniform over the whole of the core and so adjusted as to minimize noise and vibration in the core when the transformer is in service. The framework and the core bolts shall be efficiently insulated from the core so as to reduce the circulating currents to a minimum.

3.10.3 The core clamping frame shall be provided with lifting eyes for the purpose of tanking and un-tanking the core with winding mounted thereon and shall have ample strength to take the full weight of the core and winding assembly.

3.10.4 An approved type of core grounding system shall be used; the grounding connections being located at the top of the core for easy access from the inspection hole.

3.11 WINDING:

3.11.1 The coils used for transformer winding shall be circular in shape, made of paper insulated, continuous and smooth, tinned or enameled electrolytic copper conductors of high conductivity.

3.11.2 The transformer winding shall be designed for basic impulse insulation level not lower than that specified in the main specification.

3.11.3 Liberal ducts shall be provided to prevent any hot spot temperature in the winding that may adversely affect the life of the transformer. Adequate supports, wedges and spacers of hard insulating material shall be so fitted that they will neither move nor permit relative movement of any part of winding during transit of normal service or under terminal short-circuit, nor damage the winding insulation in any way. All leads and connections shall be robust, adequately insulated, protected, and clamped. The winding assembly shall be dried in vacuum with tested insulating oil of approved standard. The windings shall be subjected to a thorough shrinking and seasoning process so that no further shrinkage of windings occur during service at site. However adjustable devices shall be provided for taking up any possible shrinkage of coils in service. The assembly shall be held in position under adequate axial compression to withstand the axial thrust likely to occur under terminal short-circuit.

3.11.4 The end turns on the high voltage winding shall have reinforced insulation to take care of

the voltage surges likely to occur during switching or any other abnormal system condition.

3.11.5 The transformers shall be suitable for operation at full rated power on all tapings without exceeding the specified temperature rise as indicated in the applicable standards.

3.12 INSULATING MATERIALS:

3.12.1 The insulating oil shall conform to IS-335 and shall be suitable in all respects for operating the transformer at the rating and under conditions specified in the main equipment specification. Sufficient oil shall be supplied for the first filling of transformer, the oil circulating equipment and the tank containing tap-changing mechanism and an extra 10% shall be supplied in non-returnable drums. The tender shall contain information about the grades of oil recommended by the transformer manufacturer for use in the transformer. Test certificates for the oil shall be furnished before dispatch of transformer and acceptance by owner.

3.12.2 Class A insulating materials specified in IS:1271 shall be used. Paper insulation shall be new and free from punctures. Wood insulation, where used shall be well seasoned and treated.

3.13 TRANSFORMER TAPPINGS :

Transformer shall be provided with ON load tap changer arrangement in steps of 1.25% with range from + 10% to – 10%.

3.14 COOLING EQUIPMENT:

3.14.1 Natural cooling by means of banks of detachable type radiators made from pressed/round tubes around transformer tank shall be provided. The tubes shall be of seamless mild steel sheet with clean bright internal surface and shall be suitably braced to protect them from shock.

3.14.2 The radiators shall be provided with butterfly type of shut off valves.

3.14.3 Cooling tubes/radiators shall permit every part of the cooling surface to be cleaned by hand.

3.15 TERMINAL ARRANGEMENT

3.15.1 **High Voltage Side (33 KV)**

Cable box shall be provided suitable for terminating one no. 3C x 300sq. mm XLPE / 3C x 400 sq. mm XLPE insulated armored 33 KV cable complete with disconnecting chamber, compression glands, tinned copper lugs, Armor earth clamp and body earth terminal.

Cable box shall be fitted with bushing insulators for H.T. cable termination side.

3.15.2 **Medium Voltage Side**

For 433V

LT Termination shall be suitable for 4000A Busduct.

For 11kV

LT Termination shall be suitable for 2Nos of 11kV, 3Cx240sq.mm cable.

3.15.3 **Disconnecting Chamber**

The disconnecting chamber shall be air insulated and complete with seal off bushing, removable flexible connectors / links and removable covers. It shall be possible to trail out the transformer without having disconnecting the bus duct.

Phase to phase and phase to ground clearances with in the chamber shall be such as to enable either the transformer or cable to be subjected separately to H.V. test.

3.15.4 **Bushing :**

Bushings shall confirm to IS: 2099 and other relevant standards.

Bushings shall be supplied with terminal connector clamp suitable for connecting the bushing terminal to the owner's conductor.

Creepage distance of bushing shall be (41mm/kv phase ground) adequately,

3.16 **MARSHALLING BOX**

3.16.1 Whenever optional fittings, temperature indicators, with auxiliary contacts and Bushing CT's are specified then the bidder shall provide a Marshalling box and Marshall to it all the contact terminals of electrical devices mounted on the transformer. It shall be in the contractor's scope to provide:

a) The interconnection cabling between the Marshalling box and the accessory devices either by PVC insulated copper wire in G.I. conduits or PVC insulated copper conductor armoured cables.

b) Necessary compression type brass cable glands at the Marshalling box for above cables.

3.16.2 The Marshalling box shall be tank mounted; water/dust tight sheet steel (2mm thick) enclosed with hinged door having padlocking facility. All doors, covers and plates shall be fitted with neoprene gaskets. Top surface shall be sloped and bottom shall be at least 600mm from floor and provided with gland plate and cable glands as required.

3.16.3 Terminals shall be clip on type rated for 10A. All contacts for alarm/trip indication shall be potential free, wired up to the terminal block. Wiring shall be done with stranded copper conductor wires of sizes not less than 1.5 sq.mm for control and 2.5 sq.mm for CT circuits. C.T. terminals shall be provided with shorting facility.

4.0 ELECTRICAL & PERFORMANCE REQUIREMENT :

a) Transformer shall operate without injurious heating at the rated KVA at any voltage within +/- 10% of the rated voltage of that particular tap.

b) Transformer shall be designed for 110% continuous over fluxing withstand capability.

c) The neutral terminals of the winding with star connection shall be designed for the highest over current that can flow through the winding.

d) Overloads shall be allowed with in the conditions defined in the loading guide of the applicable

standard. Under these conditions, no limitations by terminal bushings, tap changers or other auxiliary equipment shall apply.

e) Temperature Rise shall be continuously rated for full load. The temperature rise shall not exceed 45 degree C by thermometer in oil or 55 degrees centigrade by resistance over an ambient of 38-degree C.

5.0 EARTHING :

5.1 Two separate earthing terminals to be provided at the bottom of the tank on opposite sides. The terminals shall be of clamp type suitable for connection to owners' ground-ing strip (50 x 6mm G.I.).

5.2 **Internal Earthing :**

The frame work and clamping arrangements of core and oil shall be securely earthed inside the tank by adequately sized G.I. strip connections to the tank.

Neutral to be earthed with size, of copper (6mm x 50mm)

6.0 FITTINGS AND ACCESSORIES :

The transformer shall be provided with all standard fittings and accessories specified in the applicable standard for the size and type of transformer concerned. The accessories and fittings shall generally be as specified below:

Oil Conservator :

The transformer to be provided with an oil conservator with welded end plates. It is to be bolted to the cover and can be dismounted for purpose of transport. It shall be provided with plain oil level gauge with marking for minimum level and an oil filling hole with a cap which can be used for filling oil. For draining purpose a plug shall be provided. An equalizer pipe between the conservator and the main tank is to be provided, which projects inside conservator. Separate conservator shall be provided for OLTC chamber.

Breather:

The transformer shall be provided with an indicating dehydrating silica-gel breather with glass window for inspection of sufficient capacity.

Explosion Vent.

An explosion vent with diaphragm shall be provided for relieving the pressure within the transformer.

Diagram and Rating Plate:

Diagram and rating plate of stainless steel shall be provided indicating the details of transformer, connecting diagram, vector group, tap changing diagram etc.

Earthing Terminals

Two earth terminals of adequate mechanical and electrical capacity shall be provided. One separate earthing terminal shall also be provided on each separate radiator banks.

Dial type Thermometer (OTI)

Dial type thermometer (150mm dia) with maximum set pointer at 75 degrees c and electrical contacts for electrical alarm at high temperature with thermometer pocket shall be provided.

Winding Temperature Indicator (WTI)

Shall comprise of :

i) Temperature sensing element

ii) Image coil

iii) Bushing or turret mounted

iv) C.T. Local indicating instrument with electrically independent trip/alarm contact brought out to separate terminals.

Buchholz Relay :

To be provided with double float for operation through oil pressure

Lifting Lugs :

The arrangement for lifting the active part out of the transformer tank along with cover by means of lifting lugs without disturbing the connections shall be provided.

Swivel Type Rollers :

The transformer to be provided with 4 Nos. bi-directional rollers fitted on cross channels to facilitate the movement of transformer in both directions.

Air Release Plugs :

An air release plug shall be provided on the top of the tank cover/radiators to facilitate the release of the entrapped air and filling of oil.

Drain-cum-oil Filter Valves with Plug on Cover Plate:

The transformer shall be provided with a drain-cum-oil filter valve with blanking plate & locking arrangement at the bottom of the tank.

Filter valve of at top with blanking plate.

Sample valve with blanking plate.

Inspection cover.

Oil filling hole with cap.

Jacking Pads

Skids

Neutral bushing terminals complete with connector for earth conductor.

7.0 DRAWINGS AND O&M MANUALS:

7.1 Four copies of manual of complete instructions for the installation, operation, maintenance and repairs circuit diagrams, foundation and trenching details shall be provided with the transformers.

List of spare parts shall also be indicated.

7.2 Two copies of the drawings incorporating the following particulars shall be submitted with the offer for preliminary study.

a) GA drawing showing dimension, net weight and shipping weight, quantity of insulating oil etc.

b) Crane requirements for assembly and dismantling of the transformer.

c) Drawing indicating GA of cable box and its dimension for cable entry cut out requirements etc.

7.3 The drawings in (four sets) to be furnished by the contractor for approval after acceptance of his order shall include the following.

a) GA showing front and side elevations and plan of transformer and all accessories and external features, detailed dimensions, oil quantity, H.T./L.T. clearances etc.

b) Drawings of Bus duct/cables termination arrangement.

c) HV cable box arrangement & disconnecting chamber GA & details drawings.

d) Drawing of each type of bushing.

e) Name plate and terminal making and connection diagram.

f) Control wiring & schematic diagram showing polarity and vector group of windings, CTs and

OTI, WTI, circuits, Alarm/trip circuits etc.

7.4 Reproducible copy of the above drawings for records

8.0 TESTING:

The transformer shall be subjected to all routine tests in accordance with IS : 2026 at the factory before dispatching the same and test certificates shall be furnished.

a) Measurement of winding resistance.
b) Ratio polarity and phase relationships.
c) Impedance voltage.
d) Load losses
e) No-load losses and No-load current
f) Insulation resistance (Before & after carrying out all tests)
g) Induced over voltage withstand test
h) Separate source voltage withstand test
i) Bidders may quote for the HV impulse test. Alternatively, they may submit the test certificate for the test conducted on the similar transformer.
j) Test will be witnessed by Owners representative/DCPL if so desired by owner/DCPL.
k) Oil Test (BDV) will be done, if required.

9.0 TEST REPORTS

Four copies of the test reports in bound volume shall be submitted for approval.

10.0 SPARES

The bidder shall quote item wised prices for his recommended spares for the period of operation of transformer for 5 years.

DATA TO BE FURNISHED BY BIDDER:

TRANSFORMER DATA SHEET - Refer Annexure 1

1.0 POWER TRANSFORMER:

1.1 Name of Manufacturer :

1.2 Standards followed in design
manufacture and testing :

1.3 Continuous maximum rating in KVA :

1.4 Transformer no-load voltage :

1.4.1 High voltage :

1.4.2 Medium voltage :

1.5 Vector group reference :

1.6 Temperature rise over specified
ambient temperature in degree C :

1.6.1 In oil by thermometer :

1.6.2 In winding by resistance :

1.6.3 Maximum hot spot temperature
in degree C :

1.7 Terminal Arrangement.

1.7.1 H.V. Side :

1.7.2 M.V. Side :

1.8. One-minute dry power frequency
test withstand voltage in KV :

1.8.1 High voltage :

1.8.2 Medium voltage :

1.9 Impulse test withstand voltage
with 1.2 x 50 microseconds wave in KV :

1.10 Type of tap changer :

1.10.1 No. of plus taps :

1.10.2 No. of minus taps :

1.11 Iron losses in KW at rated
voltage and frequency :

1.12 Copper losses in KW at
rated full load current and
frequency at 75 degree C :

1.13 Reactance voltage with
guaranteed tolerance in percent
at rated full load current and
frequency75 Deg C :

1.14 Impedance voltage with guaranteed
tolerance in percent at rated full load
current and frequency at 75 Deg C :

1.15 Regulation in percent of
no-load voltage at full
load current at 75 degrees
C and with power factors of :

1.15.1 Unity :

1.15.2 0.8 lagging :

1.16 Efficiency in percent
at 75 degree C and unity
power factor for :

1.16.1 100 percent load :

1.16.2 75 percent load :

1.16.3 50 percent load :
1.17 No-load current in amperes at
rated voltage and frequency :

1.18 Inrush magnetizing current
in percent of normal full
load current. :

1.19 Details of winding insulation :

1.19.1 Class of insulation materials :

Turns insulation high
voltage in meg ohm :

1.19.3 Turns insulation low
voltage in meg ohms :

1.19.4 Insulation core to low
voltage in meg ohms :

1.19.5 Insulation high voltage to

low voltage in mega ohms :

1.20 Details of 415 V neutral current transformer :

1.20.1 Name of manufacturer :

1.20.2 Current ratio :

1.20.3 VA capacity :

1.20.4 Accuracy & performance characteristics :

1.21 Quantity in liters and grade of oil :

1.22 WEIGHTS :

1.22.1 Core and windings in kg :

1.22.2 Tank and fittings in kg :

1.22.3 Oil :

1.22.4 Complete transformer filled with oil :

1.23 OVERALL DIMENSIONS :

1.23.1 Length in mm :

1.23.2 Breadth in mm :

1.23.3 Height in mm :

2.0 TESTS:

2.1 List of tests proposed to be carried out at the factory :

2.2 List of tests proposed to be carried out at the site before commissioning. :

INFORMATION TO BE FURNISHED BY THE VENDOR AFTER AWARD OF CONTRACT

Information to be furnished within 2 weeks of award of contract.

1.0 Positive sequence impedance at maximum voltage tap.

2.0 Positive sequence impedance at maximum voltage cap.

3.0 Zero sequence impedance at principal tap.

4.0 Efficiency at 75oC winding temperature:

4.1 At full load

4.2 At 75% full load

4.3 At 50% full load

5.0 Maximum efficiency and load at which it occurs.

6.0 Regulation at full load at 75oC winding temperature at:

6.1 Unity power factor

6.2 0.85 power factor lag.

7.0 Resistance per phase of :

7.1 H.V. winding : Ohms

7.2 M.V. winding : Ohms

8.0 Conductor area (sq.cm) and current density (Amps/cm2)

8.1 HV winding

8.2 M.V. winding

9.0 Type of windings

9.1 HV

9.2 MV

10.0 Insulating materials for interterm insulation :

10.1 HV winding

10.2 MV winding

11.0 Insulating materials for winding insulation

12.0 Insulating materials

12.1 Winding and core

12.2 Laminations of the core.

13.0 Make, type, dial rise, number of contacts and contact ratings (current following items, if provided).

13.1 Magnetic oil level gauge.

13.2 Dial type thermometer.

13.3 Winding temperature indicator.

13.4 Gas and oil actuated relay.

14.0 Thermal withstand capability under full short circuit conditions in terms of number of times of calculation of short circuit and corresponding anticipation percentage reduction in transformer life. Relevant calculations shall be submitted.

