OIL INDIA LIMITED
(A Government of India Enterprise)
CONTRACTS DEPARTMENT
P.O. DULIAJAN – 786602, ASSAM

E-TENDER NOTICE

OIL INDIA LIMITED (OIL) invites Bids from experience Service Providers through its E-Procurement portal **"**https://etender.srm.oilindia.in/irj/portal**"** **for** the following services under *single stage – 2 bid system*

1.0 IFB No.	**CDI 6441 P15**
Service Requirement	Design, construction substation building including supply and commsioning of electrical equipments of 3 nos 11KV/415V substation at Duliajan on LSTK basis.
Cost of Bid Document & Bid Security	**₹ 5000.00 and ₹ 8,06,200.00**
Period of Sale of Bid Document/Issue of User ID & Password	**16.05.2015 TO 16.06.2015(15:30Hrs)**
Bid Closing / Opening Date & Time	**23.06.2015 (11:00 hrs / 14:00 hrs)**

Cost of Bid Document (Non-Transferable and Non-refundable) by way of Demand Draft / Banker's Cheque from any schedule Bank in favour of OIL INDIA LIMITED and **payable at Duliajan,** along with the application(s) on applicants letter pad with a request for USER ID & PASSWORD is to be submitted to Head-Contracts, Contracts Department, Oil India Limited, P.O. Duliajan, Assam-786602. *Alternatively, applicants already having User ID & Password for OIL's e-portal can pay the requisite Bid Document cost & Bid security against the IFB through the online payment gateway.*

On receipt of request from applicants who do not have USER_ID and initial PASSWORD, it will be communicated to the bidder (through e-mail) and will be allowed to participate in the bidding through OIL's E-Procurement portal on payment of requisite Bid document cost. No physical tender documents will be provided.

PSU's and SSI units registered with NSIC claiming exemption from payment of tender fee should submit their request with all credentials at least 7 days in advance to get access for participation in the tender.

Note: All corrigenda, amendments, time extension, clarifications etc. if any to the above tenders will be hosted on the website and in the e-portal https://etenders.srm.oilindia.in/irj/portal only and no separate notification shall be issued in the press. Prospective bidders are requested to regularly visit the website and e-portal to keep them updated.

OIL INDIA LIMITED
(A GOVT. OF INDIA ENTERPRISE)
CONTRACTS DEPARTMENT, DULIAJAN

OIL INDIA LIMITED invites ON-LINE BIDS from eligible Bidders/Firms for the following mentioned works/services under **SINGLE STAGE – 2 BID System** through its e-Procurement site:

DESCRIPTION OF WORK/ SERVICE:

Design, construction of substation building including supply and commissioning of Electrical equipments of 3 nos 11KV/415V substation at Duliajan on LSTK basis

IFB NO: CDI 6441P15

Type of IFB: Single Stage- Two Bid System

LOCATION: Duliajan, Assam

CONTRACT PERIOD: 24 Months w.e.f date of issue of work order

Pre-bid conference:	26.05.2015 at 9-30 Hrs (IST)
Last Date of receipt of Pre-Bid: Queries	25.05.2015 up to 11:00 Hrs (IST)
Venue of Pre-Bid Conference:	Duliajan (Exact venue shall be communicated to the prospective bidders nearer the time)

BID CLOSING/ OPENING DATE & TIME: 23.06.2015(11:00HRS/14:00 HRS)

Bid Submission Mode: Bid should be submitted online in OIL's E-Procurement portal

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Bid Opening Place : Office of the Head-Contracts
Oil India Limited
Duliajan – 786602, Assam

Bid Validity : 180 days from Bid opening Date

BID SECURITY AMOUNT : Rs.8,06,200.00 (Rupees Eight Lakhs Six Thousand Two Hundred) Only

AMOUNT OF PERFORMANCE SECURITY: 7.5% of total Contract Value (As per clause No.13 below)

a) Bid Security deposited vide D.Draft/B.Cheque /Bank Guarantee No._____ dated_____ of_____

Original hard copy of (a) should reach the office of HEAD-CONTRACTS on or before Bid opening date and time (12:45Hrs) or *it can be paid through the online payment Gateway against this Tender*, otherwise Bid will be rejected. A scanned copy of this document should also be uploaded along with the Un-priced bid documents.

b) Bidders to confirm that in the event of award of Contract, bidder will submit Performance Security Deposit @ 7.5% of contract price and this will not earn any interest.

2.0 SEALED ENVELOPES containing the Bid Security, Printed catalogue and Literature, if called for in the tender shall be marked with the above IFB Number and description of work and submitted in the office of :

HEAD-CONTRACTS
CONTRACTS DEPARTMENT
OIL INDIA LIMITED
Duliajan – 786602
Assam.

All bidders shall deposit the requisite BID SECURITY in the form of Demand Draft/Banker's Cheque/Bank Guarantee (should be valid for minimum 210 days from the date of opening of Technical bid) from a Nationalised Bank/Scheduled bank in favour of M/s Oil India Limited and payable at DULIAJAN or *it can be paid through the online payment Gateway against this Tender***.** This BID SECURITY shall be refunded to all unsuccessful bidders, but is liable to be forfeited in full or

part, at Company's discretion, as per Clause No. 7(a), 14, 15 & 16 below. **Bids without BID SECURITY in the manner specified above will be summarily rejected.**

Exemption from submission of bid security: "Central Govt. offices, Central Public Sector undertakings and firms registered with NSIC /Directorate of Industries are exempted from submitting Bid Security. However the firms registered with NSIC /Directorate of Industries shall have to submit evidence that they have a current and valid registration for the service they intend to bid including the prescribed monetary limit."

3.0 **Pre-Bid Conference**:

3.1 A **pre-Bid conference** will be held at **Duliajan on 26.05.2015** or on the dates as indicated in the online tender for providing clarifications to prospective bidders on Bid Rejection Criteria(BRC)/Bid Evaluation Criteria(BEC), Terms of Reference/Technical Specifications, Terms and conditions of the IFB to enable them to understand the exact service requirement of the Company. ***The parties who purchase the bid documents are invited to the Pre-Bid conference***. For details of the venue, bidders may contact the office of **Head-Contracts,** Oil India Ltd., P.O. Duliajan-786602**, Phone:** 91-374-2808650/2800548**, Fax#** (91)374-2803549**, E-mail:** joydebnath@oilindia.in

3.2 At the most 2 (two) representatives from each prospective bidder shall be allowed to participate in the pre-bid conference. All costs for attending the pre-bid conference shall be to prospective bidders' account.

3.3 *The prospective bidders shall submit their queries through E-mail / Fax / Courier addressed to Head-Contracts, Oil India Ltd., Duliajan-786602, Assam prior to the date of pre-bid conference and such queries must reach OIL's office at Duliajan latest by 25.05.2015* or the date as mentioned in the on-line tender. OIL shall provide clarifications to the queries in the pre-bid conference. OIL will not be responsible for non-receipt or late receipt of any bidder's query in OIL's office. A soft copy of the queries in the word file shall also be submitted by the parties.

4.0 **Bid should be submitted online up to 11:00 AM (IST) (OIL's e-procurement Portal Server Time) on the date as mentioned and will be opened on the same day at 02:00 PM (IST) at Office of the Head-Contracts in presence of authorized representative of the bidder**.

5.0 **The rates shall be quoted as specified in the "PRICE BID FORMAT" and to be uploaded in attachment under Notes & Attachments tab.**

The bid and all uploaded documents must be digitally signed using **"Class 3" digital certificate [e-commerce application (Certificate with personal verification and Organization name)]** as per Indian IT Act obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India.

Digital Signature Certificates having "Organization Name" field as "Personal" are not acceptable. However, aforesaid Digital Signature Certificates having Bidder's Name in the " Organization Name" field are acceptable.

The authenticity of above digital signature shall be verified through authorized CA after bid opening. If the digital signature used for signing is not of "Class -3" with Organizations name, the bid will be rejected.

Bidder is responsible for ensuring the validity of digital signature and its proper usage by their employee.

The bid including all uploaded documents shall be digitally signed by duly authorized representative of the bidding company.

6.0 The Company reserves the right to reject any or all the tenders or accept any tender without assigning any reason.

7.0 (a) No Bidder can withdraw his bid within the validity or extended validity of the bid. Withdrawal of any bid within validity period will lead to forfeiture of his/her/their BID SECURITY in full and debarred from participation in future tenders, at the sole discretion of the company.

(b) Once a withdrawal letter is received from any bidder, the offer will be treated as withdrawn and no further claim / correspondence will be entertained in this regard.

8.0 Conditional bids are liable to be rejected at the discretion of the Company.

9.0 The bidders are required to furnish the composition and status of ownership of the firm in whose name bid documents have been purchased/issued along with one or more of the following documentary evidences (which are applicable to the bidder) in support of the same and scanned copies of the same should be uploaded along with the Un-priced bid documents.

a. In case of Sole Proprietorship Firm, Copies of Telephone(Landline Bill)/Electricity/ PAN card, latest Income Tax Return form indicating

therein the name, business and residential address, E-mail and telephone numbers of the owner and copies of Service Tax and Central Excise Registration Certificate.

b. In case of HUF, Copies of Telephone(Landline Bill)/Electricity/PAN card, latest Income Tax Return form, Family Arrangement indicating therein the name, residential address, E-mail and telephone numbers of the owners in general and Karta in particular and copies of Service Tax and Central Excise Registration Certificate.

c. In case of Partnership Firm, Copies of Telephone(Landline Bill)/Electricity/ PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the partners(including the Managing Partner), registered partnership agreement/deed and copies of Service Tax and Central Excise Registration Certificate.

d. In case of Co-Operative Societies, Copies of Telephone(Landline Bill)/Electricity/PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the Directors or persons who are at the helm of affairs, registration certificate from Registrar of Co-Operative Societies and copies of Service Tax and Central Excise Registration Certificate.

e. In case of Societies registered under the Societies Registration Act, Copies of Telephone (Landline Bill)/Electricity/PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the Directors or persons who are at the helm of affairs, registration certificate from the Registrar of the state and copies Service Tax and Central Excise Registration Certificate.

f. In case of Joint Stock Companies registered under the Indian Companies Act, Copies of Telephone (Landline Bill)/Electricity/PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the Directors or persons who are at the helm of affairs, Certificate of Incorporation from the Registrar of Companies, Memorandum and Articles and copies of Service Tax and Central Excise Registration Certificate.

g. In case of Trusts registered under the Indian Trust Act, Copies of Telephone (Landline Bill)/Electricity/ PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the Trustee or persons who are at the helm of affairs, registration certificate from the Registrar of the state, Trust Deed and copies Service Tax and Central Excise Registration Certificate.

10.0 The selected bidder will be required to enter into a formal contract, which will be based on their bid and O.I.L's Standard Form of Contract.

11.0 Time will be regarded as the essence of the Contract and the failure on the part of the Contractor to complete the work within the stipulated time shall entitle the Company to recover liquidate damages and / or penalty from the Contractor as per terms of the tender /contract.

12.0 The contractor will be required to allow OIL officials to inspect the work site and documents in respect of the workers payment.

13.0 The successful bidder shall furnish a **Performance Security Deposit in the form of Demand Draft / Banker's Cheque / Bank Guarantee as specified above before signing the formal contract.** The Performance Security Deposit will be refunded to the Contractor after satisfactory completion of the work, but a part or whole of which shall be used by the Company in realization of liquidated damages or claims, if any or for adjustment of compensation or loss due to the Company for any reason. This Performance Security Money shall not earn any interest.

14.0 **BACKING OUT BY BIDDER:** In case any bidder withdraws their bid within the bid validity period, Bid Security shall be forfeited and the party will be debarred for a period of 2(two) years from the date of withdrawal of bid.

15.0 **BACKING OUT BY L-1 BIDDER AFTER ISSUE OF LOA:** In case LOA issued is not accepted by the L1 bidder or Performance Security is not submitted as per terms of the Contract within the stipulated time, Bid Security shall be forfeited and the bidder shall be debarred for 2 (two) years from the date of default.