15.0 DRAWINGS

The following drawings shall be submitted for the PURCHASER'S approval in the stipulated time.

15.1 General outline drawings showing plan, front elevation, rear elevation, cable boxes/disconnecting chamber section views, locating dimensions of cable entries, terminals foundation floor fixing details and weights.

15.2 Bushings : Plan, elevation terminals details, mounting details make and type number, current and voltage rating, Creepage distances and principal characteristics.

15.3 Rating and diagram plate

15.4 Marshalling box terminal connections, wiring diagram

16.0 TEST REPORTS

Test results shall be corrected to a reference temperature of 75 Deg C.

16.1 Two copies of test results shall be submitted for the KAPL/DCPLs approval before dispatch of transformer.

16.2 Additional bound copies, as required by the KAPL/DCPLs contract, of complete test results including all tests on transformer, bushing, current transformer (if provided), shall be furnished with the transformer.

SECTION – VIII E

MV CABLES AND CABLE TRAY

1.0 STANDARDS OF CODES

This chapter covers the specifications for supply and laying of Medium Voltage **XLPE** cables.

All equipment's, components, materials and entire work shall be carried out in conformity with applicable and relevant Bureau of Indian Standards and Codes of Practice, as amended upto date. In addition, relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and /or IEC Standards shall be applicable.

2.0 CABLES

Medium voltage cables shall be aluminum conductor XLPE insulated, PVC sheathed armored conforming to latest IS Code. Cables shall be rated for a 1100 Volts.

All Conductor cables shall be as per BOQ.

Conductors shall be insulated with high quality XLPE base compound. A common covering (bedding) shall be applied over the laid-up cores by extruded sheath of un-vulcanized compound. Armoring shall be applied below outer sheath of PVC sheathing. The outer sheath shall bear the manufacturer's name and trade mark at every meter length. Cores shall be provided with following color scheme of PVC insulation.

1 Core : Red/Black/Yellow/Blue
2 Core : Red and Black
3 Core : Red, Yellow and Blue
3 ½ /4 Core : Red, Yellow, Blue and Black

3.0 STORING, HANDLING, LAYING, JOINTING AND TERMINATION

Storing

All the cables shall be supplied in drums. On receipt of cables at site. It should be ensured that both ends of the cables are properly sealed to prevent ingress/absorption of moisture lay the insulation. The cables shall be inspected and stored in drums with flanges of the cable drum in vertical position. Whenever cable drums have to be moved over short distances, they should be rolled in the direction of the arrow, marked on the drum and while removing cables from the drums the drum shall be properly mounted on jacks or on a cable wheel or any other suitable means making sure the spindle, jack etc. are strong enough to take the weight of the drum.

Laying

Cables shall be laid as per the specifications given below :

i) Cable on Trays/Racks

a) Cable shall be laid on cable trays/racks wherever specified. Cable racks/trays shall be of ladder, trough or channel design suitable for the purpose. The nominal depth of the trays/racks shall be 150 mm. The width of the trays shall be made of steel or aluminum. The trays/racks shall be completed with end plates, tees, elbows, risers, and all necessary hardware, steel trays shall be hot dip galvanized. Cable trays shall be erected properly to present a neat and clean appearance. Suitable cleats or saddles made of aluminum strips with PVC covering shall be used for securing the cables to the cable trays. The cable trays shall comply with the following requirements :

b) The tray shall have suitable strength and rigidity to provide adequate support for all contained cables.

c) It shall not present sharp edges, burrs or projections injurious to the insulation of wiring/cables.

d) If made of metal, it shall be adequately protected against corrosion or shall be made of corrosion-resistant material.

e) It shall have side rails or equivalent structural members.

f) It shall include fittings or other suitable means for changes in direction and elevation of runs.

Installation

1. Cable trays shall be installed as a complete system. Trays shall be supported properly from the building structure. The entire cable tray system shall be rigid.

2. Each run of the cable tray shall be completed before the installation of cables.

3. In portions where additional protection is required, non-combustible covers/enclosures shall be used.

4. Cable trays shall be exposed and accessible.

5. Where cables of different system are installed on the same cable tray, non-combustible, solid barriers shall be used for segregating the cables.

6. Cable trays shall be grounded by two nos, earth continuity wires. Cable trays shall not be used as equipment grounding conductors.

Jointing and termination's

Cable jointing shall be done as per the recommendations of the cable manufacturer. All jointing work shall be done only by qualified/licensed cable jointer.

All jointing pits shall be of sufficient dimensions as to allow easy and comfortable working.

Jointing materials and accessories like conductor, ferrules, solder, flex, insulating and protective tapes, filling compound, jointing box etc. of right quality and correct sizes, confirming to relevant

Indian Standards.

Each termination shall be carried out using brass compression glands and cable sockets. Hydraulic crimping tool hall be used for making the end terminations. Cable gland shall be bonded to the earth by using suitable size copper wire/tape.

1.0 TESTING

a) Cable jointing shall be tested at factory as per the requirements of latest IS amendment up to date. The tests shall incorporate routine tests, type tests and acceptance tests.

b) Cable shall be tested at site after installation and the results shall be submitted to the Project Manager.

c) Insulation resistance between conductors and neutral and conductors and earth.

d) Pressure test for 15 minutes.

2.0 CABLE TRAY & LADDER SPECIFICATION

General Requirement:-

Cable Tray and Cable Ladder systems are intended for the support and accommodation of cables and possibly other Electrical equipment in Electrical/Instrumentation/Communication systems.

Design and Fabrication of Cable Trays / Ladders:-

The cable trays / ladders shall be fabricated according to the design specified by IEC 61537 and should be tested for Safe Working Load (SWL). The relevant details of SWL and the load chart with respect to SWL, supporting distance and the deflection should be according to the following chart.

Safe Working Load (SWL) with a span length up to 3 meters						
Description	Side height in mm	Width in mm	Span length (in meters)			
Side			1.5 m	2 m	2.5 m	3.0 m
			Permitted Load (in kg/meter)			
Perforated Cable tray	35	50-300	120	90	50	-
	60	50-600	150	100	50	-
	85	100 - 600	175	110	50	
	110	100 - 550	185	130	75	60
Cable Ladder	45	200 - 600	180	140	100	55
	60	200 - 600	-	225	150	100
	110	200 - 600	-	310	200	140

Safe Working Load (SWL) with a span length up to 10 meters

Description	Side height in mm	Width in mm	Span length (in meters)						
			4 m	5 m	6 m	7 m	8 m	9 m	10 m
			Permitted Load (in kg/meter)						
Perforated Cable Tray for long span distance	110	200 - 300	160	110	75	-	20	-	-
		400 - 600	200	150	100	-	40	-	-
	160	200 - 300	230	180	140	100	70	-	-
		400 - 600	250	200	160	130	100	-	-
Cable Ladder for long span distance	110	200 - 300	160	110	80	40	-	-	-
		400 - 600	210	150	100	70	-	-	-
	160	200 - 300	230	180	140	100	70	-	-
		400 - 600	250	200	160	130	100	-	-
	200	200 - 600	-	-	300	250	200	140	100

Fabrication of Tray / Ladder and accessories at site and welding is not permitted. In unavoidable circumstances, If any cut or holes are made in the trays/Ladder/accessories, zinc spray need to be applied over the surface. The metal edge has to be protected by edge protection sleeves to avoid cable damage. Edge of the supports has to be protected with plastic END caps. Screwed connections and internal fixing Devices should not create any damage to the cable when correctly fixed. Sudden or jerky motions shall not be used to tighten reusable screw connections.

Cables shall run in cable tray/ladder mounted horizontally or vertically on cable tray support system which in turn shall be supported from floor, ceiling, overhead structures, trestles, pipe racks, trenches or other building structures using mounting accessories

Cable Tray:-

The cable tray and all accessories shall be fabricated from sheet steel and has to be hot dip galvanized against corrosion confirming to ISO 1461-1999 for installations in both indoor and outdoor applications & should have a Base Perforation Class B according to IEC 61537. The cable trays shall be supplied in standard lengths of 3000mm and the width of the tray shall be as follows.

Width: 50, 100, 150, 200, 300, 400, 500, 600 & 750 mm.

All the cable tray accessories like Bend's, TEES's, Cross oversetc. should be designed in accordance with IEC 61537 and shall be factory fabricated. The accessories shall be from the same material as of the tray and modular type, it should be connected with the trays by using fasteners. Typical details of trays, fittings and accessories are shown in the enclosed drawings.

For Cable trays designed, tested, and confirming to IEC 61537, thickness of cable tray should be according to the manufacturers catalogue. For locally fabricated and non-tested tray, thickness should be 2 mm up to span length of 1.5-meter, 2.5 mm for span length between 2 to 3 meter and 3 to 4 mm for span length between 4 and 10 meter

Cable ladder:-

The cable Ladder and all accessories shall be fabricated from sheet steel and has to be hot dip galvanized against corrosion confirming to ISO 1461-1999 for installations in both indoor and outdoor applications & should have a Free Base Area classification Y according to IEC61537. The cable ladders shall be supplied in standard lengths of 3000/6000 mm and the width of the tray shall be as follows.

Width: 200 to 1200 mm in multiples of 100 mm

Maximum rung spacing in the ladder shall be 300mm. The rung's should be made of C profiles suitable to fix cables by special metal clamps according to the drawing. The ladder shall be of riveted and foldable type for easy transportation and to avoid damage during transportation and storage. All the ladder accessories like Bend's , TEES's, Cross over's etc should be designed in

accordance with IEC 61537 and shall be factory fabricated . The accessories shall be made from the same material as of the ladder and modular type, it should be connected with the ladder by using fasteners. The details of ladders, fittings, and accessories .etc are shown in the enclosed drawing.

For Cable Ladders designed, tested and confirming to IEC 61537, thickness of cable Ladder should be according to the manufacturer's catalogue. For locally fabricated and non-tested Ladder, thickness should be 2.5 mm up to span length of 1.5-to-2-meter, 3 mm for span length between 2.5 to 4 meter and 3 to 4 mm for span length between 5 and 10 meters

Cover for Cable Trays / Ladders:-

Cover for trays/ladders to protect the cable insulation from falling objects, water droplets, harmful effects of ultraviolet rays and accumulation of dust. The cover shall be made either from Hot Dip Galvanized sheet steel or superior quality Double Dip Galvanized Sheets. For Outdoor application, Double dip Galvanized material shall be used. The covers should be fitted properly to the Ladder / Tray by using pre fixed and tested locks which ensure that covers are fitted rigidly to Tray / Ladder. For outdoor application in high wind areas, additional cross over beadings to be used for fixing the cover on tray / ladder of width more than 500 mm.

Mounting Accessories (supports and Brackets):-

The mounting accessories shall be fabricated from steel and has to be hot dip galvanized against corrosion confirming to ISO 1461-1999 for installations in both indoor and outdoor applications and should be of completely modular type.

All supports and Brackets should be factory made, hot dip galvanized after completing welding, cutting, drilling, other machining operations and tested according to IEC 61537 according to the arrangements in the enclosed drawing. The system shall be designed such that it allows easy assembly at site by using Bolts and Nuts. The main support and brackets shall be fixed at site using necessary brackets, clamps, fittings, bolts, nuts and other hard ware etc to form various arrangements required to support the cable trays. Welding of the components at the site shall not be allowed.

SECTION – VIII F

MEDIUM VOLTAGE PANELS:

1.0 GENERAL

Medium voltage power control centers (generally termed as switchboard panels) shall be in sheet steel clad cubicle pattern, free floor standing, totally enclosed, compartmentalized design having multitier arrangement of the incomers and feeders as per details given in the schedule of quantities. All panels shall conform to the requirements of the latest addition of IS Code and shall be suitable for 415 V, 3 phase AC supply or 230 V single phase AC supply as required.

2.0 CONSTRUCTIONAL FEATURES

The Switch Boards shall be totally enclosed, sheet steel cubicle pattern, extensible on either side, dead front, floor mounting type (wall mounting if specifically asked for in BOQ) and shall have a bus bar chamber at the top and the cable entry from the bottom. (For panel requiring top cable entries if any, refer to BOQ). The cable terminations should be **inside the feeder compartment only**.

The Switch Boards shall be completely dust and vermin proof. Synthetic rubber gaskets between all adjacent units and beneath all covers shall be provided to render the joints dust and vermin proof to provide a degree of ingress protection of IP 43 for indoor & IP 55 for outdoor. All doors and covers shall also be fully gasketed with synthetic rubber. All the live parts shall be properly shrouded with FRP sheets.

The Switch Board shall be fabricated with CRCA Sheet Steel of thickness not less than 2.0mm and shall be folded and braced as necessary to provide a rigid support for all components. The doors and covers shall be constructed from CRCA sheet steel of thickness not less than 1.6 mm. Joints of any kind in sheet metal shall be seam welded and all welding slag ground off and welding pits wiped smooth with plumber metal. Base channel shall be fabricated from ISMC 75 and door shall be provided at the bottom with arrangement for fixing bolts in the foundation.

All panels and door covers shall be properly fitted and square with the frame. The cutouts in the panel shall be correctly positioned.

Lifting lugs of adequate strength shall be provided on each transport section of the panels.

Fixing screws shall enter holes tapped into an adequate thickness of metal or provided with hank nuts. Self-threading screws shall not be used in the construction of the Switch Boards.

3.0 SWITCHBOARD DIMENSIONAL LIMITATIONS

A base channel 75 mm x 5 mm thick shall be provided at the bottom.

The overall height of the Switch Board shall be limited to 2200 mm
The height of the operating handle, push buttons etc shall be restricted between 300 mm and 1900 mm from finished floor level.

4.0 BUS BARS

The bus bars shall be suitable for 4 wire, 415 volts, 50 Hz, system. The main bus bar shall be made of high conductivity electrolytic grade AL 91E Aluminum. The bus bars shall have uniform cross section throughout the panel. The bus bars shall be capable of carrying the rated current at 415 volts continuously. The bus bar will run in a separate busbar chamber using bus insulators made of non-deteriorating, vermin proof, non-hygroscopic materials such as epoxy fiber, reinforced polyester or molding compound (min. 25mm clearance between phase to phase & phase to neutral busbars shall be provided). The interval between the two insulators will be designed after considering the following:

a) Strength and safe load rating of the insulator,
b) The vibrating force generated during a fault,
c) A Factor of safety of 1.25
d) A set of insulators at both ends of the bus.

Bus bars shall be sized considering maximum current density of 1 Amps/ cross section sq.mm area. The size of the bus bar calculations must be approved by the DCPLs. The bus bars shall be

designed to withstand a temperature rise of 45oC above the ambient. To limit the temperature, rise in the bus bar chamber a set of louvers can be provided at strategical places considering the air circulation.

All the bus bars shall be insulated with PVC heat shrinking sleeves throughout (except at joints) the length of the panel. The electro-galvanized high tensile steel nuts, bolts, plain or spring washers of suitable size will be used in connecting the various section of the bus bars.

5.0 SWITCH BOARD INTERCONNECTIONS

All connections between the bus bars/Breakers terminations shall be through solid Aluminum strips of adequate size to carry full rated current which shall be PVC/fiber glass insulated.

For switch unit ratings up to 63A PVC insulated copper conductor wires of adequate size to carry full load current can be used. The terminations of all such interconnections shall be properly crimped.

6.0 CABLE TERMINATIONS

Knockout holes of appropriate size and number shall be provided in the Switch Board in conformity with the location of incoming and outgoing conduits/cables. All cable entries shall be from bottom until & unless specifically asked for in the BOQ.

The cable terminations of the circuit breakers shall be brought out to terminal cable sockets suitably located in the panel.
All outgoing links for FSU\MCB feeders shall be in the feeder compartment only.

The Switch Boards shall be complete with tinned brass cable sockets, tinned brass compression glands, gland plates, supporting clamps and brackets etc for termination of 1100 volt grade aluminum conductor PVC cables.

7.0 EARTHING

The panels shall be provided with an aluminum earth bus of suitable size running throughout the

length of the switchboard. Suitable earthling eyes/bolts (at min. two points) shall be provided on the main earthing bus to connect the same to the earth grid at the site. Sufficient number of star washers shall be provided at the joints to achieve earth continuity between the panels and the sheet metal parts.

8.0 WIRING

All wiring for relays and meters shall be with PVC insulated copper conductor wires. The wiring shall be coded and labeled with approved ferrules for identification. The minimum size of copper conductor control wires shall be 1.5 sq.mm except for the circuits related to current transformers or circuits with current carrying capacity more than 5 Amps (for which min. 2.5 Sq.mm copper conductor wires shall be used).

9.0 SHEET STEEL TREATMENT AND PAINTING

Sheet Steel materials used in the construction of these units should have undergone a rigorous rust proofing process comprising of alkaline degreasing, descaling in dilute sulfuric acid and a recognized phosphating process. The steel work shall then receive two coats of oxide primer before final painting. Castings shall be scrupulously cleaned and fettled before receiving a similar oxide primer coat.

All sheet steel shall after metal treatment shall be powder coated with shade RAL 7032 (Siemens Gray) on the outside of the panel and mounting plates shall be of orange shade. Each coat of paint shall be properly stored and the paint thickness shall not be less than 50 microns (shade of paint may be changed if the client so desires).

10.0 NAME PLATES AND LABELS

Suitable engraved white on black name plates and identification labels of metal for all Switch Boards and Circuits shall be provided. These shall indicate the feeder number and feeder designation.

11.0 INSTALLATION

Installation shall be done by other agencies. However, the foundation requirements shall be submitted by the contractor. In addition, the contractor shall coordinate with the erection contractor for shifting & installation of the panels.

12.0 TESTING AND COMMISSIONING

Copies of type tests and routine test as per relevant specification, carried out at manufacturer's work shall be submitted to the CLIENT as required.

Wiring and connections including earthing shall be checked for continuity and tightness.

Insulation shall be measured with a 500 V megger and insulation resistance shall not be less than 100 Mega ohms

Interlocking operation to be checked as per requirement.

Tests shall be performed in presence of authorized representative of the CLIENT for which the contractor shall give due prior notice.

13.0 HIGH VOLTAGE TEST

A high voltage test with 2.5 KV for one minute shall be applied between the poles and earth. Test shall be carried out on each pole in turn with the remaining poles earthed, all units raked in position and the breakers closed. Original test certificate shall be submitted along with panel.

14.0 PRE-COMMISSION TESTS:

Panels shall be commissioned only after the successful completion of the following tests. The tests shall be carried in the presence of Architect's/DCPL's or their representatives.

I. All main and auxiliary bus bar connections shall be checked and tightened.

II. All wiring termination and bus bar joints shall be checked and tightened.

III. Wiring shall be checked to ensure that it is according to the drawing.

IV. All wiring shall be tested for insulation resistance by a 1000 volts meggar.

V. Phase rotation tests shall be conducted

VI. All relays and protective devices shall be tested for correctness of settings and operation by introducing a current generator and an ammeter in the circuit.

15.0 CLIMATIC CONDITIONS:

The panels & switch gear components shall be suitable for following climatic conditions:

	Maximum	**Minimum**
DBT	45ºC	10ºC
RH	90%	40%

17.0 HEATING ARRANGEMENT:

The panel shall be provided with a thermostatically controlled heating arrangement for monsoon (200 Watt) to take care of high humidity conditions. A 6/16A service socket outlet (single phase) shall be provided in one of the compartments in all the panels.

SECTION – VIII G

SURGE PROTECTION DEVICES (SPD) FOR 230 / 415V AC 50 HZ POWER SUPPLY

1.0 APPLICABLE STANDARDS

a) IEC 62305 : Protection against Lightning

Part 1: Basic Principles

Part 2: Risk Assessment

Part 3: Protection of structures

Part 4: Electrical & Electronic equipment's within structures

Note: IEC 61024 & IEC 61312 are old standards and are replaced by IEC 62305.

b) IEC 61643-1: - Surge Protective Devices Connected to Low-Voltage Power Systems:

Performance requirements and testing methods.

c) IEC 61643-12: - Surge Protective Devices Connected to Low-Voltage Power Systems:

Selection and application principles

Type of Network – 3 phases, 4 wires.

2.0 MAINS INCOMING PANEL

Protection at the main incomer of the power supply system – i.e. at the Main Distribution Board (after the incoming breaker)

2.1 Class B/Class I (according to IEC 61643)

3 numbers of lightning arrester for the connection between Phase and Neutral and one number of lightning arrester between Neutral and Earth with the following ratings: (1 no for each phase)

Sl. No	Parameters	Specifications	
		Line to Neutral (3 nos)	Neutral to Earth (1 no)
1	Type	Encapsulated/Non-exhausting Spark Gap	
2	Nominal Voltage, Un	230V, 50/60 Hz	
3	Over Voltage withstanding capacity	400V	
4	Lightning Impulse Current	50 KA(10/350 µsec)	125 KA(10/350 µsec)
5	Voltage Protection Level, Up	< 1.3 KV	
6	Response Time	< 100 nano seconds	
7	Operating temperature range	`-40 degree C to + 80 degree C	
8	Mounting on	Din Rail	
9	Degree of Protection	IP 20	
10	Max back up fuse	500 A gL/gG	NA

3.0 DISTRIBUTION BOARD (SDB)/LT PANEL

Second Stage Protection at the Sub distribution board or in LT panel of the power supply system

3.1 Class B+C/Class I+ II (according to IEC 61439/60439)

3 numbers of pluggable type surge arrester with potential free contact, thermal disconnector & provision for inbuilt common remote indication for defective arresters to connect between Line and Neutral and one number arrester Spark Gap type to connect between Neutral and Earth of following ratings including base element & pluggable arresters.

Sl. No	Parameters	Specifications	
		Line to Neutral	Neutral to Earth
1	Type	Single MOV Spark Gap Encapsulated / Non-exhausting	Spark Gap Encapsulated / Non-exhausting
2	Nominal Voltage, Un	230V, 50/60 Hz	
3	Maximum Continuous Operating Voltage, Uc	> 320 Volt	255 Volt
4	Nominal Discharge Current In	20 KA(8/20 µsec)	50 KA(8/20µsec)
5	Maximum Discharge Current I max	40 KA	50 KA (8/20 µsec)
6	Voltage Protection Level at 1 KA	< 1000 Volts	< 1200 Volts
7	Response time	< 25 nano seconds	< 100 nano seconds

8	Operating temperature range	`-40 degree C to + 80 degree C	
9	Mounting on	Din Rail	
10	Degree of Protection	IP 20	
11	Max back up fuse	125 A gL/gG	NA

Visual Indication of the flag in the surge arrester (Line to Neutral)

Healthy condition : Green Colour
Faulty condition : Red Colour

4.0 EQUIPMENT LEVEL (UPS, MCB DB'S CNC MACHINE/DRIVES, ETC)

Protection for Sensitive Equipment's at the input of the end equipment's like UPS, CNC machine, VFD's or at Important MCB DB's feeding power to Computer / Server etc

4.1 Class C/Class II (according to IEC 61643)

3 numbers of pluggable type surge arrester with potential free contact, thermal disconnector & provision for inbuilt common remote indication for defective arresters to connect between Line and Neutral and one number arrester Spark Gap type to connect between Neutral and Earth of following ratings including base element & pluggable arresters.

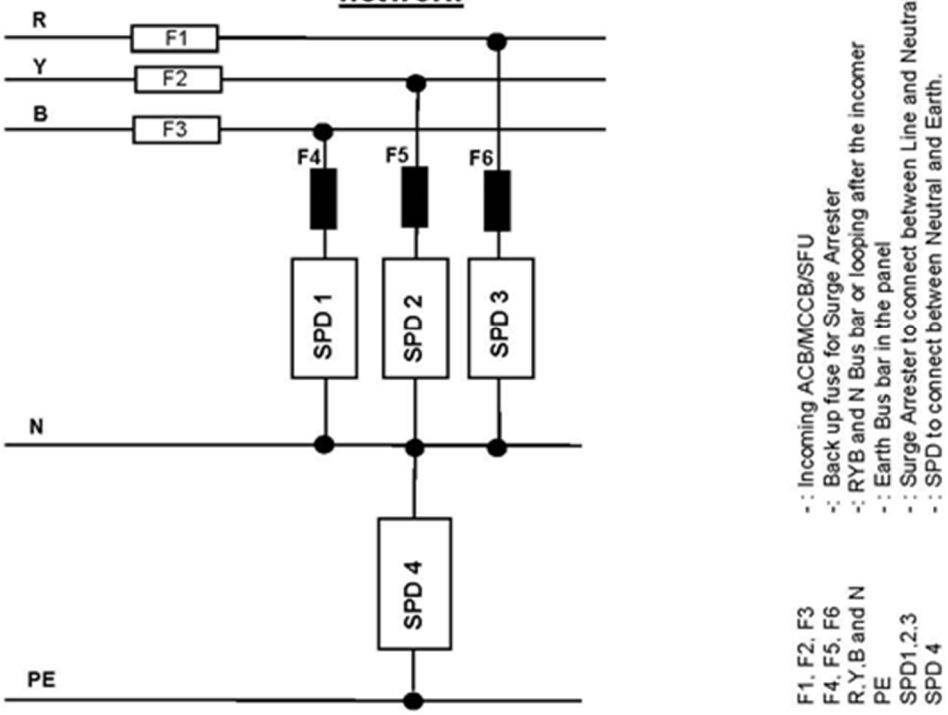
Sl. No	Parameters	Specifications	
		Line to Neutral	Neutral to Earth
1	Type	Single MOV Spark Gap Encapsulated / Non-exhausting	Spark Gap Encapsulated / Non-exhausting
2	Nominal Voltage, Un	230V, 50/60 Hz	
3	Maximum Continuous Operating Voltage, Uc	> 320 Volt	255 Volt
4	Nominal Discharge Current In	20 KA(8/20 µsec)	50 KA(8/20µsec)
5	Maximum Discharge Current I max	40 KA	50 KA (8/20 µsec)
6	Voltage Protection Level at 1 KA	< 1000 Volts	< 1200 Volts
7	Response time	< 25 nano seconds	< 100 nano seconds
8	Operating temperature range	`-40 degree C to + 80 degree C	
9	Mounting on	Din Rail	
10	Degree of Protection	IP 20	
11	Max back up fuse	125 A gL/gG	NA

Visual Indication of the flag in the surge arrester (Line to Neutral)

Healthy condition : Green Colour

Faulty condition : Red Colour

Connection diagram for SPD for 3 phase 4 wire network



Note: In US, SPD is called as TVSS- Transient Voltage Surge Suppressor. BUT, IEEE also will be changing the name to SPD in 2009 April. Then, throughout the world, the common name will be SPD.

SECTION – VIII H

METERING, INSTRUMENTATION AND PROTECTION

Ratings, type and quantity of meters, instruments and protective devices shall be as per Bill of Quantities.

1.0 CURRENT TRANSFORMERS

CTs shall confirm to latest IS codes in all respects. All CTs used for medium voltage application shall be rated for 1 kV. CTs shall have rated primary current, rated burden and class of accuracy as specified in schedule of quantities/drawings. Rated secondary current shall be 5A unless otherwise stated. Minimum acceptable class for measurement shall be 0.5 to 1 and for protection class 10. CTs shall be capable of withstanding magnetic and thermal stresses due to short circuit faults. Terminals of CTs shall be paired permanently for easy identification of poles. CTs shall be provided with earthing terminals for earthing chassis, frame work and fixed part of metal casing (if any). Each CT shall be provided with rating plate indicating :

- Name and make
- Serial number
- Transformation ratio
- Rated burden
- Rated voltage
- Accuracy class

CTs shall be mounded such that they are easily accessible for inspection, maintenance and replacement. Wiring for CT shall be with copper conductor PVC insulated wires with proper termination works and wiring shall be bunched with cable straps and fixed to the panel structure in a neat manner.

2.0 POTENTIAL TRANSFORMER

PTs shall confirm to latest amendment upto date IS Codes.

3.0 MEASURING INSTRUMENTS

Direct reading electrical instruments shall conform to latest IS codes in all respects. Accuracy of direct reading shall be 1.0 of voltmeter and 1.5 for ammeters. Other instruments shall have accuracy of 1.5. Meters shall be suitable for continuous operation between -100C and +5000C. Meters shall be flush mounting and shall be enclosed in dust tight housing. The housing shall be of steel or phenolic mould . Design and manufacture of meters shall ensure prevention of fogging of instrument glass. Pointer shall be black in color and shall have Zero position adjustment device operable from outside. Direction of deflection shall be from left to right. Selector switches shall be provided for ammeters and volt meters used in three phase system.

4.0 AMMETERS

Ammeters shall be of digital type. Ammeters shall be manufacture and calibrated as per latest IS.
Ammeters shall normally be suitable for 5 A secondary of current transformers.
Ammeters shall be capable of carrying substantial over loads during fault conditions.

5.0 VOLTMETERS

Voltmeters shall be digital type of 3 phase 415 volt voltmeters shall be 0-500. Volt meters shall be provided with protection of 2A MCB.

6.0 KWH METER

Meter shall be of 3 phase digital type and shall be provided with a maximum demand indicator.

7.0 POWER FACTOR METERS

3 phase power factor meters shall be of digital type with current and potential coils suitable for operation with current and potential transformers provided in the panel. Scale shall be calibrated for 50% lag - 100% - 50% lead readings. Phase angle accuracy shall be +40.

8.0 ENERGY AND REACTIVE POWER METERS

Trivector meters shall be two elements, integrating type, KWH, KVA, KVA hour reactive meters. Meters shall confirm to latest IS in all respects. Energy meters, KVA, and KVARH meters shall be provided with integrating registers. The registers shall be able to record energy conception of 500 hours corresponding to maximum current at rated voltage and unity power factor. Meters shall be suitable for operation with current and potential transformers available in the panel.

9.0 RELAYS

Protection relays shall be provided with flag type indicators to indicate cause of tripping. Flag indicators shall remain in position till they are reset by hand reset. Relays shall be designed to make or break the normal circuit current with which they are associated. Relay contacts shall be of silver or platinum alloy and shall be designed to withstand repeated operation without damage. Relays shall be of draw out type to facilitate testing and maintenance. Draw out case shall be dust tight. Relays shall be capable of disconnecting faulty section of network without causing interruption to remaining sections. Analysis of setting shall be made considering relay errors, pickup and overshoot errors and shall be submitted to Project Manager for approval.