16.0 **FURNISHING FRAUDULENT INFORMATION/DOCUMENT**: If it is found at any time that, a Bidder / Contractor has / had furnished fraudulent documents / information, the Bid Security/Performance Security shall be forfeited and the bidder / the party/the contractor shall be debarred for a period of three (03) years from the date of detection of such fraudulent act, besides legal action.

17.0 **The tender will be governed by:**

Forwarding Letter.
Instruction to Bidders
BRC-BEC-Bid Rejection Criteria & Bid Evaluation Criteria.
Part - I - General Conditions of Contract. (GCC)
Part - II - Schedule of Work, Unit and Quantity (SOQ)

Part - III - Special Conditions of Contract (SCC)
Part-IV-Schedule of company's Plants, Materials and Equipments-
Part-V-Safety Measures (SM)
Part-VI-Integrity Pact(Applicable for this IFB)
Performa and Annexures

18.0 **THE INTEGRITY PACT IS APPLICABLE AGAINST THIS TENDER**:

OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide "Part-VI Integrity Pact"of the tender document. This Integrity Pact proforma has been duly signed digitally by OIL's competent signatory (Digitally Signed). The Proforma has to be returned by the bidder (along with the technical bid) duly signed (digitally) by the same signatory who signed the bid, i.e., who is duly authorized to sign the bid. Uploading the Integrity Pact with digital signature will be construed that all pages of the Integrity Pact has been signed by the bidder's authorized signatory who sign the Bid.

Note: Following persons have been appointed as Independent External Monitors: SHRI RAGHAW SHARAN PANDEY, IAS (Retd.), E-Mail ID: rspandey_99@yahoo.com and HRI RAJIV MATHUR, IPS (Retd.), E-Mail ID: rajivmathur23@gmail.com

SPECIAL NOTE:

GUIDELINES FOR PARTICIPATING IN OIL'S E-PROCUREMENT :

To participate in OIL's E-procurement tender, bidders should have a legally valid digital certificate **of Class 3 with Organizations Name** as per Indian IT Act from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India (http://www.cca.gov.in). Bidders must have a valid User Id to access OIL e-Procurement site. Bidders can click on **Guest** login button to view the available open tenders in the E-portal. Bidders shall request OIL through E-mail or fax or letter along with the cost of bid documents as indicated in the NIT for issue of the **USER ID** for accessing and submitting against the E-procurement tender. The User ID shall be issued to the eligible bidders through email **on receipt of the requisite cost of the bid document**. In case any bidder is exempted from paying the tender fee, they should request OIL with supporting documents for issue of the User Id on free of charge basis The detailed guidelines are available in OIL's e-procurement site.

Please note that all tender forms and supporting documents are to be submitted through OIL's E-Procurement site only except Original

Bid Security and any other document if specified in the IFB which are to be submitted in sealed envelope super scribed with tender no. and due date to : The Head Contract, Contracts Department, Oil India Limited, Duliajan- 786602,

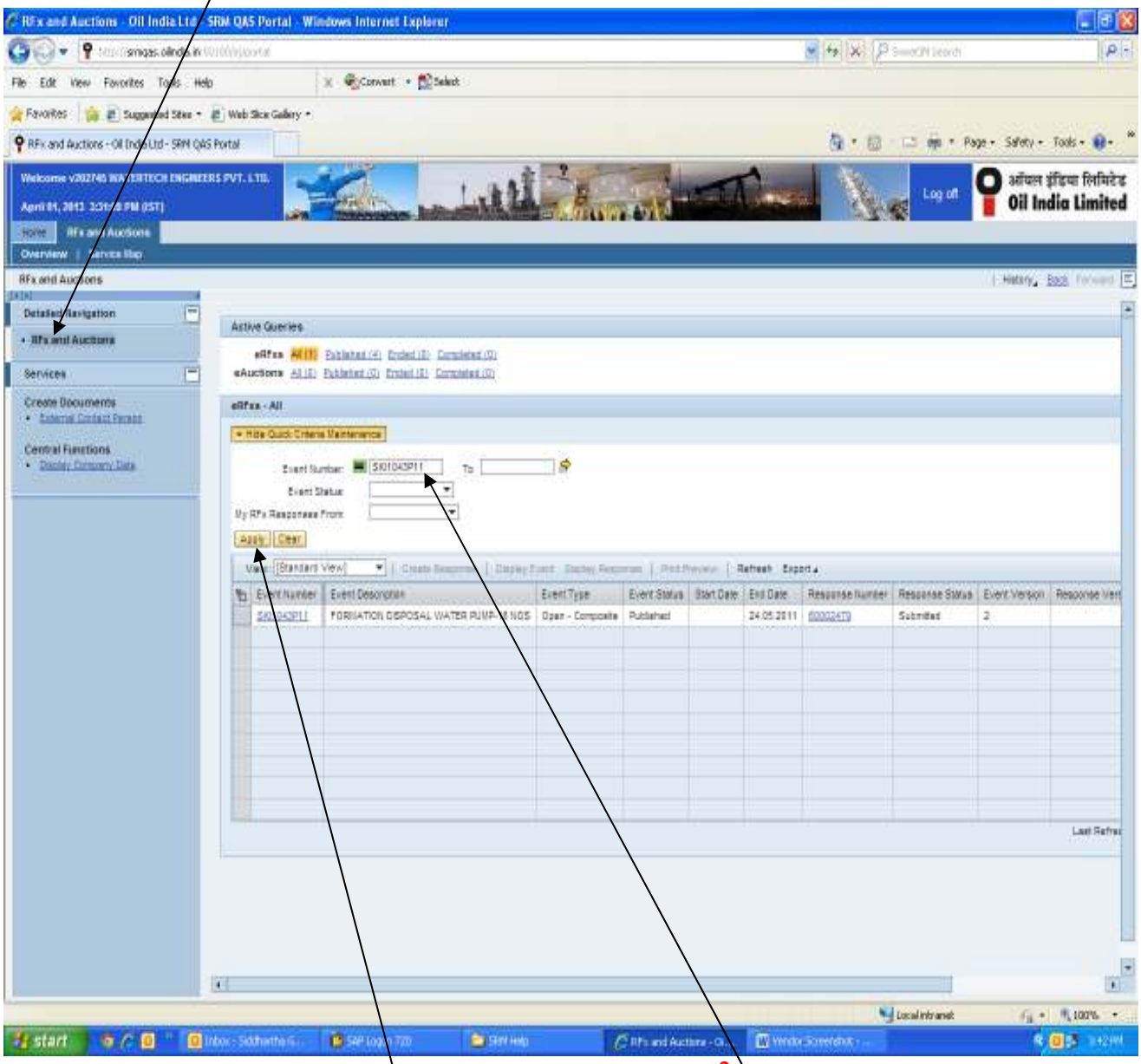
Bidders are requested to examine all instructions, forms, terms and specifications in the bid. Failure to furnish all information required as per the bid or submission of offers not substantially responsive to the bid in every respect will be at the bidders risk and may result in the rejection of its offer without seeking any clarifications. Offers sent without the requisite value of prescribed bid security (if called for in the bid) in original will be ignored straightway.

19.0 **The tender is invited under SINGLE STAGE 2- BID SYSTEM.** The bidder has to submit the "**Un-Priced Techno-Commercial**" and "**Price-Bid"** through electronic form in the OIL's e-Tender portal within the Bid Closing Date and Time stipulated in the e-Tender portal. **The Technical Bid is to be submitted as per Scope of Work & Technical Specifications along with all technical related documents related to the tender are to be uploaded under Technical RFx Tab.** The Price Bid rates shall to be quoted as specified in the **"PRICE BID FORMAT**" and to be attached as attachment under the **Notes & attachment tab**. **The price quoted in the "PRICE BID FORMAT" will only be considered for evaluation.**

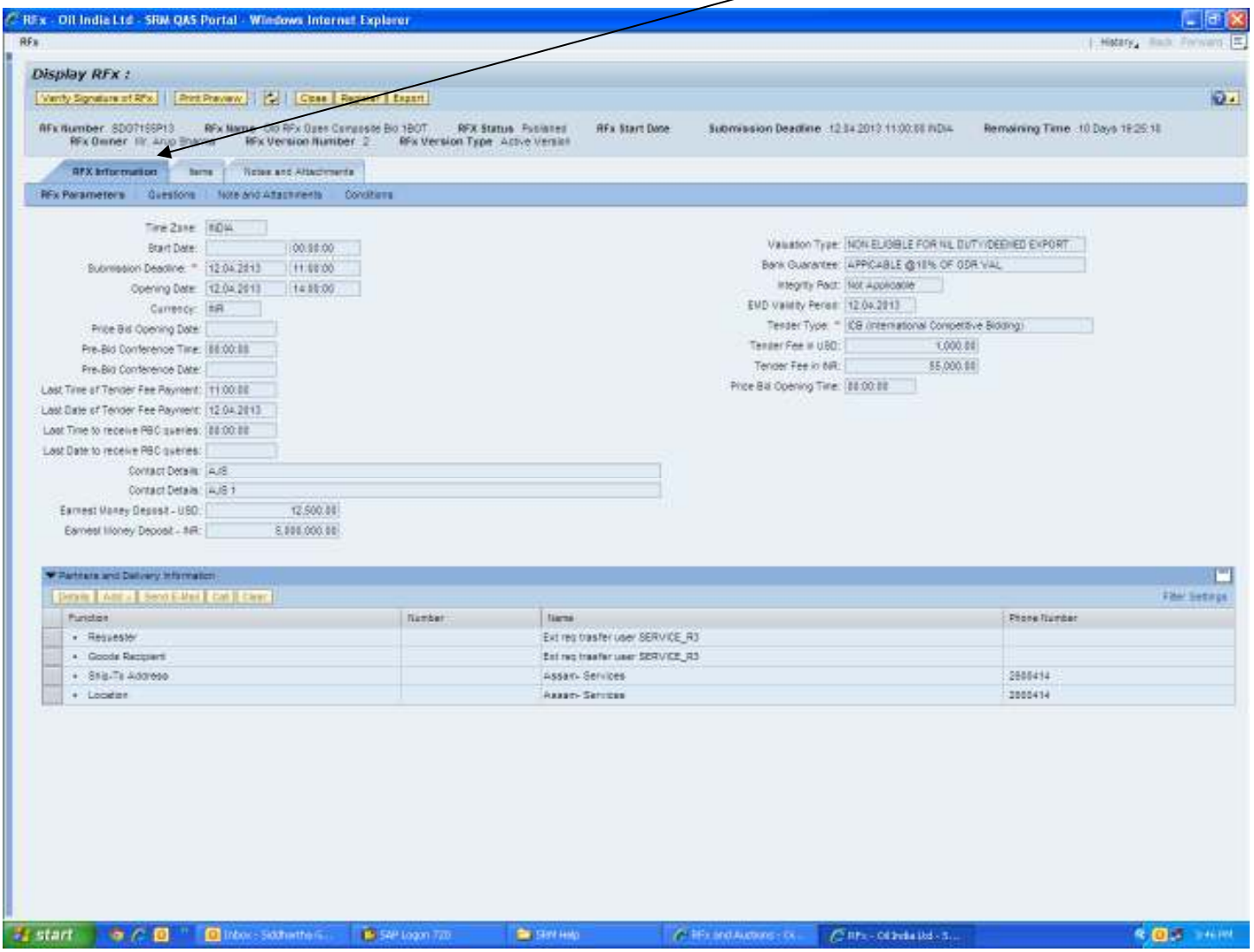
Please note that no price details should be uploaded under Technical RFx. Details of prices as per Price Bid format / Priced bid can be uploaded as Attachment under Notes & Attachment Tab. Offer not complying with above submission procedure will be rejected.

A few screen shots to find out the required IFB is shown below.

1. Select RFx and Auction Tab



After following the above mentioned steps, the details of the IFB under RFx information will be displayed as shown in the page below.



NB: All the Bids must be Digitally Signed using "Class 3" digital signature certificate with Organizations Name *(e-commerce application)* as per Indian IT Act obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India.