10.0 OVER CURRENT RELAYS

Over current relays shall be induction type with inverse definite minimum time lag characteristics. Relays shall be provided with adjustable current and time settings. Setting for current shall be 50 to 200 % insteps of 25%. The IDMT relay shall have time lag (delay) of 0 to 3 seconds. The time setting multiplier shall be adjustable from 0.1 to unity. Over current relays shall be fitted with suitable tripping device with trip coil being suitable for operation on 5 Amps.

11.0 EARTH FAULT RELAY

Same as over current relay excepting the current setting shall be 10% to 40% in steps of 10%.

12.0 UNDER VOLTAGE RELAY

Under voltage relays shall be of induction type and shall have inverse limit operation characteristics with pickup voltage range of 50 to 90% of the rated voltage.

13.0 POWER FACTOR CORRECTION CAPACITORS

Power factor correction capacitors shall conform to latest IS codes in all respects. Approval of insurance association of India shall be obtain if called for. Capacitors shall be suitable for 3 phase 415 volts 50 HZ supply and shall be available in single and three phase units of 25, 50 & 100 KVAR sizes as specified. Capacitor shall be usable for indoor use, permissible overloads being as below.

- Voltage overloads shall be 10% for continuous operation and 15% for six hours in a 24 hours cycle.
- Current overloads shall be 15 % for continuous operations and 50% for six hours in a 24 hours cycle.
- Over load of 30% continuously and 45% for six hours in a 24 hours cycle.

Capacitors shall be hermetically sealed in sturdy corrosion proof sheet steel containers and impregnated with non-inflammable synthetic liquid. Every element of each capacitor unit shall be provided with its own built-in protection. Capacitors shall have suitable discharge device to reduce the residual voltage from crest value of the rated voltage to 50 volts or less within one minute after capacitor is disconnected from the source of supply. The loss factor of capacitor shall not exceed 0.005 for capacitors with synthetic impregnates the capacitors shall withstand power frequency test voltage of 2500 volts AC for one minute. Insulation resistance between capacitors terminals and containers when a test voltage of 500 volts DC is applied shall not be less than 50 megohms.

14.0 CONTROL DEVICES

a) **Push Buttons**

The push buttons used in the panels will be rated for more than 415 volts and 2 amps. All the push buttons will be mounted on the front door and the assembly will be in two parts. All the push buttons will be mounted on the front door of the cubicle in regular symmetrical fashion as per the general norms being practiced. Only one make of push buttons will be used in the assembly of all the panels. The selection of the color of the push buttons will be

as follows

Function Color

- Starting/Switching ON Green
- Stopping/Switching OFF Red
- Resetting Black
- Forward ON Yellow
- Reverse ON Blue
- Emergency OFF Red/Mushroom

b) **Indicating Lights**

The indicating lights used in the panel will be pleasant looking and round shape having the following features;

1. A separate front lens for it's easy replacement.
2. Facility to replace the bulb from the front.
3. Baynet pin cap bulbs of standard size to be used.
4. The shape of the lens to allow viewing from sides.
5. Series resistance with use of low voltage bulb for longer life.
6. Clear and distinct indication for light ON and OFF with differences of brightness of the lens.

The selection of the colors of the indicating lamps will be as follows:

- Red for system in operation
- Amber for system ready for operation.
- Green for system being put off.

- Red, yellow and blue for incoming supply.

15.0 TESTING

15.1 Instrument transformers shall be tested at factory as per IS:2705 & IS:3156. The test shall incorporate the following:

a) Type tests

b) Routine tests

Original test certificates in triplicate shall be provided.

15.2 Meters shall be tested as per IS: 1248. The tests shall include both type tests and routine tests. Original test certificate in triplicate shall be furnished.

15.3 15.3 a) Suitable injection tests shall be applied to the secondary circuit of every instrument to establish the correctness of calibration and working order.

b) All relays and protective devices shall be tested to establish correctness of setting and operation by introducing a current generator and an ammeter in the circuit.

SECTION – VIII -I

WIRING

1. GENERAL

Technical Specifications in this section cover the Internal Wiring Installations comprising of :

- Wiring for lights and convenience socket outlets etc. in concealed/surface conduit/raceways.
- Wiring for telephone outlets.
- Submain wiring.
- Conduiting for Low Voltage System

2. STANDARDS AND CODES

Latest up to date Indian Standard (IS) and Code of Practice will apply to the equipment and the work covered by the scope of this contract. In addition, the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and / or IEC Standard shall be applicable.

3. CONDUITS

3.1 Steel Conduits

These shall be of mild steel 16 gaugeup to 32mm and 14 gauge for sizes above 32mm, electric resistance welded (ERW), electric threaded type having perfectly circular tubing. Conduits shall be precession welded ERW and shall be fabricated from tested steel strips of thickness as per IS by high frequency induction weld process. Weld shall be smooth and of consistent of high quality to ensure crack proof bending. The conduits shall be black enamel painted inside and outside in its manufactured form. Wherever so specified, the conduit shall be galvanized. All conduits used in this work shall be ISI embossed.

3.2 MS Conduits

The electrical wiring shall be done in recessed MS Conduits, unless mentioned otherwise.

No conduit less than 25 mm in diameter shall be used, unless otherwise specifically ask by DCPL / Project Manager.

3.3 PVC Conduits (if required)

Wiring shall be carried out in recessed /surface PVC conduits. The PVC conduits conform to latest and shall be ISI embossed. The conduits shall be heavy gauge (minimum 2 mm wall thickness) and the interiors of the conduits shall be free from all obstructions. All joints in conduits shall be sealed/cemented with approved solvent cement. Damage conduits/fittings shall not be used. Cut ends of conduits shall not have sharp edges.

3.4 Bends

As far as possible, the conduit system shall be so laid out that it shall obviate use of tees, elbows and sharp bends. No length of conduit shall have more than the equivalent of two quarter bends from inlet to outlet.

3.5 Conduit Accessories.

3.5.1 Standard accessories

The conduit wiring system shall be complete in all respects, including their accessories. Bends, couplers etc. shall be solid type in recessed type of works and may be solid or inspection type as required, in surface type of works. The accessories shall conform in all respects to the relevant IS. Samples shall be got approved by DCPL / Project Manager before use.

3.5.2 Fabricated accessories

Wherever required, outlet/junction boxes of required sizes shall be fabricated from 1.6 mm thick MS sheets excepting ceiling fan outlet boxes which shall be fabricated from minimum 3 mm thick sheets. The outlet boxes shall be of approved quality, finish and manufacture. Suitable means of

fixing connectors etc., if required, shall be provided in the boxes. The boxes shall be protected from rust by zinc phosphate primer process. Boxes shall be finished with minimum 2 coats of enamel paint of approved colour. A screwed brass stud shall be provided in all boxes as earthing terminal.

3.6 Open/Surface Conduit System with FRLS PVC Conduits:

a) Wherever specifically called for, surface conduit system shall be adopted. All conduits shall be of rigid FRLS PVC pipe. All conduits and its accessories shall be of threaded type. Conduits shall run in parallel, perpendicular, square and Symmetrical lines. Before the conduits are installed, the exact route shall be marked at the site and approval of the Construction Manager/ DCPL shall be obtained. Conduits shall be fixed by heavy duty FRLS PVC saddles (or as per standard accessories specified by the manufacturer and as approved by the DCPL), secured by suitable rawl plugs, at an interval of not more than 1 meter. Wherever, couplers, bends, or similar fittings are used saddles shall be provided at either side at a distance of 300 mm from the center of such fittings. Conduits shall be joined by means of screwed couplers and screwed accessories only. In long distance straight runs of conduit, inspection type couplers /junction boxes shall be provided. Threading shall be long enough to accommodate pipe to the full threaded portion of the couplers and accessories. Cut ends of conduits shall have neither sharp edges nor any burrs left to avoid damage to insulation of wires.

b) Bends in conduit runs shall be done by using readymade bends with inspection elbows / standard elbows as per the instructions of the DCPL / Construction Manager / as per site requirements. Sharp bends shall be accomplished by introducing solid bends, inspection bends or heavy-duty PVC / FRLS PVC inspection boxes. Radius of solid bends shall not be less than 75mm. Not less than 90-degree bend shall be used in a conduit run from outlet to outlet.

c) Wherever conduits terminate into control boxes, outlet boxes, distribution boards etc, they shall be rigidly connected to the box with check nuts on either side of the entry.

d) Steel wire /fish wire shall be drawn in each conduit.

e) Separate PVC insulated copper conductor earth wire shall be drawn in each conduit.

f) Draw boxes shall be located at convenient location for easy drawing of wires.

g) Every main and submain shall run in an independent conduit with an independent earth wire of specified capacity along the entire length of conduit.

h) The conduit to be installed shall be of ample cross section area to facilitate the drawing of wires. The diameter of the conduit shall be selected as per table specified in these specifications; but in no case it shall be less than 20 mm diameter.

i) Entire conduit layout shall be done such as to avoid additional junctions boxes other than for outlet points. Conduits shall be free from sharp edge and burrs. Conduits shall be laid in a neat and organized manner as directed and approved by the Construction Manager/DCPL. Conduit runs shall be planned so as not to conflict with any other services pipe, lines/duct.

j) The conduit shall be painted with two coats of enamel paint, color as approved by the Construction manager/ DCPL after installation.

k) If required, connection between PVC or FRLS PVC and steel conduits shall be through a junction box. Direct connection between PVC and steel conduits are not allowed.

l) Where exposed conduits are suspended from the structure, they shall be clamped firmly and rigidly to hangers of design to be approved by the Construction Manager/DCPL. Where hanger supports are to be anchored to reinforced concrete, appropriate inserts and necessary devices for their fixing shall be left in position at the time of concreting, making holes and opening in the concrete will generally not be allowed. Where inserts are not

provided, contractor shall use only anchor fasteners. In case, it is unavoidable, prior permission of the Construction Manager /DCPL shall be obtained to make any openings in the concrete surface.

m) **Conduit Joints:**

Conduit pipes shall be joined by means of screwed couplers and screwed accessories, as per IS: 2667. The threads shall be free from grease or oil. In long distanced straight runs of conduit, inspection type couplers at reasonable intervals shall be provided or running threads with couplers and lock nuts shall be provided. The bare threaded portion shall be treated with anti-corrosive paints. Threads on conduit pipes in all cases shall be between 11mm or 27mm long, sufficient to accommodate pipes to full threaded portion of couplers or accessories. Cut ends of conduit pipes shall have neither sharp edges nor any burrs left, to avoid damage to the insulation of conductors while pulling them through such pipes.

Brass female bushes shall be used in each conduit termination in a switch box, outlet box, electrical panel or any other box.

Conduit shall be secure in each outlet box, switch box, electrical panel or any other box by means of one PVC / FRLS FRLS PVC/brass hexagonal lock nut and bush, outside and inside the box.

At each building expansion joints, approved oil tight double wire wound flexible steel conduit or any other approved method shall be used. This shall be united on both sides with the rigid conduits by suitable union.

Conduits installed in the plant room for mechanical equipment shall be properly clamped with the mechanical supports, but in no case, it shall be fixed with the body of the equipment.

The connection of conduit to the mechanical equipment shall be through oil tight double wire wound flexible steel conduit. In any case the length of the flexible conduit shall not exceed one meter. The flexible conduit shall be properly clamped with the body of the equipment. They shall not in any case be clamped to any cover or any removable parts of the equipment.

n) **Bends of Conduits:**

All necessary bends in the system including diversion shall be done by bending pipes or by inserting suitable solid or circular inspection type normal box or similar fittings. Conduit fittings shall be avoided as far as possible on conduit system exposed to weather, where necessary, solid type fittings shall be used. Radius of such bends in conduit pipes shall be not less than 75mm. No length of conduit shall have more than the equivalent of four-quarter bends from outlet, the bends at the outlets not being counted.

o) Protection against Dampness:

In order to minimize condensation or sweating inside the conduit, all outlets of conduit system shall be properly drained and ventilated, but in such a manner as to prevent the entry of insects, as far as possible.

p) Protection of Conduit Against Rust:

The outer surface of the conduits including bends, junction boxes, etc., forming part of the conduit system shall be adequately protected against rust, particularly when such system is exposed to weather. In all cases, no bare/ threaded portion of conduit pipe shall be allowed unless such bare threaded portion is treated with anti-corrosive coating or covered with approved plastic compound.

All screwed and socketed connections shall be adequately made fully water tight by the use of proper joining material i.e. white lead for metal conduits.

q) Bunching of Cables:

Unless otherwise specified, insulated conductors of different phases shall be bunched in separate conduit.

Wires carrying current shall be so bunched in the conduit that the outgoing and return wires are drawn in to the same conduit. Wires originating from two different phases shall not be run in the same conduit.

The number of insulated wires/cables that can be drawn into the conduits shall be as per the following table.

MAXIMUM PERMISSIBLE NUMBER OF 1100 VOLTS GRADE SINGLE CORE CABLE THAT CAN BE DRAWN INTO FRLS FRLS PVC CONDUITS.

CABLE SIZE IN SQ. MM	SIZE OF CONDUITS (MM) [MAX.NO. OF CABLES]				
	20	25	32	40	50
1.5	5	10	14	-	-
2.5	5	8	12	-	-
4	3	6	10	-	-
6	2	5	8	-	-
10	-	4	7	10	-
16	-	3	5	6	-
25	-	-	3	4	6
35	-	-	2	3	5
50	-	-	-	-	4

4. WIRES

Wiring shall be carried out with FRLS PVC insulated 660/1100 volt grade unsheathed single core wires with electrolytic annealed stranded copper (unless otherwise stated) conductors conforming to latest IS Code. All wire rolls shall be ISI marked. All wires shall bear manufacturer's label and shall be brought to site in new and original packages. Manufacturer's certificate, certifying that wires brought to site are of their manufacture shall be furnished as required.

5. COAXIAL CABLES

The coaxial cables shall be of vide band type with operation up to 300 MHz capability. Aging resistance shall comply with latest code i.e. maximum 5% increase in attenuation at 200 MHz measured by artificial aging (14 days at 80o C) cables shall meet all exceed following specifications

- Center core Dia 0.8 mm

- Dielectric Dia 4.8 mm
- Dielectric PE
- Outer Conductor Dia 5.4 mm
- Outer Dia 7.0 mm
- Bending radius more than 30 mm
- Impedance 75 ohms
- D.C Resistance 50 ohms/KM
- Screening factor more than 50
- Attenuation

o 50 MHz 6.5

o 100 MHz 9

o 200 MHz 13

o 300 MHz 16

6. LAYING OF CONDUITS

- Conduits shall be laid either recessed in walls and ceilings or on surface on walls and ceilings or partly recessed and partly on surface, as required.
- Same rate shall apply for recessed and surface conduiting in this contract.
- Stranded copper conductor insulated wire of size as per schedule of quantities shall be provided in entire conduiting for loop earthing.
- GI wire of suitable size to serve as a fish wire shall be left in all conduit runs to facilitate drawing of wires after completion of conduiting.

6.1 Recessed Conduiting

Conduits recessed in concrete members shall be laid before casting, in the upper portion of

slabs or otherwise as may be instructed, so as to embed the entire run of conduits and ceiling outlet boxes with a cover of minimum 12 mm concrete. Conduits shall be adequately tied to the reinforcement to prevent displacement during casting at intervals of maximum 1 meter. No reinforcement bars shall be cut to fix the conduits. Suitable flexible joints shall be provided at all locations where conduits cross expansion joints in the building.

Conduits recessed in brick work shall be laid in chases to be cut by electrical Contractor in brick work before plastering. The chases shall be cut by a chase cutting electric machine. The chases shall be of sufficient width to accommodate the required number of conduits and of sufficient depth to permit full thickness of plaster over conduits. The conduits shall be secured in the chase by means of heavy-duty pressed steel clamps screwed to MS flat strip saddles at intervals of maximum 1 meter. The chases shall then be filled with cement and coarse sand mortar (1:3) and properly cured by watering.

Entire recessed conduit work in concrete members and in brick work shall be carried out in close coordination with progress of civil works. Conduits in concrete members shall be laid before casting and conduits in brick work shall be laid before plastering. Should it become necessary to embed conduits in already cast concrete members, suitable chase shall be cut in concrete for the purpose. For minimizing this cutting, conduits of lesser diameter than 25 mm and outlet boxes of lesser depth than 50 mm could be used by the Contractor for such extensions only after obtaining specific approval from DCPL /Project Manager . For embedding conduits in finished and plastered brick work, the chase would have to be made in the finished brick work. After fixing conduit in chases, chases shall be made good in most workmanlike manner to match with the original finish.

Cutting chases in finished concrete or finished plastered brick work for recessing conduits and outlet boxes etc shall be done by the Contractors without any extra cost.

6.2 Surface Conduiting

Wherever so desired, conduit shall be laid in surface over finished concrete and/or plastered brickwork. Suitable spacer saddles of approved make and finish shall be fixed to the finished structural surface along the conduit route at intervals not exceeding 600 mm. Holes in concrete or brick work for fixing the saddles shall be made neatly by electric drills using masonry drill

bits. Conduits shall be fixed on the saddles by means of good quality heavy duty MS clamps screwed to the saddles by counter sunk screws. Gitti not to be used for fixing the saddle. Neat appearance and good workmanship of surface conduiting work is of particular importance. The entire conduit work shall be in absolute line and plumb.

6.3 Fixing of conduit fittings and accessories

For concealed conduiting work, the fittings and accessories shall be completely embedded in walls/ceilings leaving top surface flush with finished wall/ceiling surface in a workman like manner.

Loop earthing wire shall be connected to a screwed earth stead inside outlet boxes to make an effective contact with the metal body.

6.4 Painting and Colour coding of conduits

Before laying, conduits shall be painted specially at such places where paint has been damaged due to vice or wrench grip or any other reason.

If so specified, surface conduits shall be provided with 20 mm wide and 100 mm long colour coding strips as below

Use Code colour

- Low voltage Grey
- Telephone Black
- Earthing system Green
- Control system lighting Purple

6.5 Protection of Conduits

To safeguard against filling up with mortar/plaster etc. all the outlet and switch boxes shall be provided with temporary covers and plugs which shall be replaced by sheet/plate covers as required. All screwed and socket joints shall be made fully water tight with white lead paste.

6.6 Cleaning of Conduit Runs

The entire conduit system including outlets and boxes shall be thoroughly cleaned after completion of erection and before drawing in of cables.

6.7 Protection Against Dampness

All outlets in conduit system shall be properly drain and ventilated to minimize chances of condensation/sweating.

6.8 Expansion Joints

When crossing through expansion joints in buildings, the conduit sections across the joint shall be through approved quality heavy duty metal flexible conduits of the same size as the rigid conduit. **The expansion joint crossing shall be done as approved by Project Manager.**

6.9 Loop Earthing

Loop earthing shall be provided by means of insulated stranded copper conductor wires of sizes as per Schedule of Quantity laid along with wiring inside conduits for all wiring outlets and sub-mains. Earthing terminals shall be provided inside all switch boxes, outlet boxes and draw boxes etc.

7. LAYING AND DRAWING OF WIRES

7.1 Bunching of Wires

Wires carrying current shall be so bunched in conduits that the outgoing and return wires are drawn into the same conduit. Wires originating from two different phases shall not be run in the

same conduit.

7.2 Drawing of Wires

The drawing of wires shall be done with due regard to the following precautions:-

- No wire shall be drawn into any conduit, until all work of any nature, that may cause injury to wire is completed. Burrs in cut conduits shall be smoothen before erection of conduits. Care shall be taken in pulling the wires so that no damage occurs to the insulation of the wire. Approved type bushes shall be provided at conduit terminations.
- Before the wires are drawn into the conduits, conduits shall be thoroughly cleaned of moisture, dust, dirt or any other obstruction by forcing compressed air through the conduits if necessary.
- While drawing insulated wires into the conduits, care shall be taken to avoid scratches and kinks which cause breakage of conductors.
- There shall be no sharp bends.
- The Contractor shall, after wiring is completed, provide a blank metal/sunmica plate on all switch / outlet / junction boxes for security and to ensure that wires are not stolen till switches / outlets etc.. are fixed at no extra cost the contractor shall be responsible to ensure that wires and loop earthing conductors are not broken and stolen. In the event of the wire been partly / fully stolen , the contractor shall replace the entire wiring along with loop earthing at no extra cost. No joint of any nature whatsoever shall be permitted in wiring and loop earthing .

7.3 Termination /Jointing of Wires

- Sub-circuit wiring shall be carried out in looping system. Joints shall be made only at distribution board terminals, switches/buzzers and at ceiling roses/connectors/lamp holders terminals for lights/fans/socket outlets. No joints shall be made inside conduits or junction/draw/inspection boxes.
- Switches controlling lights, fans or socket outlets shall be connected in the phase wire of the final sub circuit only. Switches shall never be connected in the neutral wire.

- Insulation shall be shaved off for a length of 15 mm at the end of wire like sharpening of a pencil and it shall not be removed by cutting it square or wringing. Strands of wires shall not be cut for connecting terminals. All strands of wires shall be twisted round at the end before connection.
- Conductors having nominal cross-sectional area exceeding 1.5 sq. mm shall always be provided with crimping sockets. Tinning of the strands shall be done wherever crimping sockets are not available as per instructions of the Project Manager
- Wiring conductors shall be continuous from outlet to outlet. Joints where unavoidable, due to any special reason shall be made by approved connectors. Specific prior permission from Project such joint.
- All wiring shall be labelled with appropriate plastic ferrules for identification.
- At all bolted terminals, brass flat washer of large area and approved steel spring washers shall be used.
- Brass nuts and bolts shall be used for all connections.
- The pressure applied to tighten terminal screws shall be just adequate, neither too much nor too less.
- Switches controlling lights, fans, socket outlets etc. shall be connected to the phase wire of circuits only.
- Only certified valid license holder wiremen shall be employed to do wiring / jointing work.

7.4 Load Balancing

The Contractor shall plan the load balancing of circuits in 3 phase installation and get the same approved by the Project Manager before commencement of the work.

7.5 Color Code of Conductors

Colour code shall be maintained for the entire wiring installation - red, yellow, blue for three phases, black for neutral and green for earth.

SECTION – VIII J

EARTHING & LIGHTNING PROTECTION

1.0 EARTHING

1.1 The scope of this section covers supply, installation and testing of earthing system for all non-current carrying metal parts of electrical installation.

1.2 Installation of earthing system for electrical equipment shall be carried out in accordance with IS 3043 - code of Practice for earthing and conforming to Indian electricity Rules 1956 as amended up to date.

1.3 Earthing System & Equipment Bonding:

1.3.1 Earthing system shall comprise earth electrodes at each building. Test link boxes shall be provided at each earth electrodes for periodical resistance measurement. All such earth electrodes shall be interconnected forming a main loop - (MEL).

1.3.2 The entire conduit installation, cable sheaths and cable armor shall also be bonded to earth at both ends. It must be ensured that the conduit installations maintain electrical continuity throughout its entire length. Conduits shall be effectively bonded together at each joint, such as couplings, junction boxes, draw boxes or any other accessories and equipment's. Where conduits and screwed cable glands are terminated at equipment enclosures with slip-holes, an earthing/bonding washer (e.g. star-washer) shall be used to maintain electrical continuity.

1.3.3 All earth connections with solid conductors shall be made by means of soldered cable lugs. Connections with G. I. copper tapes shall be directly bolted type. All hardware used shall be galvanized steel, brass or passivated to prevent corrosion. Spring washer or lock

washers shall be used to make all connections secure and vibration-proof. All contact surfaces shall be thoroughly cleaned and coated with conducting petroleum jelly to prevent corrosion.

1.3.4 Earth connections from Switch Boards shall be taken as directly as possible to the earth buses or test links

Main earth conductors from earth bus or test-link to the Earth Electrode shall be coated with bitumastic to reduce straddle potential.

1.3.5 All earth terminations on all switch board/switch panels shall be with suitable size crimped lugs of Dowel or equivalent make.

1.4 Earth Electrodes:

Earth electrodes shall consist of Copper/G.I. plates buried in ground or G.I. pipes laid in ground. The type of electrodes shall be as specified in the BOQ. The method of installation earth electrode shall be in accordance with IS:3034. Earth plates shall be buried minimum 3 meters below virgin ground. Salt or charcoal shall be filled around the electrode to reduce the resistively of the soil and 20mm dia G.I. pipes (class heavy) shall be suitably installed to treat it with water. Every earth electrode shall have earth test link. Additional earth electrode shall be provided if necessary to bring down earth resistance within one-ohm.

1.5 Main Earth Conductor:

Main earth conductors shall be Galvanized Iron or copper strip as specified in BOQ or solid conductors with or without PVC sheath as specified. They shall be connected at one end to the earth electrode and to the earth bus or test link at the other end. All connections below ground shall be made by bolting or riveting and brazing or welding. Sizes of main earth conductors shall be as specified. All connections to the test-link or earth bus shall be securely bolted. Contact surfaces shall be tinned and suitably protected with Petroleum Conducting Jelly to prevent corrosion.

1.6 Installation :

1.6.1 All joints shall be riveted and sweated. Joints in the earth bar between the switch gear units or to cable sheaths shall be bolted at the joints.

1.6.2 Where the diameter of the bolt for connecting earth bar to apparatus exceeds one quarter of the width of the earth-bar, the connection to the bolt shall be made with a wider piece to earth bar. These shall be tinned at the point of connection to equipment and special care taken to ensure a permanent low resistance contact to iron or steel. All bolts, nuts, washers, etc. shall be cadmium plated.

1.6.3 Main earth-bars shall be spaced sufficiently away from the surface to which they are fixed, such as walls or the side of trenches, to allow for ease of connections.

1.6.4 The earthing lead shall be suitably protected from mechanical injury by galvanized iron pipe wherever it passes through wall and floor. The portion within ground shall be buried at least 60 cm deep.

1.6.5 The earthing lead shall be securely bolted and soldered to the plate or pipe as the case may be. In the case of the plate, the lead shall be connected by means of a cable socket, with two bolt and nuts. All washers shall be of the same material as the plate or pipe. All iron bolt, nuts and washers shall be galvanized.

1.6.6 The earthing plate shall be surrounded by alternate layer of charcoal or coke and salt. There shall be a 20mm G.I. pipe running from the top of the plate or pipe. The top of this pipe shall provide with a funnel and mesh for watering the earth. This will be housed in a masonry enclosure not less than 30cm x 30cm x 30cm deep. A cast iron frame with 10 mm thick cover shall be suitably embedded in the masonry.

1.6.7 Earth electrode resistance shall be measured as per IS 3043. No earth electrode installed shall have a greater ohmic resistance than 1.0 ohms as measured by an approved earth testing apparatus.

1.7 CHEMICAL EARTHING

In maintenance free earthing copper bonded earthing rod electrode shall be of 14.35 mm in diameter and 3 meter length. The rod shall be placed in a 150 mm dia an augured hole in the ground and then surrounded by ground enhancement material in either a dry form or pre mixed in a slurry. Once set, ground enhancement material becomes hard and as such holds positively to the rod as well as surrounding ground.

Earth rod offered shall have passed the test required of BS7430/ANSI/UL-467 and confirm to the adhesion of the copper coating to the steel core (Design feature that prevents the ingress of moister and subsequently the integrity of the rod.

Minimum 0.25 mm thickness of copper shall be deposited over the steel core as per BS 7430/UL 467. Average life of the ground rod shall be 30 years in most soil.

Ground enhancement material shall be as per IEEE-80 clause 14.5 with a resistivity of less than 0.12 ohm – meter. The ground enhancement material shall be permanent and not leach any chemicals in to the ground. The pH value of the ground enhancement material shall be 6.9 to 7.2 of 100gm / lit@20 deg.C.

Minimum 30 Kg of ground enhancement material shall provide for each earth electrode.

Inspection chamber shall be of 400 x 500 mm with concrete base CI manhole cover with frame painted with bitumastic paint. 2 Nos. of 50 x 6 mm cross section & 300 mm long copper strip to be cramped with copper cladded rod electrode have sufficient nos. (But not less than 4 Nos.) of 10Φ mm GI nuts & bolts for connection to the equipment / interconnection to the other pits to form equi-potential bonding.

2.0 LIGHTNING PROTECTION SYSTEM:

2.1 Advanced LIGHTNING ARRESTOR Generation-2

2.1.1 Technical specification

Advanced Proactive -Early Streamer Emission(ESE) without aid of any primary power, to provide

optimum protection against any negative Lightning in its zone of protection. Model DP 25/ 45/60 , dameks, Turkey.

2.1.2 Special features of Protector ESE sensor type Lightning protector

1. The active conductor should be ESE (Early Streamer Emission) type certified by High Volt Test Lab for 8/20 wave form at over 100kA.
2. As well as tested by CPRI Bangalore, India as per their available capacity.
3. The active conductor should derive the energy from the electrostatic field intensity variations that is formed in the air , for which no extra energy source like wind energy, solar energy or kinetic energy that is created by the vibrations are required. The inner structure should not consist of either coils or condensers which could be flammable or explosive during the discharge nor should it use Piezo crystals that might be broken during the discharge or vibration.
4. The active conductor should be made from special materials to prevent the system from chemical corrosion.
5. The conductor should have a protection mechanism that prevents any internal damage due to the lightning discharge.
6. The active conductor should be designed as compact and small (weight below 3kg)to maintain installation and transportation advantage.
7. The Basic Model of the Air terminal should have Protection Radius of 42 m at 5 meter clear height above highest structure. Data on other ranges if required shall be furnished on case-to-case basis.

2.2 PROTECTOR LIGHTNING COUNTER(optional)

Specifications:

Dimensions	: 173 x 82 x 44 mm
Weight	: 740 gr
Temperature range	: -20 to +50oC
Counter	: 6 digits
Protection	: IP 65
Starting threshold	: 1 100 kA in 8/20 wave

Min. Time between 2 discharges : 100 ms

Connection RES M : □8 30x2 30x3 available

WORKING PRINCIPLE

The lightning counter is to count the lightning strike discharges that goes through the conductor down to the ground. The counter is to be installed on the down conductor. It can either be installed serial or parallel.

No maintenance should be required. The device should be a high technology product and conform to the working and laboratory test conditions.