HEAD-CONTRACTS

INSTRUCTIONS TO BIDDERS

1.0 Bidder shall bear all costs associated with the preparation and submission of bid. Oil India Limited, hereinafter referred to as 'Company', will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

2.0 **BIDDING DOCUMENTS**

2.1 The services required, bidding procedures and contract terms are prescribed in the Bidding Documents. This Bidding Document includes the following:

a) A forwarding letter highlighting the following points
   (i) Company's IFB No.
   (ii) Bid closing date and time
   (iii) Bid opening date, time and place
   (iv) Bid submission place
   (v) Bid opening place
   (vi) The amount of Bid Security
   (vii) The amount of Performance Guarantee
   (viii)Quantum of liquidated damages for default in timely mobilizations

b) Instructions to Bidders
c) General Conditions of Contract (**Part-I**)
d) Schedule of Work, Unit, Quantities, Rates and Prices (**Part- II-SOQ**)
e) Special Conditions of Contract **(Part-III-SCC)**
f) Schedule of company's Plants, Materials and Equipments-(**Part-IV**)
g) Safety Measures (**Part-V**-**SM)**
h) Integrity Pact (**Part-VI)**
i) Price Bid Format
j) BRC/BEC
k) (**Proforma & Annexures**).

2.2 The bidder is expected to examine all instructions, forms, terms and specifications in the Bid document. Failure to furnish all information required in the Bidding Documents or submission of a bid not substantially responsive to the Bidding Documents in every respect will be at the Bidder's risk & responsibility and may result in the rejection of its bid.

3.0 TRANSFERABILITY OF BID DOCUMENTS:

3.1 Bid Documents are non-transferable. Bid can be submitted only in the name of the bidder in whose name the Bid Document has been

issued.

3.2 Unsolicited offers will not be considered and will be rejected straightway.

4.0 AMENDMENT OF BIDDING DOCUMENTS:

4.1 At any time prior to the deadline for submission of bids, the company may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by the issuance of an Addendum.

4.2 The Addendum will be sent in writing through post / courier / Fax/e-mail to all prospective Bidders to whom Company has sent the bid documents and also be uploaded in the OIL's e-portal in the C-folder under the tab "Amendments to Tender Documents". The company may, at its discretion, extend the deadline for bid submission, if the Bidders are expected to require additional time in which to take the Addendum into account in preparation of their bid or for any other reason. Bidders shall also check OIL's E-Tender portal [C-folder under the tab "Amendments to Tender Documents"] for any amendments to the bid documents before submission of their bids.

5.0 PREPARATION OF BIDS

5.1 LANGUAGE OF BIDS: The bid as well as all correspondence and documents relating to the bid exchanged between the Bidder and the Company shall be in English language, except that any printed literature may be in another language provided it is accompanied by an English translated version, which shall govern for the purpose of bid interpretation.

5.2 DOCUMENTS COMPRISING THE BID: The complete bid should be submitted on-line in the e-portal.

6.0 BID FORM:

6.1 The bidder shall complete the Bid Form and the appropriate Price Schedule furnished as attachment in the e-portal.

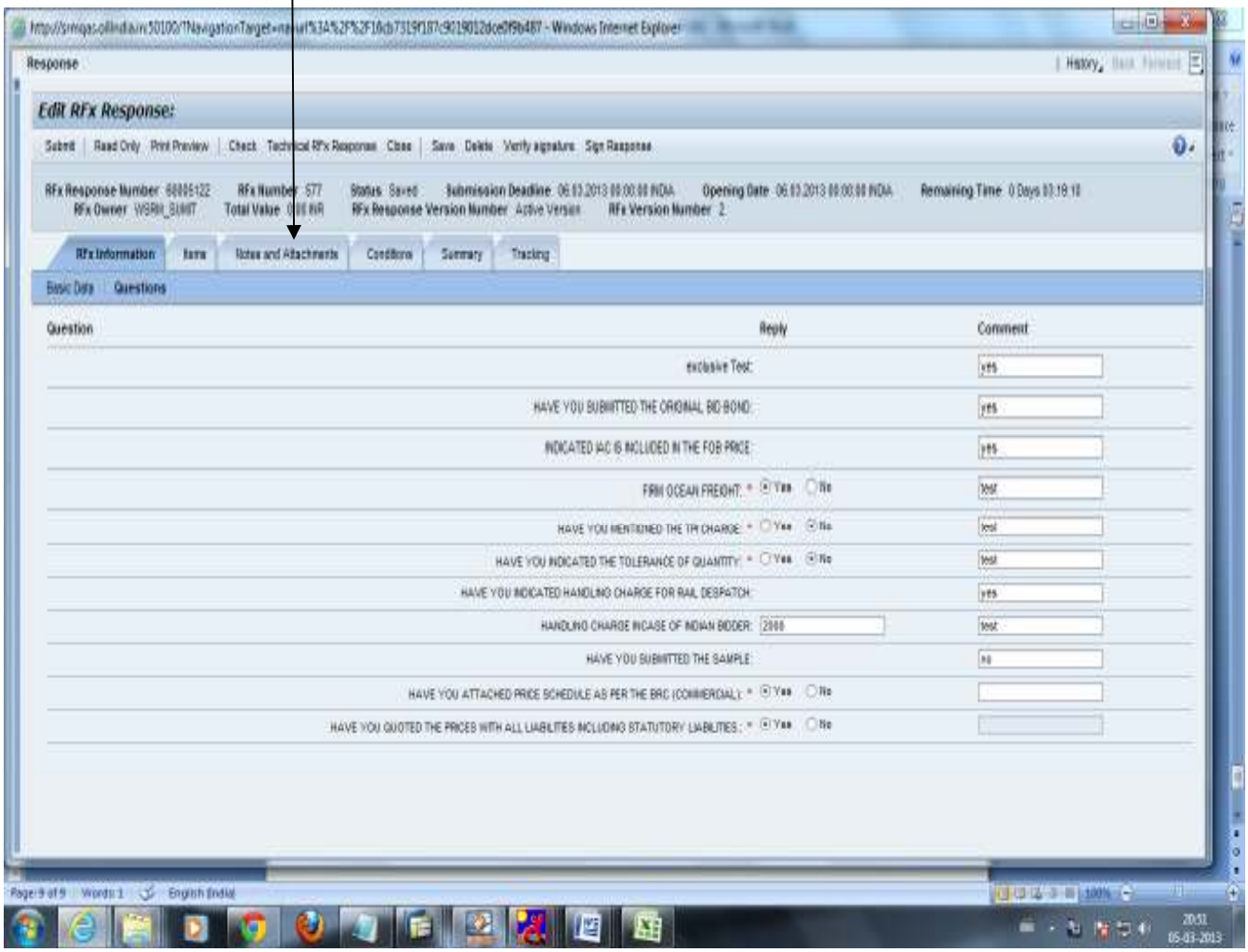
7.0 BID PRICE:

7.1 Prices must be quoted by the bidders, both in words and in figures. In case of any discrepancy between the words and in figures, the prices indicated in words only will be considered.

7.2 Price quoted by the successful bidder must remain firm during its performance of the Contract and will not be subjected to variation on any account.

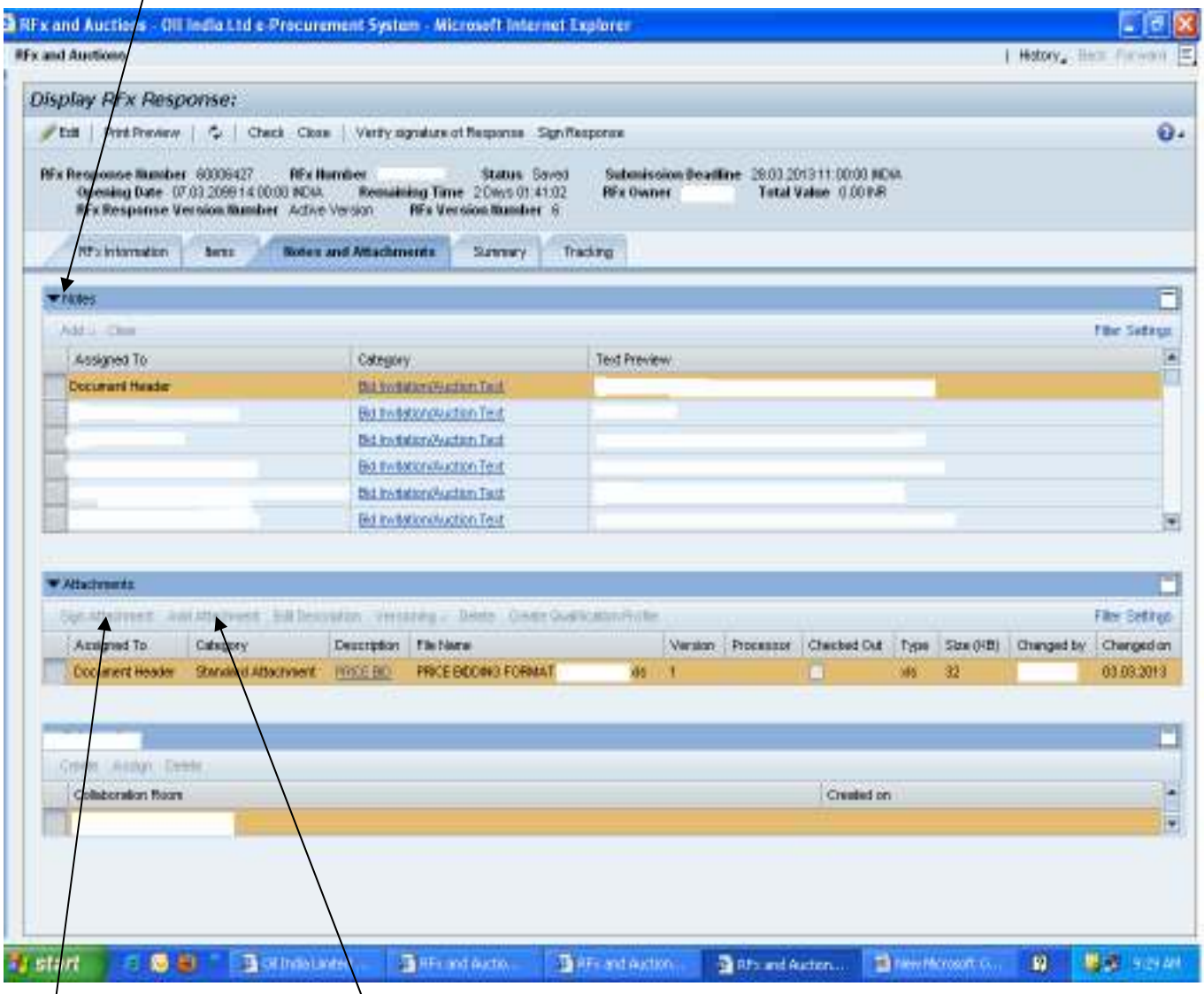
7.3 **Since the tender is invited under SINGLE STAGE 2- BID SYSTEM and such no price details should be uploaded/mentioned under Technical RFx Tab. Details of prices as per Price Bid format / Priced bid can be uploaded as Attachment in the attachment header under the notes and attachment tab. Offer not complying with above submission procedure will be rejected. Kindly refer the screen shots below.**