2.3 PROTECTOR TESTER(optional)

Specifications:

Dimensions : 107 x 148 x 44 mm

Weight : 930 gr

Operation Frequency : Standard

Power RES M : 6 V battery

WORKING PRINCIPLE

The tester is developed for specific use where it is required to maintain the highest security and make sure that the lightning conduction system works properly such as in remote installed areas, where services may not be available on demand.

The tester enables to verify that the Air terminal conductor is in standard operation by making a connection both to the upper tip and the lower shaft. By using the tester, the lightning conductor is tested in addition to the ground resistivity tests and these two tests together creates a common and proper control on the system.

2.4 ESE LIGHTNING CONDUCTOR PROTECTION RADIUS CALCULATION (NF C 17-102 S 2.2.3.2) FOR ALL MODELS OF PROTECTOR

The protection radius of air terminal is calculated by the standard formula given in the French

Standard NF C 17-102.

The formulation is based on the lightning conductor triggering advance (□T), installation height (h) and the triggering distance (□L).

Rp = √h(2D-h) +Δ □L(2D+Δ □L) h ≥ 5m.

ΔL = V x □Δ T

Rp : Conductor protection area radius

h : The distance between the point of the conductor and the area to be protected

ΔT : Triggering time

D : Triggering distance according to the NF C 17 102 standard

ΔL(m) = v (m/□µs)..ΔT(m/□µs)

The values of Triggering advance & triggering distance for each model should be stated against the requirement given in the table below. Deviations if any must be explained.

TYPE	(ΔT)	(D)
DP 25	25 µs	20 M.
DP 45	40 µs	45 M.
DP 60	60 µs	60 M.

DP type / model select

ESE CONSUCTORS	h= Conductor tip height(m)								
	2	4	5	7	10	15	20	45	60

LEVEL 1

DP 25	17	34	42	43	44	45	45	45	45
DP 40	26	50	63	64	64	65	65	65	65
DP 60	32	64	79	79	79	80	80	80	80

LEVEL 2

DP 25	23	46	57	59	61	63	65	70	70
DP 40	34	64	76	77	78	80	82	85	85
DP 60	40	78	97	98	100	101	103	105	105

LEVEL 3

DP 25	26	52	65	66	70	72	75	84	85
DP 40	36	72	89	90	92	95	97	104	105
DP 60	44	87	107	108	110	111	114	119	120

Components of LPS

ESE lightning conductor

1. Mast to ensure desired free height
2. Down Conductor for grounding
3. Protector lightning strike counter
4. Test joint
5. Protection guard
6. Earthing

SECTION – VIII K

MEDIUM VOLTAGE DISTRIBUTION BOARDS:

1. GENERAL

This section covers specification of DBs.

2. STANDARDS AND CODES

The latest and amended up to date Indian Standard Specifications and Codes of Practice will apply to the equipment and the work covered by the scope of this contract. In addition, the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable.

3. MINIATURE CIRCUIT BREAKERS

- The MCB's shall be of the completely moulded design suitable for operation at 240/415 Volts 50 Hz system.
- The MCB's shall have a rupturing capacity of 10 KA at 0.5 p.f.
- The MCB's shall have inverse time delayed thermal overload and instantaneous magnetic short circuit protection. The MCB time current characteristic shall coordinate with XLPE cable characteristic.
- Type test certificates from independent authorities shall be submitted with the tender.

4. FINAL DISTRIBUTION BOARDS

- Final distribution boards shall be flush mounting, totally enclosed, dust and vermin proof and shall comprise of miniature circuit breakers, earth leakage circuit breakers, neutral link etc as detailed in the schedule of quantities.

- The distribution equipment forming a part of the Distribution Boards shall comply to the

relevant Standards and Codes of the Bureau of Indian.

- The board shall be fabricated from 16 gauge CRCA sheet steel and shall have a hinged lockable spring loaded cover. All cutouts and covers shall be provided with synthetic rubber gaskets. The entire construction shall give a IP 42 (double door and four tier-arrangement) degree of protection.
- The bus-bar shall be of electrical grade copper having a maximum current density of 1.6 ampere per square mm and PVC insulated throughout the length. The minimum spacing between phases shall be 25 mm and between phase and earth 19 mm
- Separate neutral link for each phase shall be provided.
- All the internal connections shall be with either solid copper PVC insulated or copper conductor PVC insulated wires of adequate rating.
- All the internal connections shall be concealed by providing a hinged protective panel to avoid accidental contact with live points.
- All outgoing equipment shall be connected direct to the bus bar on the live side. The equipment shall be mounted on a frame work for easy removal and maintenance.
- The sheet steel work shall undergo a rigorous rust proofing process, two coats of filler oxide primer and final powder coated paint finish.
- All the circuits shall have an independent neutral insulated wire, one per circuit, and shall be numbered and marked as required by the Project Manager.
- A sample of the completed board is to be got approved by the Project Manager before commencement of supply and erection.
- Before commissioning, the distribution boards shall be megger tested for insulation and earth continuity.

5. SHEET STEEL TREATMENT AND PAINTING

- Sheet Steel materials used in the construction of these units should have undergone a rigorous rust proofing process comprising of alkaline degreasing, descaling in dilute sulphuric acid and a recognized phosphating process. The steel work shall then receive two costs of oxide filler primer before final painting. Castings shall be scrupulously cleaned

and fettled before receiving a similar oxide primer coat.

- All sheet steel shall after metal treatment be given powder coated finish painted with two coats of approved shade on the outside and white on the inside. Each coat of paint shall be properly stored and the paint thickness shall not be **less than 80 microns**.

6. NAME PLATES AND LABELS

- Suitable engraved white on black name plates and identification labels of metal for all Switch Boards and Circuits shall be provided. These shall indicate the feeder number and feeder designation.

SECTION – VIII L

1.0 TESTING OF THE INSTALLATION

1.1 Installation Completion Tests

At the completion of the work, the entire installation shall be subject to the following tests:

1. Wiring continuity test
2. Insulation resistance test
3. Earth continuity test
4. Earth resistivity test
5. Polarity test

Besides the above, any other test specified by the local authority shall also be carried out. All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the contractor at his own cost.

1.2 Insulation Resistance Test

The insulation resistance shall be measured between earth and the whole system conductors, or any section thereof with all protection in place and all switches closed and except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it does not exceed 1100 volts for medium voltage circuits. Where the supply is derived from AC three phase system, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the neutral. The insulation resistance measured as above shall not be less than 50 mega ohms divided by the number of points provided on the circuit the whole installation shall not have an insulation resistance lower than one mega ohm.

The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and shall be carried out after removing all metallic connections between the two poles of the installation and in those circumstances the insulation shall not be

less than that specified above.

The insulation resistance between the frame work of housing of power appliances and all live parts of each appliance shall not be less than that specified in the relevant standard specification or where there is no such specification, shall not be less than half a Megaohm or when PVC insulated cables are used for wiring 12.5 Megaohms divided by the number of outlets. Where a whole installation is being tested a lower value than that given by the above formula subject to a minimum of 1 Megaohms is acceptable.

1.3 Wiring Continuity Test

All wiring systems shall be tested for continuity of circuits, short circuits, and earthing after wiring is completed and before installation is energized.

1.4 Testing Of Earth Continuity Path

The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

1.5 Testing Of Polarity Of Non-Linked Single Pole Switches

In a two wire installation a test shall be made to verify that all non-linked single pole switches have been connected to the same conductor throughout, and such conductor shall be labeled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply. In the three of four-wire installation, a test shall be made to verify that every non-linked single pole switch is fitted to one of the outer or phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance of the Project Manager as well as the local authorities.

1.6 Earth Resistivity Test

Earth resistivity test shall be carried out in accordance with latest IS Code of Practice for earthing.

1.7 Polarity Test

1.7.1 In two wire installation, a test shall be made to verify that all the switches in every circuit have been fitted in the same conductor throughout, and such conductor shall be labeled or marked for connection to the phase conductor, or to the non-earthed conductors of the supply.

1.7.2 In a three wire or a four-wire installation, a test shall be made to verify that every non-linked single pole switch is fitted in a conductor which is labeled, or marked for connection to one of the phase conductors of the supply.

1.7.3 The installation shall be connected to the supply for testing. The terminals of all switches shall be tested by a test lamp, one lead of which is connected to the earth. Glowing of test lamp to its full brilliance, when the switch is in “on” position irrespective of appliance in position or not, shall indicate that the switch is connected to the right polarity.

1.8 Performance

Should the above tests not comply with the limits and requirements as above the contractor shall rectify the faults until the required results are obtained. The contractor shall be responsible for providing the necessary instruments and subsidiary earths for carrying out the tests. The above tests are to be carried out by the contractor without any extra charge.

1.9 Tests And Test Reports

The Contractor shall furnish test reports and preliminary drawings for the equipment to the Project Manager for approval before commencing supply of the equipment. The Contractor should intimate with the tender the equipment intended to be supplied with its technical particulars. Any test certificates etc., required by the local Inspectors or any other Authorities would be supplied by the Contractor without any extra charge. All test reports shall be approved by the Project Manager prior to energizing of installation.

SECTION –VIII M

LIST OF APPROVED MAKES OF MATERIAL (As applicable)

S.No.	Electrical item	Make			
1	Conduit pipe painted inside & outside 16 SWG ISI marked.	BEC	M-Kay	AKG	S.K. (E.R.W.)
2	Conduit Accessories & Junction boxes	All made out of 16G MS sheet			
		All made out of 14G MS sheet			
3	Wires PVC insulated and PVC sheathed FR/ FRLS /control wires (IS marked)	Finolex	Salzer	R.R. Kabel	KEI
	Instrumentation and Control cables	Rolliflex	Finolex	RR kabel	
4	PVC/XLPE insulated LT cables	Universal	Finolex	KEI	Havells
5	XLPE insulated HT cables	Polycab	RR Kabel	KEI	Havells
6	Modular switches and sockets	Legrand (ARTEOR)	ABB	L&T	MK Honeywell (wrap around plus)
7	Flush type switch and sockets	Anchor	Kinjal	SSK	Havells Reo
8	Air circuit breaker	SCHNIEDER MTZ	ABB	Siemens 3WA	EATON
9	Fuse switches Unit/Switch Fuse Unit & HRC fuses	SCHNIEDER	ABB	Siemens	HH ELCON
10	Distribution boards MCB	Legrand	ABB	Siemens	SCHNEIDER
11	Loose wire box for distribution boards	Legrand	Siemens	ABB	L&T
12	Lighting fixtures & LED fixtures	Philips	Crompton	Decon	Wipro
13	Fluorescent/ CFL lamps/LED	Philips	Crompton	Osram	Wipro
14	Ceiling Fans / Wall Fan/ Cabin Fan	Havells	Orient	Usha	Bajaj
15	Air circulator	Bajaj	Havells	Almonard	Crompton
16	MCB's	Legrand	ABB	Siemens	SCHNEIDER
17	MCCB	SCHNIDER NSX	ABB	Siemens 3VA	EATON
18	Exhaust fan	Almonard	Alstom	Crompton	
19	Cable lug	Phonix	Jainson	Dowells	
20	Lamp Holder (Brass)	Kay	SSK	Kinjal	
21	Safe trip/RCCB/ELCB	Legrand	ABB	Siemens	HAGER
22	GI pipe `B' class	Prakash Surya	Jindal		
23	Electrical Switchboards / feeder pillar/LT panel/HT panel	Tenco	Tricolite	Marine	Symatic
24	Telephone wires/Telephone Cable / jelly filled telephone cables	Finolex	Delton	Rolliflex	R.R. Kabel
25	Telephone tag blocks	Krone	Pouyet		
26	Telephone outlet	MK Electric	Legrand (Mosaic)	Crabtree (Piccadilly)	

27	GI raceways	ELCON CABLE TRAY	PROFAB	INDIANA	OBO
28	PVC raceways	Legrand	MK		
29	Panel meters	Schneider	ABB	Siemens	Secure
30	Current transformer	Gilbert & Maxwell	Netwek	Reco	AE
31	Selector switch	Recom	Kaycee	Siemens	C & S
32	Protective relays	Schnieder	ABB	Siemens	Alstom
33	Capacitor/Reactor/Thyristor	Neptune	Subodhan	Epcos	Malde
34	Changeover switch	ABB	HPL	Socomec	C & S
35	Electronic ballast	Philips	Wipro	Bajaj	Havells
36	DLP plastic trunking	Legrand	MK		
37	Geysers	Recold	Venus	Usha Lexus	Sphere hot
38	Smoke / Heat detectors	Siemens	System sensor	Simplex	Morley
39	Manual Call Point	Siemens	System sensor	Simplex	Morley
40	Response indicators	Siemens	System sensor	Simplex	Morley
41	Fire Exit Signs	Systems-Tek	Simplex	Agni	
42	Fire Control Panel	Siemens	System sensor	Simplex	Morley
43	Speaker/Hooter	Siemens	System sensor	Simplex	Morley
44	Occupancy sensors/ movement sensor	Legrand	Philips	Wipro	
45	Tower Light	ligman	Siemens	Bega	
46	HT/LT transformers	MP TRANSFORMERS	Essenar	VOLTAMP	TRANSFORMER & RECTIFIER
47	HT SF-6 circuit breakers/VCB	Schneider	ABB	Siemens	
48	Programmable Logic Controller(PLC)	Siemens	Allen-Bradley	Schneider	ABB
49	Earthing (Chemical Earthing) Plate Earthing	JMV	ASHLOK	ELINK/ OBO	IVANAH
50	Octagonal Pole	Bajaj	Crompton	Phillips	
51	11 kV HT panel I/c relay	Avana	ABB	Siemens	Alstom
52	Control Relay Panel	CGL	Schneider	ABB	TENCO
53	Lightning Arrestor	ABB	Alltec	JMV	
54	Temp. Gauge	Guru			
55	Gate Valve	Leader	Sant		
56	Electrical Backup	Spare hot	Spare hot		
57	PVC Tank	SyntexPolycon	Syntex		
58	Thermostat	ISI Marked			
59	S.S Sheet	Jindal	National		

60	HT/LT cable joints (Straight through/outdoor/indoor)	3M	Denson	GSeal	
61	Alternator	STAMFORD			
63	PVC TRUNKING	LEGRAND	MK	OBO	
64	METAL TRUNCKING	ELCON CABLE TRAY	PROFAB	INDIANA	OBO
65	Cable gland (single / double compression)	DOWELLS	COMET	JAINSON	BRACO
66	HT termination Kit	Raychem	3M	Cabseal	
67	PVC gland	Hensal	Hulukable	BRACO	
68	HAND DISINFECTANT	TECHNOCRAT	SANITT		
69	HAND DRYER	TECHNOCRAT	ALLIGRO		
70	AIR CURTAIN	TECHNOCRAT	FABTECH		
71	FLY INSECT KILLER	TECHNOCRAT	---		
72	Ladder Cable tray / perforated cable tray	ELCON CABLE TRAY	PROFAB	INDIANA	OBO
73	Access control system	Honney well	ABB	Bosch	
74	PVC FRLS Conduits & Accessories (Heavy duty only)	NELCO	VIP	AKG	
75	Outdoor Push button station	Hansu	FCG	Vaishno	
76	Structural material such as MS angle, Channel ,H beam etc	Sail	Vizag	Tata	
77	Anchor fastener	Hitachi	Fisher		
78	Galvanized angle , channel	Sail	Jindal	TATA	
79	Welding rod	ISI mark	Esab	Advani	
80	Galvanized Nut bolt	ISI mark			
81	Rawl plug	ISI mark			
82	FLP light fixture	Shreya	Sudhir	FCG	
83	FLP industrial socket	Shreya	Sudhir	FCG	
84	industrial Receptacles	R-Sthal	Sudhir	FCG	
85	Industrial type socket (Pentra type)	Legrand	BCH	Havells	
86	DG Set	Caterpillar	Sterling & Wilson	Cummins Power Generation	
87	33 KV Pin insulator	BHEL	Atlas	Jayshree	
88	33 KV Disc insulator	BHEL	Atlas	Jayshree	
89	AB AND DO	ATLAS			
90	LA	ALPRO			
91	Capacitor	EPCOS	POWER MATRIX	SUBODHAN	
92	BUS Duct	BHEL	Power gear	C & S	KGS engg