Click on this tab to upload Price Bid



Next Screen on clicking Notes & attachment Tab and go to edit mode

Bidders can insert comments here

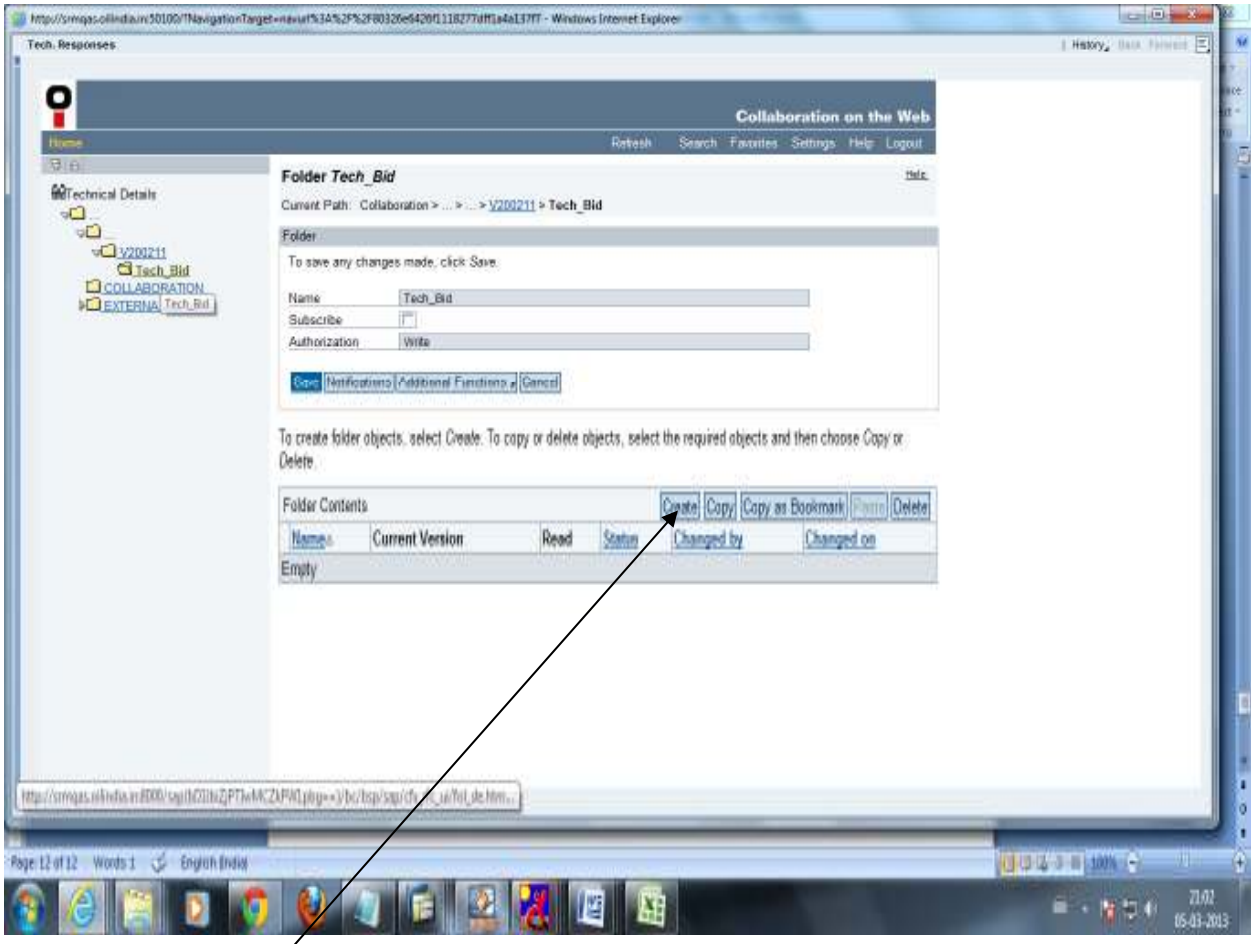


Price Bid Format to be attached here after digitally signing the attachment

Create Technical Rfx response (creating Technical Rfx response is mandatory)

To create Technical Rfx response click on Technical RFx Response , at the top of the Response.(Refer screen shot on Page no:3)

System will redirect you to the C-folder in new window(Screen shot Below)



Click on button Create to create and upload new document.

7.4 Bidder shall be deemed to have satisfied himself before submitting his bid as to the correctness and sufficiency of its bid for the services required and of the rates and prices quoted, which rates and prices shall, except insofar as otherwise provided, cover all its obligations under the contract.

8.0 DOCUMENTS ESTABLISHING BIDDER'S ELIGIBILITY AND QUALIFICATIONS:

8.1 These are as per BEC/BRC

9.0 PERIOD OF VALIDITY OF BIDS:

9.1 Bids shall remain valid for 180 days from the date of bid opening.

9.2 In exceptional circumstances, the OIL may solicit the Bidder's consent to an extension of the period of validity. The request and the response thereto shall be made in writing (or by Fax). A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request will neither be required nor permitted to modify their bid.

10.0 FORMAT AND SIGNING OF BID:

10.1 The original and all copies of the bid shall be typed or written in indelible inks and shall be signed (digitally) by the Bidder or a person or persons duly authorized to bind the Bidder to the contract.

11.0 SUBMISSION OF BIDS.

11.1 Bids are to be submitted online through OIL's E-procurement portal with digital signature. The bid and all attached documents should be digitally signed by the bidder using "Class 3" digital certificates [e commerce application (Certificate with personal verification and Organisation Name)] as per Indian IT Act 2000 obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India(RCAI), Controller of Certifying Authorities(CCA) of India before bid is uploaded.

The bid including all uploaded documents shall be digitally signed by duly authorized representative of the bidder to bind the Bidder to the contract. The authenticity of above digital signature shall be verified through authorized CA after bid opening and in case the digital signature is not of "Class-3" with organization name, the bid will be rejected.

Bidder is responsible for ensuring the validity of digital signature and it's proper usage by their employees.

11.2 Any person signing the Bid or any other document in respect of this Bid Document or other relevant documents on behalf of the Bidder without disclosing his authority to do so shall be deemed to have the authority to bind the Bidder. If it is discovered at any time that the person so signing has no authority to do so, the Company (OIL) may, without prejudice to any other right or remedy, cancel his Bid or Contract and hold the Bidder liable to the Company (OIL) for all costs and damages arising from the cancellation of the Bid or Contract including any loss which the Company (OIL) may sustain on account thereof.

11.2 Timely submission of the bids is the responsibility of the Bidder should be submitted before the bid closing date and time. Company shall not be responsible for any delay.

11.3 E-mail/ Fax/ Telex/Telegraphic/Telephonic offers will not be accepted.
11.4 Bidder shall submit the Bid, duly completed in terms of the Bid Document.

12.0 **DEADLINE FOR SUBMISSION OF BIDS**:

12.1 Bids should be submitted on-line up to 11.00 AM (IST) (Server Time) on the Bid Closing date mentioned in the Forwarding Letter. Bidders will be permitted by System to make any changes in their bid after the bid has been uploaded by the bidder prior to the date and time as mentioned in the bid. But no changes would be allowed by the system once the due date and for submission of bids has been reached and bids are opened.

12.2 No bid can be submitted after the submission dead line is reached. The system time displayed on the e-procurement web page shall decide the submission dead line.

12.3 The documents(if any) in physical form must be received by Company at the address specified in the “Forwarding Letter” on or before the Bid Closing Date & Time mentioned in the "Forwarding Letter". Timely delivery of the same at the address mentioned in the Forwarding Letter is the responsibility of the Bidders.

13.0 LATE BIDS:

13.1 Bidders are advised in their own interest to ensure that their bids are uploaded in system before the closing date and time of the bid. Any Bid received by the Company after the Bid Closing Date & Time stipulated by the Company shall be rejected.

14.0 MODIFICATION AND WITHDRAWAL OF BIDS:

14.1 Bidders will be permitted by System to make any changes in their bid after the bid has been uploaded by the bidder prior to the date and time as mentioned in the bid. But no changes would be allowed by the system once the due date and for submission of bids has been reached and bids are opened.

14.2 No bid can be modified / withdrawn subsequent to the deadline for submission of bids.

14.4 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiry of the period of bid validity specified by the Bidder on the Bid Form. Withdrawal of a bid during this interval shall result in the Bidder's forfeiture of its Bid Security.

15.0 EXTENSION OF BID SUBMISSION DATE :

15.1 Normally no request for extension of Bid Closing Date & Time will be entertained. However, OIL at its discretion, may extend the Bid Closing Date and/or Time due to any reasons. In case of receipt of only one Bid on the Bid Closing Date and Time, OIL may extend the Bid Closing /Opening Date by 2(two) weeks. However, the bidder whose bid has been received within the bid closing date and time, will not be allowed to revise their Bid/prices. Withdrawal of such Bid also will not be permitted by the system.

16.0 BID OPENING AND EVALUATION:

16.1 OIL shall open the Bids, in the presence of Bidder's representatives who choose to attend at the date, time and place mentioned in the Covering Letter. However, an authorization letter (as per Performa-II) from the bidder must be produced by the Bidder's representative at the time of bid opening. Unless this Letter is presented, the representative will not be allowed to attend the bid opening. The Bidder's representatives who are allowed to attend the bid opening shall sign a register evidencing their attendance. Only one representative against each bid will be allowed to attend. **In technical bid opening date, only Technical RFx will be allowed to open by the system.** Bidders therefore should ensure that techno-Commercial bid is uploaded under the **Technical RFx** Tab Page only ***and no price should be mentioned anywhere under the Technical RFx.***

16.2 In case of any unscheduled holiday or Bandh on the Bid Opening Date, the Bids will be opened on the next full working day. Accordingly, Bid Closing Date / time will get extended up to the next working day and time.

16.3 Bid for which an acceptable notice of withdrawal has been received pursuant to clause 14.0 shall not be opened. OIL shall examine bids to determine whether they are complete, whether requisite Bid Securities have been furnished, whether documents have been properly signed and whether the bids are generally in order.

16.4 Bid opening shall be done as detailed in clauses 16.1 and 16.2 above

16.5 OIL shall prepare, for its own records, minutes of bid opening including the information disclosed to those present in accordance with the sub-clause 16.3

16.6 To assist in the examination, evaluation and comparison of bids, normally no clarifications shall be sought from the Bidders. However, for assisting in the evaluation of the bids especially on the issues where the Bidder confirms compliance in the evaluation and contradiction exists on the same issues due to lack of required supporting documents in the Bid(i.e. document is deficient or missing), or due to some statement at other place of the Bid(i.e. reconfirmation of confirmation) or vise versa, clarifications may be sought by OIL at its discretion. The request for clarification and the response shall be in writing and no change in the price or substance of the bid shall be sought, offered or permitted.

16.7 Prior to the detailed evaluation, OIL will determine the substantial responsiveness of each bid to the requirement of the Bidding Documents. For purpose of these paragraphs, a substantially responsive bid is one, which conforms to all the terms and conditions of the Bidding Document without material deviations or reservation. A material deviation or reservation is one which affects in any way substantial way the scope, quality, or performance of work, or which limits in any substantial way, in-consistent way with the bidding documents, the Company's right or the bidder's obligations under the contract, and the rectification of which deviation or reservation would affect unfairly the competitive position of other bidders presenting substantial responsive bids. OIL's determination of bid's responsiveness is to be based on the contents of the Bid itself without recourse to extrinsic evidence.

16.8 A Bid determined as not substantially responsive will be rejected by the Company and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

16.9 The Company may waive minor informality or nonconformity or irregularity in a bid, which does not constitute a material deviation, provided such waiver, does not prejudice or affect the relative ranking of any Bidder.

17.0 EVALUATION AND COMPARISON OF BIDS:

17.1 The OIL will evaluate and compare the bids as per Priced Bid Format of the bidding documents.

17.2 DISCOUNTS / REBATES: Unconditional discounts/rebates, if any, given in the bid or along with the bid will be considered for evaluation.

17.3 Post bid or conditional discounts/rebates offered by any bidder shall not be considered for evaluation of bids. However, if the lowest bidder happens to be the final acceptable bidder for award of contract,

and if they have offered any discounts/rebates, the contract shall be awarded after taking into account such discounts/rebates.

18.0 CONTACTING THE COMPANY:

18.1 Except as otherwise provided in Clause 14.0 above, no Bidder shall contact OIL on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded except as required by OIL vide sub-clause 16.6.

18.2 An effort by a Bidder to influence OIL in the bid evaluation, bid comparison or Contract award decisions may result in the rejection of their bid.

19.0 AWARD CRITERIA:

19.1 OIL will award the Contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

20.0 OIL' S RIGHT TO ACCEPT OR REJECT ANY BID:

20.1 OIL reserves the right to accept or reject any or all bids and to annul the bidding process and reject all bids, at any time prior to award of contract, without thereby incurring any liability to the affected bidder, or bidders or any obligation to inform the affected bidder of the grounds for OIL's action.

21.0 NOTIFICATION OF AWARD:

21.1 Prior to the expiry of the period of bid validity or extended validity, OIL will notify the successful Bidder in writing by registered letter or by cable or telex or fax or e-mail (to be confirmed in writing by registered / couriered letter) that its bid has been accepted.

21.2 The notification of award will constitute the formation of the Contract.

22.0 SIGNING OF CONTRACT:

22.1 At the same time as OIL notifies the successful Bidder that its Bid has been accepted, OIL will either call the successful bidder for signing of the agreement or send the Contract Form provided in the Bidding Documents, along with the General & Special Conditions of Contract,

Technical Specifications, Schedule of rates incorporating all agreements between the parties.

22.2 Within 2 Weeks from the date of issue of Letter of Award (LOA), the successful Bidder shall sign and date the contract and return it to OIL. Till the contract is signed, the LOA issued to the successful bidder shall remain binding amongst the two parties.

22.3 In the event of failure on the part of the successful bidder to sign the contract within the period specified above or any other time period specified by OIL. OIL reserves the right to terminate the LOA issued to the successful bidder. The party shall also be debarred for a period of 2(two) years from the date of default.

23.0 FURNISHING FRAUDULENT INFORMATION/DOCUMENTS:

23.1 If it found that a bidder has furnished fraudulent information/documents, it shall constitute sufficient ground for annulment of the award and the party shall be debarred for a period of 3(three) years from the date of detection of such fraudulent act besides the legal action.

24.0 BID DOCUMENT:

Before submission of Bids, Bidders are requested to make themselves fully conversant with all Conditions of the Bid Document and other relevant information related to the works to be executed under this contract.

25.0 Mobilization Period: 1(One) months from the date of issue of LOA.

&&&&&&&&&&&&& END OF ITB &&&&&&&&&&&&&

BID REJECTION CRITERIA / BID EVALUATION CRITERIA OF THE TENDER

BID REJECTION CRITERIA (BRC): The bid shall conform generally to the specifications and terms and conditions given in this bid document. Bids shall be rejected in case the services offered do not conform to required parameters stipulated in the technical specifications. Notwithstanding the general conformity of the bids to the stipulated specifications, the following requirements will have to be particularly met by the Bidders without which the same will be considered as non-responsive and rejected.

A. EXPERIENCE CRITERIA:

Bidders must meet the following criteria:

A.1 The Bidder must have experience of having successfully completed works with Central Public Sector Units, State Public Sector Units, Central Government Organization/Department, State Government Organization/Department, Public Limited Companies during the last seven years ending last day of the month previous to the one in which bids are invited which should be either of the following:

Three completed jobs of system voltage level 11 kV and above for substation and its associated transmission and distribution over - headlines/ cables each costing not less than the amount equal to ₹ 3,22,47,600.00

OR

Two completed jobs of system voltage level 11 kV and above for substation and its associated transmission and distribution over - headlines/ cables each costing not less than the amount equal to ₹ 4,03,09,500.00

OR

One completed job of system voltage level 11 kV and above for substation and its associated transmission and distribution overhead lines/ cables each costing not less than ₹ 6,44,95,100.00

The bidder must also meet the following Criteria:

A.2 Constructed and successfully completed civil construction of office building or residential building or Sub Station Building.

A.3 Supplied, installed and commissioned 11 kV Sub Station or of a higher system voltage, which must be in service and satisfactory operation for

12months in the last day of the month previous to the one in which bids are invited.

A.3.1 Minimum 1No. of Transformer of rating 500 kVA and above.
A3.2 Minimum 6 Nos. 11KV, VCB Panels rated 1250/800/630 Amps.
A.3.3 Minimum 1No. PCC/ PMCC/ LT Switchboards comprising of Draw out type Air Circuit Breakers rated 800 Amps and above along with MCCB/ FSU.
A.3.4 Minimum 3000mtrs, 3/4core XLPE, HT/LT cables or 5KM, 11KV or higher voltage overhead lines with rabbit/ dog/wolf conductor.

II) Bids can be submitted by an Individual Firm / Company or Firms / Companies under Consortium as:

1. A Consortium of a maximum of three Firms / Companies as Partners meeting the following requirements:

Bids from Consortium: In case, the bidder is consortium of companies, the following requirement should be satisfied by the bidder:

(i) Any one of the consortium members individually shall have to meet the Financial Criteria as per Para III below and the same or any other consortium member individually should meet the Experience Criteria as per Para A above.

(ii) Consortium bids shall be submitted with a Memorandum of Understanding between the consortium members duly signed by the authorized Executives of the consortium members clearly defining the role/scope of work of each partner/member, binding the members jointly and severally to the responsibility for discharging all obligations under the contract and identifying the Leader of Consortium. Unconditional acceptance of full responsibility by the Leader of the Consortium for executing the 'Scope of Work' of this tender document till the end of the Contract Period under this tender, shall be submitted along with the technical bid. The Memorandum of Understanding between the consortium members should be **duly Notorised by Notary person**.

(iii) Only the Leader of the consortium shall buy the bid document, submit bid and sign the Contract Agreement (in the event of award of Contract) on behalf of the Consortium.

(iv) The Bid Security shall be in the name of the Leader of the consortium on behalf of consortium with specific reference to consortium bid and name & address of consortium members. Similarly the Performance Security shall be in the name of the Leader on behalf of the consortium.

2.0 Any party who is extending technical support by way of entering into technical collaboration with another party, shall not be allowed to submit an independent Bid against the tender and such bids shall be rejected straightway. Further, all bids from parties with technical collaboration support from the same Principal will be rejected.

B.2 TECHNICAL REQUIREMENTS FOR BIDDER

B.2.1 The Bidder should have a valid Electrical Contractors' License issued or recognized by the State Licensing Authority of Government of Assam.

III) FINANCIAL REQUIREMENTS FOR BIDDERS

The average annual financial turnover during the last three years ending 31st March 2014 should not be less than ₹ 2,41,85,700.00 as per the audited Profit & loss accounts.

IV) SUBMISSION OF DOCUMENTS

The Bidder should submit the following documents, without which the Bid shall be rejected.

1. Constitution Details of the Bidder with valid Partnership Deed / Memorandum and Articles of Association/ consortium agreement

2. Consortium Agreement with details of Individual Partners, Partnership Deed/s / Memorandum and Articles of Association.

3. Completion Certificate to evidence work experience, meeting the conditions, as laid out in Clause A.1

5. Completion Certificate to evidence work experience, meeting the condition, as laid out in Clause A.2.

6. Completion Certificate to evidence work experience, meeting the conditions, as laid out in Clause A.3.

7. Self-attested Copy of valid Electrical Contractors' License issued or recognized by the State Licensing Board, Government of Assam.

8. Self-attested copies of Audited Profit & Loss Account for the past three completed financial years ending March2014. In the event of a Bid by a Consortium, these documents need to be submitted for any of the Partner - to ascertain the meeting of the financial criteria.

V) BID EVALUATION CRITERIA

The Bids conforming to the terms and conditions stipulated in the Bid Documents and considered to be responsive after subjecting to the Bid rejection Criteria, will be considered for further evaluation, as per the Bid Evaluation Criteria, given below.

1. To ascertain the inter-se ranking, the comparison of the responsive bids shall be made on the basis of the total amount quoted for the items (i.e. schedule of works, units, quantity, rates) of the tender in the Price Bid format. The lowest (L1) bidder shall be awarded the contract provided they meet the other qualifying criteria listed in the tender document.

2. In case of identical lowest offered rate by more than one bidder, the selection shall be made of draw of lot, between the bidders offering the same price.

VI) COMMERCIAL:

3.1 Bids are invited under Open –Single Stage Two bid system.

3.2 Bidders must offer firm rates in Indian Rupees only. Rates quoted by the successful bidder must remain firm during the entire period of execution of the contract and not subject to variation on any account whatsoever. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

3.3 Bid security as specified shall be furnished along with the bid. Any bid not accompanied by the proper bid security will be rejected, except those are exempted.

3.4 The system will not permit to submit any bids after the scheduled bid closing date and time.

3.5 Bids must be kept valid for a minimum period of 180 days from the date of scheduled bid closing. Bids with inadequate validity will be rejected.

3.6 Bidders must quote clearly and strictly in accordance with the Price Bid Format of the bidding document; otherwise the bid will be summarily rejected. If no charge is involved for any of the item, zero (0) should be mentioned against such part of work. However, such charges shall consider being included in the overall quoted price.

3.7 Bidder must accept and comply with the following clauses as given in the Bidding Document in toto, failing which offer will be rejected-

a. Performance Bank Guarantee clause
b. Force Majeure clause
c. Tax liabilities clause
d. Arbitration clause
e. Applicable Law
f. Liquidated Damage clause

3.8 The Company also reserves the right to cancel/withdraw the Tender without assigning any reasons to the bidders, for which no compensation shall be paid to the bidder. The bidder must confirm their acceptance to this clause in their respective bids.

3.9 Original bid shall be digitally signed and uploaded by the bidder or his authorized representative, failing which the bid may be rejected.

VII) GENERAL

4.1 In case bidder takes exception to any clause of Tender Document not covered under BEC / BRC, then the Company has the discretion to load or reject the offer on account of such exception if the bidder does not withdraw / modify the deviation when / as advised by the Company. The loading so done by the Company will be final and binding on the Bidders. No deviation will however, be accepted in the clauses covered under BRC.

4.2 To ascertain the substantial responsiveness of the bids, the Company reserves the right to ask the Bidder for clarification in respect of clauses covered under BRC also and such clarification fulfilling the BRC clauses must be received on or before stipulated date mentioned in the letter of clarification sought by the Company, failing which the bid will be summarily rejected.

4.3 In case any of the clauses in the BRC contradict with other clauses of Bid Document elsewhere, then the clauses in the BRC shall prevail.

4.4 The originals of such documents [furnished by bidders(s)] shall have to be produced by bidder(s) to OIL as and when asked for.

4.5 OIL will not be responsible for delay, loss or non receipt of applications (for bidding documents) sent by mail and will not entertain any correspondence in this regard.

4.6 The bids not conforming to complete scope of work will be rejected.

4.7. Bidders should provide(***self attested /attested***) Photocopy of PF Registration Certificate, Service Tax registration certificate, Copy of PAN Card details & VAT registration certificate**.**

********End of BRC-BEC*******

OIL INDIA LIMITED
(A Govt. of India Enterprise)
Contracts Department,
Duliajan, DISTRICT: DIBRUGARH
ASSAM, PIN: 786602

DESCRIPTION OF WORK/SERVICES:-

Design, construction of substation building including supply and commissioning of Electrical equipments of 3 nos 11KV/415V substation at Duliajan on LSTK basis

GENERAL CONDITIONS OF CONTRACT (GCC)

MEMORANDUM OF AGREEMENT made this_____ day of _____ Between OIL INDIA LIMITED a Company incorporated under the Companies Act 1956 and having its Registered Office at Duliajan in the District of Dibrugarh, Assam (hereinafter called Company) of the one part and Shri/Smti _____and Shri/Smti _____ carrying on business as partners /proprietor under the firm name and style of M/s._____ with the main Office at _____in the District of _____ aforesaid (hereinafter called 'Contractor') on the other part.

WITNESSETH:

1. a) The contractor hereby agrees to carry out the work set down in the Schedule of work which forms part-II of this Contract in accordance with the 1968 General Conditions of Contract of Oil India Limited and General Specifications read in conjunction with any drawings and Particular Specifications & instructions which forms Part-III of the contract utilizing any materials/services as offered by the Company as per Part-IV of the contract at_____ .

b) In this Contract all words and expressions shall have the same meaning as are respectively assigned to them in the 1968 General Conditions of Contract of Oil India Limited which the Contractor has perused and is fully conversant with before entering into this Contract.

c) The clauses of this contract and of the specifications set out hereunder shall be paramount and in the event of anything herein contained being inconsistent with any term or terms of the 1968 General Conditions of Contract of Oil India Limited, the said term or terms of the 1968 General conditions of Contract to the extent of such inconsistency, and no further, shall not be binding on the parties hereto.

2. The contractor shall provide all labour, supervision and transport and such specified materials described in part-II of the Contract including tools and plants as necessary for the work and shall be responsible for all royalties and other levies and his rates shall include for these. The work executed and materials supplied shall be to the satisfaction of the Company's Engineer and Contractor's rates shall include for all incidental and contingent work which although not specifically mentioned in this contract are necessary for its completion in a sound and workman like manner.