SECTION – IX

Qualification Criteria

1. The Tenderer:
   - The bidders should have successfully executed 33 KV 4 pole structure ,33 KV/11 KV HT Electrical works consisting of transformer, IP welded type Bus duct of 12KV Class and other related works like HT switch gear ,VCB panel, HT panels, HT cable , Trays and Tray supports , earthing etcin the last 3 years
   - The bidder **should possess valid A class electrical contractor license issued from the any state governmentfor electrical installation related work**
   - Vendor must have experience of 11KV or 33 KV Capacitor bank supply and installation; within the last 3 years

2. In The vendor should have done supply, Installation, commissioning of electrical work during the last 3 years as on date, with the value as under:

   Three (3) similar works with minimum value of Rs. 480 lakhs

   OR

   Two (2) similar works with minimum value of Rs.600 lakhs

   OR

   One (1) similar works with minimum value of Rs.960 lakhs

   Similar works means supplying, erection, supervision, testing and commissioning of 33 KV 4 pole structure 33/11 KV HTwork as specified in point 1 of reputed organization

3. Turnover of the Tenderer must not be less than INR **600 lakhs** in any one of the last three financial years. Notarized copies of the Chartered Accountant certified Profit & Loss statement should be enclosed
4. Net worth of the company should be positive during the last audited financial year (2021-22 / 2022-23). Notarized copies of the Chartered Accountant certified Balance sheet statement should be enclosed.
5. The bidder should have service centre and service team in “specify the state/place” to provide support services. (Registration of said office to be enclosed.)
6. Supply performance and completion certificate

Note:

- JV/Consortium are not allowed to participate in this tender.

- Notwithstanding anything stated above, the Purchaser reserves the right to assess the Tenderer's capability and capacity to perform the contract satisfactorily before deciding on award of Contract, should circumstances warrant such an assessment in the overall interest of the Purchaser. The Purchaser reserves the right to ask for a free demonstration of the quoted equipment to similar/identical specification at a pre-determined place acceptable to the purchaser for determining technical responsiveness, before the opening of the Price Bid.

PROFORMA:

A.	**General information:**	
1	Name of Company	
2	Registration No.	
3	Number of Years in Operation	
4	Registered Address	
5	Operating Address	
6	Telephone No	
7	Telefax	
8	Email Address	
9	GST No.	
10	PAN No.	
11	TIN No.	

B.	**FINANCE**
1	**Name & Address of Banks and Branches used :**
1.1	
1.2	
1.3	
2	Annual Turnover of the Firm/ company:

2.1	2019– 2020:	_____ (Value in Lakhs)
	2020 – 2021:	_____ (Value in Lakhs)
	2021 – 2022:	_____ (Value in Lakhs)
3	Bidders are to submit copy of valid current Income Tax Return submitted, GSTRegistration, (wherever applicable) failing which their offer may be liable to be rejected.	

C	**EXPERIENCE:**					
1	**Past Project Experience:**					
Sr. No.	**Year awarded**	**Project Name**	**Nature of HT electrical work**	**CONTRACT VALUE (INR)**	**PURCHASER NAME & REFERENCE (Contact details)**	**Facility Approved by: (Name of approving agency)**
1.1						
1.2						
1.3						
1.4						
1.5						
1.6						
1.7						
1.8						
1.9						
1.10						
2	**Details of Ongoing project:**					
S. No.	**Year awarded**	**Project Name**	**Nature of HT electrical work**	**CONTRACT VALUE (INR)**	**PURCHASER NAME & REFERENCE (Contact details)**	**Remarks**
2.1						
2.2						
2.3						
2.4						
2.5						

D.	**QUALITY**
	The equipment supplied and work carried should generally comply with the following guidelines / standards. Mention in the Section VIII A of this document

FORMAT OF PERFORMANCE CERTIFICATE

To whom it may concern

Date. _____

Certified that M/s ---------- (name & address of the manufacturer) supplied us ----------Nos (indicate quantity) of electrical work , ---------- (indicate capacity & type of the equipment) against our order no ----------dt ----------(please indicate order no & date as figuring in the performance statement). The equipment was installed, commissioned & handed over to us on ---------- (indicate date) & since then the equipment has been working to our entire satisfaction.

SECTION – X

TENDER FORM

Date_____
To

_____

M/s **Karnataka Antibiotics and pharmaceuticals ltd**

Ref. Your TE document No. _____dated _____
We, the undersigned have examined the above-mentioned TE document, including amendment/corrigendum No. _____, dated _____ (*if any*), the receipt of which is hereby confirmed. We now offer to supply and deliver_____ *(Description of goods and services)* in conformity with your above referred document for the sum of _____ (total tender amount in figures and words), as shown in the price schedule(s), attached herewith and made part of this tender.

If our tender is accepted, we undertake to supply the goods and perform the services as mentioned above, in accordance with the delivery schedule specified in the List of Requirements.

We further confirm that, if our tender is accepted, we shall provide you with a performance security of required amount in an acceptable form, read with modification, if any, in Section - V – "Special Conditions of Contract", for due performance of the contract.

We agree to keep our tender valid for acceptance as required in the GIT clause 19, read with modification, if any in Section - III – "Special Instructions to Tenderers" or for subsequently extended period, if any, agreed to by us. We also accordingly confirm to abide by this tender up to the aforesaid period and this tender may be accepted any time before the expiry of the aforesaid period. We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

We further understand that you are not bound to accept the lowest or any tender you may receive against your above-referred tender enquiry.

We confirm that we do not stand deregistered/banned/blacklisted by any Govt. Authorities.

We confirm that we fully agree to the terms and conditions specified in above mentioned TE document, including amendment/ corrigendum if any.

(Signature with date)

(Name and designation) Duly authorised to sign tender for and on behalf of

NOTE: One **Unpriced tender form** to be enclosed with **Technical Bid &**
One **Priced tender form** to be enclosed with **Price Bid**

SECTION – XI PRICE SCHEDULE

Sl.No	Description of Item	Quantity (Nos.)	Unit Price for Supply	Unit price for installation	Total Price for supply (Rs.)	Total Price for installation (Rs.)	Total Amount (Rs.)
1	Supply,installation, and commissioning of HT Electrical workas per Schedule of quantity	**REFER SEPARATE PRICE SCEHDULE ANNEXURE III**					
	TOTAL AMOUNT						

NB: Unit price & Total amount shall be written in figures and words, both.
Total Supply price in Rupees:

_____

In words:_____

Total Installation price in Rupees:

In words: _____

Total Tender price in Rupees:

_____

In words:_____

Note: -

1. Vendor should consider all necessary item, Fittings , consumables etc as specified in datasheet & schematics
2. If there is a discrepancy between the unit price and total price THE UNIT PRICE shall prevail.
3. Quoted price should include all taxes & duties, insurance, Transportation, P&F, Octroi etc.
4. Vendor should submit the price bid in the above format

Name_____

Business Address_____ **Signature of Tenderer**

_____

Place & Date: _____ **Seal of Tenderer**_____

SECTION – XII

QUESTIONNAIRE

Fill up the Section XIX – Check List for Tenderers and enclose with the Tender

1. The tenderer should furnish specific answers to all the questions/issues mentioned in the Checklist. In case a question/issue does not apply to a tenderer, the same should be answered with the remark “not applicable”
2. Wherever necessary and applicable, the tenderer shall enclose certified copy as documentary proof/ evidence to substantiate the corresponding statement.
3. In case a tenderer furnishes a wrong or evasive answer against any of the question/issues mentioned in the Checklist, its tender will be liable to be ignored.

SECTION – XIII

MANUFACTURER'S AUTHORISATION FORM

To,
M/s KARNATAKA ANTIBIOTICS AND PHARMACEUTICALS LTD

Dear Sirs,

Ref. Your TE document No _____, dated _____

We, _____ who are proven and reputable manufacturers of_____(*name and description of the goods offered in the tender*) having factories at_____, hereby authorise Messrs_____(*name and address of the agent*) to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.

We further confirm that no contractor or firm or individual other than Messrs. _____ (*name and address of the above agent*) is authorised to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.

We also hereby extend our full warranty as applicable as per clause 15 of the General Conditions of Contract, read with modification, if any, in the Special Conditions of Contract for the goods and services offered for supply by the above firm against this TE document.

Yours faithfully,

_____

[*Signature with date, name and designation*]
for and on behalf of Messrs_____

[*Name & address of the manufacturers*]

Note:

1. *This letter of authorisation should be on the letter head of the manufacturing firm and should be signed by a person competent and having the power of attorney to legally bind the manufacturer.*
2. *Original letter may be sent.*

SECTION – XIV

BANK GUARANTEE FORM FOR PERFORMANCE SECURITY

To

KARNATAKA ANTIOBIOTICS AND PHARMACEUTICALS LTD
BANGLORE
KARNATAKA

WHEREAS _____ (Name and address of the contractor) (Hereinafter called "the contractor") has undertaken, in pursuance of contract no_____ dated _____ to supply (description of goods and services) (herein after called "the contract").

AND WHEREAS it has been stipulated by you in the said contract that the contractor shall furnish you with a bank guarantee by a scheduled commercial bank recognised by you for the sum specified therein as security for compliance with its obligations in accordance with the contract;

AND WHEREAS we have agreed to give the contractor such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the contractor, up to a total of. _____ (Amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the contractor to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up to sixty (60) days after the date of completion of all contractual obligations by the Contractor, including the warranty obligations. i.e up to ---------- (indicate date)

……

(Signature with date of the authorised officer of the Bank)

……

Name and designation of the officer

……

Seal, name & address of the Bank and address of the Branch

BANK GUARANTEE FORMAT FOR ADVANCE PAYMENT SECURITY

Ref..... Date.....

Bank Guarantee No....

To

KARNATAKA ANTIOBIOTICS AND PHARMACEUTICALS LTD
BANGLORE
KARNATAKA

Dear Sirs,

In consideration of the **KARNATAK ANTIBIOTICS AND PHARMACEUTICALS LTD**, hereinafter referred to as **KAPL**, which expression shall unless repugnant to the context or meaning thereof include its successors, executors, administrators and assigns, having awarded to M/s._____ having its registered office at _____ hereinafter referred as the 'Contractor', which expression shall unless repugnant to the context or meaning thereof, include its successors, Administrators, executors and assigns, a contract hereinafter referred to as the 'Order' for _____ referred to as the 'Supply and Services' on terms and conditions set out, inter-alia in the **KAPL**Order No. _____ dated _____valued _____at (in words & figures) and as the **KAPL**having agreed to make a payment against the above ORDER, to the Contractor amounting to Rs. _____(in words & figures) as an advance against Bank Guarantee to be furnished by the Contractor, the said advance to be adjusted against the supply and services to be performed by the Contractor, we _____ hereinafter referred to as the `Bank' which expressions shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns **having our office at** _____**do hereby undertake to give the irrevocable and unconditional guarantee and** do hereby undertake to pay the Client on first demand without any demur, **reservation, contest recourse and protest and without reference to the Contractor** any and all monies payable by the Contractor by reason of any breach by the said Contractor of any of the terms and conditions of the said order to the extent of Rs. _____ (in words & figures) till the said advance is adjusted as aforesaid at any time up to _____.We agree that the guarantee herein contained shall continue to be enforceable till the sum due to the Client on account of the said advance is adjusted/recovered in full as aforesaid or till the Client discharges this guarantee.

The Client shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee, from time to time vary the advance or to extend the time for performance of the supply and services by the Contractor. The Bank shall not be released from its liability under these presents by any exercise of the client of the liberty with reference to the matter aforesaid.

The client shall have the fullest liberty, **without reference to Contractor and** without affecting this guarantee to postpone **for any time or** from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forebear to enforce any **power**, covenants contained or implied in the order between the client and the Contractor or any other course or remedy or security available to the client and the Bank shall not be released of its obligations under these presents by any exercise by the client of its liberty with reference to matters aforesaid or any of them or by reason

of any other act or forbearance or other acts of omission or commission on the part of the client or any other indulgence shown by the client or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the Bank Guarantee.

The right of client to recover the outstanding sum of advance with applicable costs up to Rs. _____ from the bank in the manner aforesaid will not be affected or suspended by reason of the fact that any dispute or disputes is or are pending before any officer, tribunal or court and any demand made by client on the Bank shall be conclusive and binding.

The Bank further undertakes not to revoke this guarantee during its currency without prior and written consent of the **clientand further agrees that the guarantee contained shall continue to be enforceable till the client discharges this guarantee.**

The Bank also agrees that the client shall at its option is entitled to enforce this guarantee against the bank as principal debtors, in first instance, notwithstanding any other security or guarantee that client may have in relation to the Contractor's liabilities of the said advance.

Notwithstanding anything contained herein above, our liability under this guarantee is restricted to as Rs. _____(in words & figures) and it will remain in force up to and including (date of completion of supply and services) and shall be extended from time to time for such periods as may be advised by M/s……. on whose behalf this guarantee has been given.

Therefore, we hereby affirm that we are guarantors and responsible to you on behalf of the Contractor up to a total amount of _____(amount of guarantees in words and figures) and we undertake to pay you, upon your first written demand declaring the Contractor to be in default under the purchase order and without caveat or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or show grounds or reasons for your demand or the sum specified therein.

This Guarantee is valid until _____ day _____.

We have power to issue this guarantee in your favour under Memorandum and Articles of Association and the undersigned has full power to do under the Power of Attorney / Resolution of Board of Directors dated.....granted to him by the Bank.

Dated.....this.....day of.....2023

Signed by

Place:

(Person duly authorised by Bank)

Witness :

1. We…… (indicate the name of Bank) lastly undertake not to revoke this guarantee except with the previous consent of client in writing.

2. This guarantee shall be valid up to …….. unless extended on demand by client. Notwithstanding anything mentioned above our liability against this Guarantee is restricted to Rs……. (Rupees……only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liabilities under the Guarantee shall stand discharged.

   Dated the …….. day of 2023

   For ……
   (Indicate the name of Bank)
   ……
   Seal, name & address of the Bank and address of the Branch

BANK GUARANTEE FORM FOR EMD

Whereas _____ (hereinafter called the "Tenderer") has submitted its quotation dated _____ for the supply of _____ (hereinafter called the "tender") against the purchaser's tender enquiry No. _____ Know all persons by these presents that we _____ of _____ (Hereinafter called the "Bank") having our registered office at _____ are bound unto _____ (hereinafter called the "Purchaser) in the sum of _____ for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this _____ day of _____ 20____. The conditions of this obligation are:

(1) If the Tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.