3. The Company's Engineer shall have power to:

a) Reduce the rates at which payments shall be made if the quality of work although acceptable is not up to the required standard set forth in the OIL Standard Specifications which have been perused and fully understood by the Contractor.

b) Order the Contractor to remove any inferior material from the site and to demolish or rectify any work of inferior workmanship, failing which the Company's Engineer may arrange for any such work to be demolished or rectified by any other means at the Contractor's expenses.

c) Order the Contractor to remove or replace any workman who he (The Engineer) considers incompetent or unsuitable; the Engineer's opinion as to the competence and suitability of any workman engaged by the Contractor shall be final and binding on the Contractor.

d) Issue to the Contractor from time to time during the progress of the work such further drawings and instructions as shall be necessary for the purpose of proper and adequate execution and maintenance of the works and the Contractor shall carry out and be bound by the same.

e) Order deviations in Part II and III of this Contract. All such deviation orders shall be in writing and shall show the financial effect, if any, of such deviation and whether any extra time is to be allowed.

4. The Contractor shall have no claim against the company in respect of any work which may be withdrawn but only for work actually completed under this contract. The contractor shall have no objection to carry out work in excess of the quantities stipulated in Part-II if so ordered by the company at the same rates, terms and conditions.

5. The Company reserves the right to cancel this Contract at any time upon full payment of work done and the value of the materials collected by the contractor for permanent incorporation in the work under this contract particularly for execution of this contract up to the date of cancellation of the Contract. The valuation of the work done and the materials collected shall be estimated by the company's Engineer in presence of the contractor. The Contractor shall have no claim to any further payment whatsoever. The valuation would be carried out exparte if Contractor fails to turn up despite reasonable notice which will be binding on the Contractor.

6. The Contractor hereby undertakes to indemnify the Company against all claims which may arise under the under noted Acts:-

i) The Mines Act.
ii) The Minimum Wages Act, 1948.
iii) The Workman's Compensation Act, 1923.
iv) The Payment of wages Act, 1963.
v) The Payment of Bonus Act, 1965.
vi) The Contract Labour (Regulation & Abolition) Act, 1970 and the rules framed there under.
vii) Employee's Pension Scheme, 1995.
viii) Inter-State Migrant (Regulation of Employment and Condition of Service) Act. 1979.
ix) The Employees Provident Fund and Miscellaneous Provisions Act, 1952.
x) AGST Act.
xi) Service Tax Act.

or any other Acts or Statute not here in above specifically mentioned having bearing over engagement of workers directly or indirectly for execution of work. The Contractor shall not make the Company liable to reimburse the Contractor for the statutory increase in the wage rates of the Contract Labour appointed by the Contractor. Such Statutory increase in the wage rates of Contract Labour shall be borne by the contractor.

7. The Contractor shall clear away all rubbish and surplus material from the site on completion of work and shall leave the site clean and tidy.

8. The duration of the contract shall be **104 weeks** from the commencement date mentioned in the work order. The Contractor must complete the work within the contract period. During the currency of the job, the work progress must be commensurate with the time elapsed. In the event of any delay on the contractor's part, he/she will be liable to pay to the company liquidated damages at the rate of 1/2% (Half p.c) per week of the contract price of the item(s) delayed in completion and the maximum value of the liquidated damage will be 7.5% of the contract price of the item(s) delayed provided the item(s) delayed are not critical for commissioning and final utilization of the work. If, however, the item(s) delayed in completion are critical for commissioning and final utilisation of the work then the contractor will be liable to pay liquidated damages by way of penalty at the rate of 1/2% (Half percent) of the total contract cost subject to a maximum of 7.5% of the total contract cost.

The Chief Engineer's certificate as to the criticality or otherwise of an item shall be final.

The payment of liquidated damages/penalty may be reduced or waived at the sole discretion of the Company whose decision in this regard will be final.

In the event of there being undue delay in execution of the Contract, the Company reserves the right to cancel the Contract and / or levy such additional damages as it deems fit based on the actual loss suffered by the

company attributable to such delay. The company's decision in this regard shall be final.

9. In order to promote, safeguard and facilitate the general operational economic in the interest of the Company during the continuance of this contract the Contractor hereby agrees and undertakes not to take any direct or indirect interest and or support, assist, maintain or help any person or persons engaged in antisocial activities, demonstration, riots , or in any agitation prejudicial to the Company's interest and any such even taking shape or form at any place of the Company's works or and its neighborhood.

10. The tendered all-inclusive Price (the Contract price) except Service Tax is Rs. XXXXXXXXX(Not to be filled up by the Bidder. Will be entered at the time of Signing of the agreement with the successful bidder) but the Company shall pay the Contract or only for actual work done at the all inclusive rates set down in the Schedule of work part II of this Contract.

Final payment will be made only after satisfactory completion of the work. Such final payment shall be based on the work actually done allowing for deviations and any deductions and the measurement shall be checked and certified correct by the Company's Engineer before any such final payment is made.

11. The contractor employing 20 (twenty) or more workmen on any day preceding 12 months shall be required to obtain requisite licence at his cost from the appropriate Licensing Officer before undertaking any Contract work. The Contractor shall also observe the rules & regulations framed under the Contract Labour (Regulation &Abolition) Act.

12. The Company for any reason whatsoever and of which the company shall be sole judge may terminate this Contract with a 24 hours notice in writing to the Contractor and in the event of Company's so doing the clause 5 here of shall prevail and the accounts between the parties will be in accordance therewith finalised.

13. The Contractor will not be allowed to construct any structure (for storage / housing purpose) with thatch, bamboo or any other inflammable materials within any company's fenced area.

14. The Contractor shall ensure that all men engaged by him/her are provided with appropriate protective clothing and safety wear in accordance with regulation 89(a) and 89(b) in the Oil mines Regulations 1984. The Company’s representative shall not allow/accept those men who are not provided with the same.

15. All Statutory taxes levied by the Central and State Government or any other competent authority from time to time will be borne by Contractor and the amount of the contract specified in the contract is inclusive of all tax liabilities but excluding Service Tax. Service Tax if applicable shall be, to the Company's account.

However, Service Tax portion payable directly by the Service provider (if applicable) shall be reimbursed to the Contractor on the basis of the documentary evidence.

16. The Contractor shall deploy local persons in all works.

17. The Contractor shall not engage minor labour below 18(eighteen) years of age under any circumstances.

18. The Contractor and his/her workmen shall strictly observe the rules and regulations as per Mines Act. (Latest editions).

19.1 **GENERAL OBLIGATIONS OF COMPANY:**

COMPANY shall, in accordance with and subject to the terms and conditions of this contract:

i) Pay the Contractors in accordance with terms and conditions of the contract.

ii) Allow access to Contractors and their personnel, subject to normal security and safety procedures, to all areas as required for orderly performance of the work.

20. **Special Conditions**

a) The contractor will be required to allow OIL Officials to inspect the work site and documents in respect of the workers' payment.

b) Contractor(s) whosoever is liable to be covered under the P.F. Act and contract cost is inclusive of P.F., must ensure strict compliance of provisions of Provident Fund and Miscellaneous Provisions Act, 1952 in addition to the various Acts mentioned elsewhere in this contract. Any contractor found violating these provisions will render themselves disqualified from any future tendering. As per terms of the contract, if applicable, the Contractor must deposit Provident Fund Contribution (covering Employee's & Employer's share) with the competent authority monthly under their direct code. The Contractor shall be required to submit documentary evidence of deposit of P.F. Contribution to the Company. In case of failure to provide such documentary evidence, the Company reserves the right to withhold the amount equivalent to applicable P.F. Contribution.

21. ARBITRATION:

Any dispute under this contract will be settled through Arbitration as per Indian Arbitration and Conciliation Act, 1996.

Place of Arbitration: Duliajan

22. FORCE MAJEURE:

Force Majeure (exemption) Clause of the International Chamber of Commerce (ICC Publication No. 421) is hereby incorporated in this contract.

23. I.B. VERIFICATION REPORT AND SECURITY REVIEW:

Contractor will be required to submit the verification report to ascertain character and antecedents from the Civil Administration towards the persons engaged under this contract to the Head of the user Department before engagement.

24. In case of any doubt or dispute as to the interpretation of any clause herein contained, the decision of the Company's Engineer shall be final and binding on the contractor.

25. SET OFF CLAUSE:-

"Any sum of money due and payable to the contractor (including Security Deposit refundable to them) under this or any other contract may be appropriated by Oil India Limited and set off against any claim of Oil India Limited (or such other person or persons contracting through Oil India Limited) for payment of a sum of money arising out of this contract or under any other contract made by the contractor with Oil India Limited (or such other person or persons contracting through Oil India Limited)."

26.0 FURNISHING FRAUDULENT INFORMATION/DOCUMENT:

If it is found that a Bidder/Contractor has furnished fraudulent document/information the party shall be debarred for period of 3(three) years from date of detection of such fraudulent act, besides the legal action.

27.0 LIQUIDATED DAMAGES FOR DELAY IN MOBILISATION AND/ OR COMPLETION OF WORKS AND SERVICES

In normal case of works /service contracts, liquidated damages will be applicable @ 0.5% of the contract value per week or part thereof, for delay in contract mobilization/completion date subject to a maximum ceiling of 7.5% of contract value.

IN WITNESS whereof the parties hereunto set their hands seals the day and year first written above:-

SIGNED & DELIVERED FOR AND
ON BEHALF OF

----------by the hand of

(Signature of Contractor or his legal Attorney)

(Full Name of Signatory)

---
its Partner/Legal Attorney

(Seal of Contractor's Firm)

(Signature of witness)

And in presence of

Date : _____

(Full Name of Signatory)

Address:

(Signature of Acceptor)

SIGNED & DELIVERED FOR & ON
BEHALF OF OIL INDIA LIMITED
_____

Designation

Date_____

GENERAL

1.1 SCOPE of Work:

These general specifications cover the details for construction of substation building and Substation Equipment (Transformers, HT Panels, LT panels and HT and LT cables, Cable termination kits other related items, Chemical earth electrodes, Cable marking system) to be supplied, the inspection as may be necessary before dispatch, delivery at site, installations, testing, commissioning, putting into operation and handing over in working condition of the equipment for substations for working voltage of 11000/415 volts.

1.1.1 **Related Documents:**
This technical specification shall be read in conjunction with the standard conditions of the contract with correction slips, as are relevant for commercial aspects, as well as schedules and drawing and requirements under these specifications.
In the event of any discrepancy between these specifications and inter connected documents, the technical requirements as per the contract specifications shall be followed and deemed to be having over -riding value.

CIVIL PART

(A) SCOPE OF WORK:

The scope of work includes detail planning, structural analysis, designing and site preparation, construction of substation building, foundation for equipments & panels, internal trench including trench cover for cables, approach road, site development including procurement & supply of all materials, fabrication along with all associated works necessary for completion of the work pertaining to Sub Station in all respect.

1.1 Substation building

I. Detail planning and modeling/preparation of the layout plan and preparation of preliminary drawings of the substations.

II. Detail structural analysis and design of Substation conforming to relevant BIS codes (Latest revision) using STAAD PRO software. All related calculations (both hard & soft copies) are to be submitted.

III. Preparation of working drawings showing detail of structural components in AutoCAD Software. Three sets of hard copies are to be submitted and copies of working drawings as required during execution of the work.

IV. Construction, including supply of all materials, equipment, system and services to complete & commissioning of the work in all respect, as per the approved detail working drawings including preliminary site development works.

V. Quality control and quality assurances. This includes furnishing all statutory certificates/documents related to quality/specification of the various components installed/commissioned in the project. Acquiring the statutory certificates/documents from the regulatory bodies/suppliers is the responsibility of the contractor.

VI. Undertake full responsibility for the engineering design prepared by them with respect to adequacy and technical soundness for the structure. They shall be responsible for the structural and/or any defects due to faulty design.

1.2 Area development surrounding Substations

I. Construction of security fence cum wall on the periphery of all substations building (shall be constructed approx.2-3mtrs away from the substation building exterior wall) for prevention of trespassing to substation premises. The details scope of works includes,

a. Security fence cum wall around the substation shall be of 1meter high (from MGL), 75 mm thick brick wall and 2 meters high XPM above the brick wall. Foundation for wall shall be as per design requirement.

b. Erection & fixing of 2.0 meters wide double leaf steel plated gate with locking facility

c. 2.0 meter wide foot path, chequered tiles over CC (75 mm thick & prop 1:3:6) over single layer brick soling, from road to main entry of substation building.

d. All the area between the fencing and substation building shall be CC (75 mm thick & prop 1:3:6) over properly compacted /prepared sub grade.

e. Painting of the wall shall be done by approved distemper shade & fencing shall be done with red oxide and aluminium paint.

1.3 Brief Minimum Specification of Architectural and Structural works

To be adopted while planning, structural analysis, designing and preparation of working drawing and execution.

I. Foundation: Cement Concrete (1:2:4) for brick wall and 75thk flat brick soling (1:7) below RCC column footing and tie beams.

II. DPC: 40mm thick DPC (1:2:4) cement concrete mixed with 3% CICO.

III. Skirting: 18mm thick X 150 mm high skirting (1:3) to all indie walls.

IV. Flooring: 100 thick granolithic flooring-25mm thick granolithic topping (1:1:1.5) over 75 mm thick cc (1:2:4).

V. Brick Work: All brick work in (1:4) cement mortar with 1st class local bricks.

VI. RCC Work: All RCC works (1:1.5:3) in accordance with IS 456 -2000.

VII. Reinforcements: (i) MS Bar Grade - 1 in accordance with IS: 432 (Part - I).

(ii) Tor Steel Grade Fe415 conforming to IS: 1786.

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VIII. Steel Works:

(i) All structural steel works shall conform to IS 800

(ii) Flat steel conforming to IS: 1731.

IX. Plastering:

(i) 6mm thick plaster (1:3) to all exposed RCC works.

(ii) 12mm thick plaster (1:6) to all inside and outside faces of brick walls. But outside faces of brick wall plaster shall be with water proofing compound.

(iii) 12 mm thick cement plaster (1:3) in all exposed front plinth walls (from MGL to FFL).

X. Rendering:

(i) 2 coats of distemper to all inside plastered surfaces of brick walls over one coat of primer.

(ii) 2 coats of exterior emulsion paint to all outside plastered surfaces over one coat of primer.

(iii) 2 coats of dark grey paints to be provided to all steel structures over one coat of red oxide primer.

XI. Grill Work: XPM sheet conforming to IS 412, to be provided to all ventilators.

XII. Cable Trench Cover: Removable FRP Cover.

XIII. RCC Roof: Average 50mm thick grading concrete (1:4:8) and 13mm thick smooth Terracing plaster (1:3) with a floating coat of cement to be provided over RCC roof slab with proper sloping.

XIV. Drain: Standard surface drain to be provided all around the substation.

XV. Drain Side Gap: 50mm thick drain side gap - 37 mm thick cc (1:4:8) and 13mm thick cement plaster (1:3) on top.

1.4 General Note

I. The contractor shall fully familiarize himself with the site conditions and general arrangements and scheme etc. before preparing conceptual lay out plan of the substation building including the locations of equipment. The contractors are advised to visit the substation site and acquaint themselves with the topography, infrastructure and also the design philosophy.

II. The contractor based on conceptual layout plan shall do the complete work of design and detailed engineering.

III. The construction of substation building shall be started simultaneously more than one location at a time and completed in stipulated time so that installation of Electrical equipment can be started and completed in scheduled time.

IV. Substations shall be designed to the required service conditions/loads as specified elsewhere in this Specification or implied as per National/International Standards. All civil works shall be carried out as per applicable Indian Laws, Standards and Codes. All materials shall be of best quality conforming to relevant Indian Standards and Codes.

V. The Contractor shall furnish/provide all temporary works, transportation and all other incidental items not shown or specified but as may be required for complete performance of the Works in accordance with approved drawings, specifications.

VI. The substation buildings shall be constructed at 03(Three) different locations and bidder should quote their rates against individual substation building.

1.5 Design Loading

I. All structural will be designed for most critical combinations of dead loads, imposed loads, equipment loads, wind loads, seismic loads and temperature loads. In addition, loads and forces developed due to differential settlements will also be considered as per Indian Codal provisions.

a) Dead loads will consist of self weight of the structure complete with finishes, fixtures, wall, partitions etc. Dead loads will be determined using unit weights from IS: 875 Part - I. While calculating dead load of structure, total thickness of floor finish will be considered as 50mm.

b) For consideration of imposed loads on structures, IS: 875 - "Code of practice for structural safety of buildings" will be followed.

c) Equipment loads are self weight of permanent or semi permanent equipment acting on the structure. Such loads will be as per supplier of equipment manufacturer.

d) Structure will be designed for seismic forces in accordance with IS: 1893 - 2002, "Criteria for Earthquake Resistant Design Structure". Since the structure is in Zone-V, a high seismic zone, ductile detailing as per IS: 13920 and IS: 4326 shall be followed.

e) The total temperature variation will be considered 2/3 of the average maximum annual variation in temperature. The structure will be designed to withstanding stresses due to 50% of the total temperature variation.

II. In addition to the general requirements & civil design criteria stipulated for individual building, following clauses are applicable and shall strictly complied with for any structure as a whole or in part for safety and serviceability.

a) All structures as a whole or any part/component of it shall be designed for a life of 30 years.

b) All RCC design shall be either limit state method or working stress method following the recommendations of IS - 456 (latest).

c) All foundations shall be founded at a level at least 1.50 metre below virgin soil. No foundation shall be placed on filled-up soil.

d) All slabs have two layers of reinforcement for sections having 120mm & above.

III. All structural steel work shall be designed either by allowable stress method following recommendations by IS: 800.

IV. Miscellaneous Requirements

a) In general MGL bf the site shall be 300 mm above the nearest road level.

b) The FFL of the substation building shall be 600mm above made up ground level.

c) The ramps for building entrance shall be cast in situ RCC slab designed as a slab spanning over supports or rigid pavement resting on sub-grade provided that the thickness of slab and the property of sub-grade shall be such to ensure of its being treated as rigid pavement. Minimum thickness of slab shall be 150mm.

1.6 Document Submission

I. Preparation of preliminary drawings, preliminary structural analysis & design, preparation of preliminary structural drawing (in Auto CAD) to be submitted as part of Technical Bid.

II. Final Design and Construction documents including architectural drawings & finish schedule pertaining to all Architectural work shall be required to be submitted to Company (OIL) for approval within 60 days from the date of receipt of LOA along with all related calculations (both hard & soft copies) are to be submitted. 3 (Three) sets of approved drawings shall be required to submitted to Company (OIL). Approval of these by the Company (OIL) shall not relieve the contractor of his responsibility for any error and fulfillment of Contract requirements. All drawings shall be prepared in AutoCAD of latest version.

III. As-built drawings shall be prepared by the Contractor after completion of construction/erection, incorporating all the changes, if any, done on Engineer's instruction/approval. Ammonia Prints of As-built drawings - 3 Set, Tracing of As-built drawings and CD containing all As-built drawings, design analysis, construction document shall be submitted.

(B) GENERAL CONDITIONS

The contractor shall perform all service in accordance with BIS standards and codes and good engineering practices.

(1) The contractor shall provide all labours, supervisions, transport and such specified materials, required for executing the including tools and plants as necessary for the work and shall be responsible for all royalties and other levies and his rates shall include for these. The work executed and materials supplied shall be to the satisfaction of the Company's Engineer and Contractor's rates shall include for all incidental and contingent work which although not specifically mentioned in this contract are necessary for its completion in a sound and workman like manner.

(2) Contractor shall have to produce necessary cash memo towards forest produce used against the contract to Contract Engineer from the authorities prior to processing of final payment. In absence of cash memo, the final bill shall not be processed.

(3) The Company's Engineer shall have power to:

(i) Reduce payments if the quality of work although acceptable is not up to the required standard set forth in the Particular Specifications which have been perused and fully understood by the Contractor.

(ii) Order the Contractor to remove any inferior material from the site and to demolish or rectify any work of inferior workmanship, falling which the Company's Engineer may arrange for any such work to be demolished or rectified by any other means at the Contractor's expenses.

(iii) Order the Contractor to remove or replace any workman who he (The Engineer) considers incompetent or unsuitable; the Engineer's opinion as to the competence and suitability of any workman engaged by the Contractor shall be final and binding on the Contractor.

(iv) rder the Contractor from time to time during the progress of the work further drawings necessary for the purpose of proper and adequate execution and maintenance of the works and the Contractor shall carry out and be bound by the same.

(v) Order deviations of this Contract arising due to non availability in working drawings, change in specification of materials/works shall be in writing and financial effect, if any, of such deviation shall be worked out on the basis of the rates appearing in Company's Schedule of Rate in force on the date of issue of such Deviation Order.

(vi) he contractor shall have no claim against the Company in respect of any work which may be withdrawn but only for work actually completed under this contract. The Contractor shall have no claim to any further payment whatsoever. The valuation would be carried out exparte if Contractor fails to turn up despite responsible notice which will be binding on the Contractor.

(4) The Contractor hereby undertakes to indemnify the Company against all claims which may arise under the under noted Acts:-

(i) The Mines Act
(ii) The Minimum Wages Act, 1948.
(iii) The Workman Compensation Act, 1923.
(iv) The Payment of Wages Act. 1963.
(v) The Payment of Bonus Act, 1965.
(vi) The Contract Labour (Regulation & Abolition) Act, 1970 and the rules framed there under.
(vii) Employees Pension Scheme, 1995.
(viii) Inter-State Migrant (Regulation of Employment and Condition of Service) Act, 1979.
(ix) The Employees Provident Fund and Miscellaneous Provisions Act, 1952.
(x) VAT
(xi) Service Tax Act.

Or any other Acts or Status not here in above specifically mentioned having bearing over engagement of workers directly or indirectly for execution of work. The Contractor shall not make the Company liable to reimburse the Contractor for the statutory increase in the wage rates of the Contract Labour appointed by the Contractor. Such statutory increase in the wage rates of Contract Labour shall be borne by the Contractor.

(5) The Contractor shall clear away all rubbish and surplus material from the site on completion of work and shall leave the site clean and tidy.

(6) In order to promote, safeguard and facilitate the general operational economic in the interest of the Company during the continuance of this contract the Contractor hereby agrees and undertakes not to take any direct or indirect interest and or support, assist, maintain or help any person or persons engaged in antisocial activities, demonstration, riots, or in any agitation prejudicial to the Company's interest and any such event taking shape or form at any place of the Company's work or and its neighbourhood.

(7) The Contractor will arrange at your own cost cleaning and grass removing of area allotted, construction of temporary office/stores, cement godown, fabrication yards etc and also the watch & ward of all the above. However contractor shall not be allowed to construct any structure (for storage /housing purpose) with thatch, bamboo or any other inflammable materials within any Company's fenced area.

(8) The Contractor shall ensure that all men engaged by him/her are provided with appropriate protective clothing and safety wear in accordance with regulation 89(a) and 89(b) in the OIL mines Regulations 1984. The Company's representative shall not allow/accept those men who are not provided with the same.

(9) All Statutory taxes levelled by the Central and State Government or any other competent authority from time to time will be borne by Contractor and the amount of the Contract specified in the Contract is inclusive of all tax liabilities.

However any subsequent increase in such statutory taxes after bid opening day will be borne by the Company. Similarly if there is any decrease in such statutory taxes after bid opening day, the Company shall recover the decreased amount of such taxes from the Contractor.

(10) The Contractor shall deploy local persons in all works.

(11) The Contractor shall not engage minor labour below 18 (eighteen) years of age under any circumstances.

(12) The Contractor and his/her workmen shall strictly observe the rules and regulations as per Mines Act (latest edition).

(C) **SPECIAL CONDITIONS:**

(1) The Contractor will be required to allow OIL Officials to inspect the work site and documents in respect of the workers' payment.

(2) All safety precautions to be maintained by the Contractor at his own cost as per safety rules and regulations.

(3) The Contractor shall use pump if needed for dewatering of pit while excavation for which no extra payment will be made.

(4) The Contractor shall have to work during rainy seasons also.

(5) Watch and ward, loss or damage to Company property, theft and other incidental charges shall be Contractor's responsibility.

(6) Efficient workmen to be engaged by the Contractor.

(7) Materials if rejected should be removed from site within 48 (forty eight) hours of rejection, failing which the Company reserves the right to get the rejected materials removed at the risk and cost of the Contractor.