(2) If the Tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:-

a) Fails or refuses to furnish the performance security for the due performance of the contract.
or
b) Fails or refuses to accept/execute the contract.
or
c) If it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition(s).

This guarantee will remain in force for a period of forty-five days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the authorised officer of the Bank)

Name and designation of the officer

Seal, name & address of the Bank and address of the Branch

SECTION – XV

CONTRACT FORM
(Format for signing the agreement by the successful bidder after awarding the order)

CONTRACT FORM FOR SUPPLY, INSTALLATION SUPERVISION , COMMISSIONING, HANDING OVER, TRIAL RUN, TRAINING OF OPERATORS & WARRANTY OF GOODS

KARNATAKA ANTIOBIOTICS AND PHARMACEUTICALS LTD

Contract No_____ dated_____

This is in continuation to this office's Notification of Award No_____ dated _____

1) Name & address of the Contractor: _____

2) Purchaser's TE document No_____ dated_____ and subsequent Amendment No_____, dated_____ (if any), issued by the purchaser.

3) Contractor's Tender No_____ dated_____ and subsequent communication(s) No_____ dated _____ (if any), exchanged between the Contractor and the purchaser in connection with this tender.

4) In addition to this Contract Form, the following documents etc, which are included in the documents mentioned under paragraphs 2 and 3 above, shall also be deemed to form and be read and construed as integral part of this contract:

(i) General Conditions of Contract;
(ii) Special Conditions of Contract;
(iii) List of Requirements;
(iv) Technical Specifications;
(v) Quality Control Requirements;
(vi) Tender Form furnished by the Contractor;
(vii) Price Schedule(s) furnished by the Contractor in its tender;
(viii) Manufacturers' Authorisation Form (if applicable for this tender);
(ix) Purchaser's Notification of Award

Note: The words and expressions used in this contract shall have the same meanings as are respectively assigned to them in the conditions of contract referred to above. Further, the definitions and abbreviations incorporated under clause 1 of Section II – 'General Instructions to Tenderers' of the Purchaser's TE document shall also apply to this contract.

5) Some terms, conditions, stipulations etc. out of the above-referred documents are reproduced below for ready reference:

(i) Brief particulars of the goods and services which shall be supplied/ provided by the Contractor are as under:

Sl.No	Description of Item	Quantity (Nos.)	Unit Price for Supply	Unit price for installation	Total Price for supply (Rs.)	Total Price for installation (Rs.)	Total Amount (Rs.)

Any other additional services (if applicable) and cost thereof: _____

Total value (in figure) _____ (In words) _____

1. Delivery schedule

   (i) Details of Performance Security

   (ii) Quality Control

      (a) Mode(s), stage(s) and place(s) of conducting inspections and tests.
      (b) Designation and address of purchaser's inspecting officer

   (iii) Destination and despatch instructions

   (iv) Consignee, including port consignee, if any

2. Warranty clause
3. Payment terms
4. Paying authority

_____

(Signature, name and address of CONSIGNEE)

For and on behalf of_____

Received and accepted this contract

_____

(Signature, name and address of the Contractor's executive duly authorised to sign on behalf of the Contractor)
For and on behalf of _____
(Name and address of the Contractor)

_____

(Seal of the Contractor)

Date: _____

Place: _____

SECTION – XVI

PROFORMA OF CONSIGNEE RECEIPT CERTIFICATE
(To be given by consignee's authorized representative)

The following stores (s) has / have been received in good condition:

1) Contract No. & date :_____

2) Contractor's Name :_____

3) Consignee's Name & Address with telephone No. & Fax No. : _____

4) Name of the item supplied :_____

5) Quantity Supplied :_____

6) Date of Receipt by the Consignee :_____

7) Name and designation of Authorized Representative of Consignee :_____

8) Signature of Authorized Representative of Consignee with date :_____

9) Seal of the Consignee :_____

SECTION – XVII

Proforma of Final Acceptance Certificate by the Consignee

No_____

Date_____

To
M/s _____
_____
_____

Subject: Certificate of commissioning of equipment/plant.

This is to certify that the equipment(s)/plant(s) as detailed below has/have been received in good conditions along with all the standard and special accessories and a set of spares in accordance with the contract/technical specifications. The same has been installed, commissioned & validated.

(a) Contract No_____ dated_____

(b) Description of the equipment(s)/plants/works:_____

(c) Equipment(s)/ plant(s) nos.:_____

(d) Quantity:_____

(e) Bill of Loading/Air Way Bill/Railway Receipt/ Goods Consignment Note no_____ dated _____

(f) Name of the vessel/Transporter:_____

(g) Name of the Consignee:_____

(h) Date of commissioning and proving test:_____

Details of accessories/spares not yet supplied and recoveries to be made on that account.

Sl. No.	Description of Item	Quantity	Amount to be recovered

The proving test has been done to our entire satisfaction and operators have been trained to operate the equipment(s)/plant(s).

The Contractor has fulfilled its contractual obligations satisfactorily ## or

The Contractor has failed to fulfil its contractual obligations with regard to the following:

- He has not adhered to the time schedule specified in the contract in dispatching

the documents/drawings pursuant to 'Technical Specifications'.

- He has not supervised the commissioning of the equipment(s)/plant(s)in time, i.e. within the period specified in the contract from date of intimation by the Purchaser/Consignee in respect of the installation of the equipment(s)/plant(s).
- The Contractor as specified in the contract has not done training of personnel.

The extent of delay for each of the activities to be performed by the Contractor in terms of the contract is:

The amount of recovery on account of non-supply of accessories and spares is given under Para no.02.

The amount of recovery on account of failure of the Contractor to meet his contractual obligations is_____ (here indicate the amount).

Signature
Name
Designation with stamp

Explanatory notes for filling up the certificate:

He has adhered to the time schedule specified in the contract in dispatching the documents/drawings pursuant to 'Technical Specification'.

He has supervised the commissioning of the equipment(s)/plant(s) in time, i.e. within the time specified in the contract from date of intimation by the Purchaser/Consignee in respect of the installation of the equipment(s)/plant(s).

Training of personnel has been done by the Contractor as specified in the contract
In the event of documents/drawings having not been supplied or installation and commissioning of the equipment(s)/plant(s) having been delayed on account of the Contractor, the extent of delay should always be mentioned in clear terms.

SECTION – XVIII

CHECKLIST

NAME OF TENDERER:
NAME OF MANUFACTURER:

Sl No.	Activity	Yes/ No/ NA	Remarks
1. a.	Have you enclosed EMD of required amount for the quoted schedules?		
b.	EMD is furnished in the form of Bank Guarantee as per Section XIII?		
c.	Have you kept validity of Bank Guarantee for 165 days from Technical Bid Opening date as per clause 18 of GIT?		
d	Have you enclosed tender fee as prescribed in TE document?		
2. a.	Have you enclosed duly filled Tender Form as per format in Section X?		
b.	Have you enclosed Power of Attorney in favour of the signatory?		
3.	Are you a SSI unit, if yes have you enclosed certificate of registration issued by Directorate of Industries/NSIC		
4. a.	Have you enclosed clause-by-clause technical compliance statement for the quoted goods vis-à-vis the Technical specifications?		
b.	In case of Technical deviations in the compliance statement, have you identified and marked the deviations?		
5. a.	Have you submitted satisfactory performance certificate as per the Proforma for performance statement in Sec. IX of TE document in respect of all orders?		
b.	Have you submitted copy of the order(s) and end user certificate?		
6.	Have you submitted manufacturer's authorization as per Section XIV?		
7.	Have you submitted prices of goods in the Price Schedule as per Section XI?		

Sl No.	Activity	Yes/ No/ NA	Remarks
8.	Have you ensured validity of your offer for 120 days from the Technical bid Opening date as per the TE document?		
9.	Have you furnished Income Tax Account No. as allotted by the Income Tax Department of Government of India?		
10.	Have you intimated the name and full address of your Banker (s) along with your Account Number		
11.	Have you fully accepted payment terms as per TE document?		
12.	Have you fully accepted delivery period as per TE document?		
13	Have you accepted the warranty as per TE document?		
14.	Have you accepted terms and conditions of TE document?		
15.	Have you furnished documents establishing your eligibility & qualification criteria as per TE documents?		
16	Have you furnished Annual Report (Balance Sheet and Profit & Loss Account) for last three years prior to the date of Tender opening?		
17	Have you enclosed signed Integrity Pact in the prescribed format?		

Notes to Bidder

1. All pages of the Tender should be page numbered and indexed.
2. The Tenderer may go through the checklist and ensure that all the documents/confirmations listed above are enclosed in the tender and no column is left blank. If any column is not applicable, it may be filled up as NA.
3. It is the responsibility of tendered to go through the TE document to ensure furnishing all required documents in addition to above, if any.

(Signature with date)

(Full name, designation & address of the person duly authorised sign on behalf of the Tenderer)
For and on behalf of

(Name, address and stamp of the tendering firm)

Section – XIX

Consignee

All Goods shall be delivered at

KARNATAKA ANTIBIOTICS AND PHARMACEUTICALS LTD
110-116, VIKRAM UDYOG PURI INDUSTRIAL AREA,
UJJAIN, MADHYA PRADESH

SECTION – XX

INTEGRITY AGREEMENT

To be signed by the bidder and same signatory competent/authorized to sign the relevant contract of behalf of Client

This Integrity Agreement is made at ……. on this ……. Day of……..2023

BETWEEN

President of India represented through Chief Executive Officer, **KARNATAK ANTIBIOTICS AND PHARMACEUTICALS LTD.**(Hereinafter referred as the "Principal/Owner", which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns.

AND

…….
Through ……. (Hereinafter referred to as the **"Bidder/Contractor**" and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns).

Preamble

WHEREAS the Principal / owner has floated the Tender (NIT No……...)
(Hereinafter referred to as "**Tender/Bid**") and intends to award, under laid down organizational procedure, contract for …….
Hereinafter referred to as the **"Contract"**

AND WHEREAS the Principal /Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as **"Integrity Pact**" or **"Pact**"), the terms and conditions of which shall also be read as integral part and parcel of the Tender Bid documents and Contract between the parties. NOW, THEREFORE, in consideration of mutual covenants' contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

Article 1: Commitment of the Principal /Owner

1) The Principal /Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles.

   (a) No employee of the Principal/Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the 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/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The principal/owner 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 /Owner shall Endeavour to exclude from the Tender process any person, whose conduct in the past has been of biased nature.

2) If the Principal/Owner obtains information on the conduct t of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also in initiate disciplinary actions as per its internal laid down policies and procedures.

Article 2: Commitment of the Bidder(s) / Contractor(s)

1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Government/Department all suspected acts of **fraud or corruption or Coercion or Collusion** of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.

2) 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/owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.

(b) The Bidder(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certification, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize 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) /Contract(s) will not use improperly, (for the purpose of competition or personal gain).or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including and 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 names and addresses of agents/representatives in India, if any Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign agents/representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a

tender but not both. Further, in cases where an agent participates in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.

(e) The Bidder (s)/Contractor (s) will, when presenting his bid, disclose (with each tender as per proforma unclosed) 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.

3) The Bidder(s) /Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

4) The Bidder(s/contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice means a wilful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and /or to influence the procurement process to the detriment of the Government interests.

5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (Means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/her reputation or property to influence their participation in the tendering process).

Article 3: Consequences of Breach

Without prejudice to any rights that may be available to the Principal/Owner under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this integrity Pact by the Bidder (s)/Contractor(s) and the Bidder(s)/Contractor(s) accepts and undertakes to respect and uphold the Principal /Owner's absolute right:

1) If the Bidders) / Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/owner after giving 14 days notice to the contractor shall have powers to disqualify the Bidder (s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the principal/owner. **Such exclusion may be forever or for a limited period as decided by the principal/owner.**

2) **Forfeiture of EMD/performance Guarantee/Security Deposit:** If the Principal/owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal /Owner apart from exercising any6 legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and security Deposit, Performance Guarantee and security Deposit of the Bidder/Contractor.

3) **Criminal Liability**: If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of and employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of Indian Penal code (IPC)/Prevention of corruption Act, or if the Principal/owner has substantive suspicion in this regard, the Principal/owner will inform the same to low enforcing agencies for further. Investigation.

Article 4- Previous Transgression

1) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public sector Enterprises 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 for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Principal/owner.

3) If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/owner may, at its own discretion, revoke the exclusion prematurely.

Article 5- 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. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement /pact by any of its Sub-contractors/sub-vendors.

2) The Principal/owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.

Article 6- Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 12 months after the completion of work under the contract or till the continuation of defect Liability period, whichever is more and for all other bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged /determined by the competent authority, Client.

Article 7- other Provisions

1) This Pact is subject to Indian Law., place of performance and jurisdiction is the head quarters of Client of the Principal/Owner, who has floated the Tender.

2) Changes and supplements need to be made in writing. Side agreements have not been made.

3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a company, the Pact must be signed by a representative duly authorized by board resolution.

4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intensions.

5) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement/pact, any action taken by the Owner/Principal in accordance with this **Integrity Agreement/Pact or interpretation thereof shall not be subject to arbitration.**

Article 8- LEGAL AND PRIOR RIGHTS:

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and /or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender /Contact documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following witnesses:

……
(For and on behalf of Principal/owner)

……
(For and on behalf of Bidder/Contractor)

WITNESSES:

1.

(Signature, Name & address)

2.

(Signature, Name & address)

Place:

Date:

Section XXI

SCHEDULE OF FISCAL ASPECTS

Sr. No.	Particulars	Description
1	Submission of completed Tender	06/11/2023 at 18:00 hours
2	Opening of Bid	07/11/2023 at 11:00 hours
3	Possession of Site	As per project requirement
4	Date of Commencement	Within 15 days of award of work
5	Time of completion	6 months from date of Letter of intent
6	Advance	10% advance against advance bank guarantee from Scheduled commercial banks valid till completion of project
7	Payment terms for Purchase Order	a. Refer BOQ
8	Payment Terms for Service order	NA
9	Minimum Interval between submission of bills and payment	30 days submission of interim bills
10	Maximum period for Payment	Within 30 working days from the date of certificate of payment as issued by the DCPL
11	Period of submitting Final bills	Within 120 days of completion of work.Payment shall be made within 45 days from the date of submission of the final bills.

Sr. No.	Particulars	Description
12	Liquidated damages/per week	0.5 % per week inclusive of Sundays and Holidays upto a maximum 5% of contract value. Delay shall be accessed periodically based on the cumulative mile-stones
13	Defects Liability Period	12 months from the date of completion of work
14	Earnest Money Deposit	12,00,000/-
15	Tender Fee	Rs. Nil
16	Refund of Earnest Money Deposit to unsuccessful bidders	On award of contract to successful bidder
17	Insurance	For supply, installation, testing and commissioning under the scope of Employer
18	Transportation	On account of Contractor
19	B.G / DD in favour of	Karnataka Antibiotics and Pharmaceuticals Ltd payable at bengaluru
20	All queries / communication to be addressed to	7acaproject@kaplindia.com projects@doshicon.com
21	Pre-bid meeting	13/10/2023 at 11:00 hours Through Video Conference Link will be available one day prior to pre-bid meeting at www.kaplindia.com.