(8) Water that may accumulate on the site during progress of the works or in trenches and excavations from other than accepted risks shall be removed from the site to entire satisfaction of the Engineer-in-Charge and at the Contractor's expense.

(9) The Contractor shall be in a position to execute more than 1(One) locations simultaneously.

(10) If required, the Contractor shall have to work in two shifts for which on extra payment will be admissible to him/them.

(11) If needed water and electricity will have to be arranged by the Contractor at his own cost.

(12) The Contractor and his workmen are to be strictly observed the safety precautionary rules as per Mines Act (latest edition) while executing the work.

(13) The Contractor shall have to provide temporary latrine facilities in the entire work site for use of their workmen during progress of work.

(14) In case of any doubt or dispute as to the interpretation of any clause herein contained, the decision of the Company's Engineer shall be final and binding on the contractor.

(D) PARTICULAR SPECIFICATIONS & INSTRUCTIONS

1.00 GENERAL:

All materials used in the work shall conform to the latest revision of the relevant Indian Standard Specifications to the extent practicable. Where no such specifications exist they shall be of the best quality available in the market. Wherever ISI certified materials and products are available these alone shall be used. All materials shall be stored at site in accordance with IS-4082-1996.

Unless specially provided for in the contract the tendered rates shall include the cost of carriage, transport, loading, unloading and stacking as directed for all materials required on the work. Where a tender provides a rate for transport of materials, it includes for all loading, unloading and stacking on the site in such position and manner as directed. Any materials found not conforming to specification must be removed from site within 48 hours.

2.00 SITE CLEARANCE:

Before the earthwork is started, the area coming under cutting and/refilling shall be cleared of shrubs, vegetation, grass, uprooting of tree stumps and such others, and rubbish removed upto a distance of 50 metres outside the periphery of the area under clearance. The rate of such site clearance is included in the rate of earthwork.

3.00 STORAGE:

Materials shall be transported, handled and stored at site carefully to the approval of Engineer so as to prevent any damage of any kind to be kept at his own risk and cost.

Cement shall be stored in a weather proof shed, the floor of which shall be raised 300 mm clear from the ground and 600 mm away from the wall all round in order to protect from rain and moisture. Empty cement bag shall be returned to the Company in good condition.

4.00 EARTHWORK:

Earthwork shall be done manually/mechanical means including getting out the excavated soil, dewatering and providing and then returning the soil, as required, in layers not exceeding 20cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m.

5.00 SAND FILLING:

Sand filling of shall be done manually including dry ramming, dressing including carriage complete.

6.00 CEMENT CONCRETE/ REINFORCED CEMENT CONCRETE WORK:

All C.C. work, unless otherwise specified or directed by Engineer In-charge, shall be done with 18 mm graded down broken stone. Broken stone shall be properly screened before use. All reinforced cement concrete work to be done in prop. 1:1.5:3 unless otherwise specified - 18mm down to 12mm graded down broken stone as per related drawings and instructions of site Engineer to be followed in case of any discrepancies. Proper vibration to be done as per IS recommendation. Floor paneling to be done in the line of expansion joint or as directed by Engineer In-charge.

Fine Aggregate - Fine aggregate shall be hard, durable, clean and free from adherent coating and organic matter. It shall not contain harmful impurities such as pyrites, coal, lignite, mica, shale or similar laminated material, clay, alkali, soft fragments, sea shells and organic impurities in such quality as to affect the strength or durability of the concrete. Fine aggregate to be used for reinforced concrete shall not contain any material liable to attack the steel reinforcement. Fine aggregate which is chemically reactive with alkalis of cement is harmful as cracking of concrete may take place.

Coarse Aggregate - Coarse aggregate shall be obtained from natural sources such as stone, gravel, etc crushed or un-crushed or a continuation thereof from approved quarries. This shall consist of coarse material most of which is retained on 4.75mm sieve. Aggregate shall be hard, strong, dense, durable, and clean and free from veins and adherent coatings. It shall be free from soft, feeble, thin, elongated or laminated pieces and shall be roughly cubical in shape. It shall be clear and free from dirt and any other deleterious matter.

Reinforcement bars - The following types of steel for reinforcement shall be used in reinforced concrete construction and these shall conform to Indian Standards or as revised from time to time mentioned against each

1) Mild steel and medium tensile steel bars and hard drawn steel wire - IS: 432.
2) HYSD bars - IS: 1786.

Bending & Placing steel reinforcement in position-Bending shall be carried out as per relevant IS specification and direction of the Engineer-in-charge. All reinforcement bars shall be accurately placed in position with spacing and cover as shown in the drawing or as specified and firmly held so during the placing and vibrating and setting of concrete. Bars shall be thoroughly cleared of rust, seals, grease, oil and any other foreign matter before placing them in position. The overlap jointing shall be staggered. The bars shall be fixed with 22G binding wire. Precast cover blocks 1:2 (1 cement: 2sand) cement mortar 40 mm square and necessary thickness shall be used to keep the reinforcement bars in proper position (no extra payment shall be made for preparation of blocks). Wire required for binding shall not be measured

separately. Tack welding shall also be permitted in lieu of building with steel wire.

Proportioning of mix - Proportioning shall be done by volume. Boxes of suitable size shall be used for measuring sand and aggregates. The size of the boxes (internal) shall be 35 x 25cm and 40cm deep. The unit of measurement for cement shall be a bag of cement weighting 50 Kg and this shall be taken as 0.035 cubic metre. While measuring the aggregate and sand the boxes shall be filled without shaking, ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of damp sand allowances for bulkage shall be made.

Mixing - Mixing of reinforced cement concrete shall, as a rule be done in a mechanical mixer. However, the Engineer-in-charge may permit hand mixing in specific cases where in his opinion it is not practicable to resort to mechanical mixing, either on account of the quality of cement concrete required is small or for any other reason. In such cases, it should be ensured that the inferior quality of concrete produced by hand mixing will not adversely affect the structure.

Consistency - In general the quantity of water to be used for each batch containing 50 Kg of cement, to give the required consistency shall not be more than 34 litres for 1:3:6, mix 32 litres for 1:2:4 mix, 30 litres for 1:1.5:3 mix and 27 litres for 1:1:2 mix. The quantity of water shall be regulated by carrying out regular Slump Test. In case of design concrete quantity of water to be guided as per design mix and relevant IS codes.

Placing of concrete - Before placing the concrete the sub-base/form work shall be cleared of all injurious or foreign matter, watered and well consolidated. Formwork shall be clean and free from all foreign material. It is necessary that the time between mixing and placing of concrete does not exceed the initial setting process. Mixed concrete that has been left standing shall not be used after the initial set has commenced the addition of water (or cement) to make such a mixture more workable shall not be allowed. In foundation trenches or such other situations, the entire concrete used in the work shall be laid gently (not thrown) in layers not exceeding 15cm. The concrete so deposited shall be thoroughly vibrated by means of mechanical vibrators till dense concrete is obtained.

Curing - Concrete shall be carefully protected during first stage of hardening from harmful effects or excessive heat, drying winds, rain or running water and shock. After the concrete has begun to harden i.e. about 1 to 2 hours after its laying it shall be protected from quick drying with moist gunny bags or any other material approved by the Engineer-in-charge. After 24 hours of laying of concrete the surface shall be cured by flooding water upto 25mm depth or by covering with wet adsorbent materials. The curing shall be done for a minimum period of 7 days from the date of pouring of concrete, unless otherwise specified.

Finishing - In case of roof slabs the top surface shall be finished even and smooth with wooden trowel, before the concrete beings to set. The surface of RCC slab on which the cement concrete or mosaic floor is to be laid shall be roughened with brushes while the concrete is green. This shall be done carefully without disturbing the concrete. Before laying the floor, the laitance shall be removed, the surface of slab hacked and a coat of cement slurry at 2.75 Kg of cement per square metre shall be applied, so as to get a good bond between RCC and concrete floor. The exposed surface which is to receive plaster or where it is to be joined with brick masonry wall, shall be properly roughened immediately after the removal of form work, taking care to remove the laitance completely without disturbing the concrete. Before the surface is plastered, it shall be cleaned and wetted so as to give good bond between concrete and plaster.

7.00 FORM WORK:

The formwork shall be rigid and so corrected as to retain the shape and dimensions of the member being cast. Form work for concrete shall be seasoned timber or other approved materials as per directions of the Engineer. It shall be sufficiently tightened to prevent loss of cement slurry and all holes and joints shall be chaulked with putty. It shall have sufficient strength and rigidity to withstand the load of concrete, and vibrations, movement of men, materials and plants and any other incidental loads without excessive deflection beyond permissible limits. The formwork shall be so constructed as to be removable in sections by inscribing or otherwise loosing - them without hammering or levering with force. Only wedges, clamps bolts or screws etc shall be used in preference to nails or spikes. All side pieces shall be easily removable without disturbing the bottom pieces. Where however, use of nails and spikes become unavoidable, these shall be left projecting so that they can easily be withdrawn.

Surface treatment for shuttering - Forms shall be cleaned of all dust, wood shavings, dirt and other matter by washing with water. This process is facilitated by providing draining holes in the shuttering. The surface shall then be coated with form release agent of approved manufacturer before concreting is done. Care shall be taken that such approved composition is kept out of contact with the reinforcement.

In normal circumstances and where ordinary Portland cement is used form may generally be removed after the expiry of the following periods.

a) Walls, columns and vertical face of all structural members as may be decided by the Site Engineer: 24 to 48 hours.
b) Slabs side (props left under): 3 days
c) Beam soffits (props. left under):14 days
d) Removal of props under slabs
    i) Spanning up to 4.5 m: 14 days
    ii) Spanning over 4.5 m: 21 days
e) Removal of props under beams:
    i) Spanning up to 6 m: 21 days
    ii) Spanning above 6 m: 28 days

In no circumstances shall forms be struck until the concrete reaches a strength of at least twice the stress to which concrete may be subjected at the time of removal of form work. All form works shall be removed without such shock or vibration as would damage the concrete. Form work for long span deep beams to be supported by MS props or Bhaluka Bamboo props as required based on the design for the formwork to take care the massive load of the green concrete.

8.00 DAMP PROOFING COURSE:

It shall consist of 1:1.5:3 plain cement concrete with approved water proofing materials such as cico, impermo etc. of specified thickness. Edges of DPC shall be straight, even and vertical side shuttering shall consist of wooden or steel forms and shall be strong and properly fixed so that it is not disturbed during compaction and mortar or cement slurry does not leak through. When forms are struck, the surface should be smooth without any honeycombing. The surface shall be kept wet for seven days. Before commencing the superstructure work, the top of concrete course shall be dried and cleaned of all materials. Blown type bitumen shall then be applied uniformly on the surface and the side of the concrete coming in contract with flooring on the inside shall also be painted with bitumen.

9.00 BRICKWORK:

a) All bricks shall be of 75 class designation quality locally available as approved by the Site Engineer.
b) Bricks shall be of size as specified in the item of work or of nominal size where no particular size is mentioned.
c) Bricks shall be well burnt, sound, hard with sharp edges of uniform size and shape free from cracks, stones or particles of lime and other defects, shall be kiln burnt and satisfy the following requirement:
i) They shall give a clear metallic sound when struck
ii) They shall be of uniform colour and size
iii) They shall not be cracked, stratified or under or over burnt
iv) The tolerance in dimensions shall be +/- 12mm in length, 6mm in width and 3mm in height.
v) Keys or frogs shall be formed on one of the larger size, except in the case of machine extruded bricks where no frogs are required
vi) The increase in weight when soaked in water for 24 hours shall not be more than 20% of the dry weight of the bricks.

d) If required by the Site Engineer, necessary test shall be conducted at the contractor's expense to ensure quality. In general, the bricks shall be the best quality locally available.

Bricks used for masonry in cement mortar or composite mortar shall be thoroughly soaked in clean water for at least an hour immediately before use (The absence of bubbling when the soaked brick is immersed in water is

the test for thorough soaking). The soaked bricks shall be kept on a platform free from dirt, mud or any foreign element. Bricks shall be laid in English bond unless otherwise specified. Care must be taken that the bricks are perfectly clean and free from lime, moss or dirt of any kind. If necessary they must be scrubbed before use. Half or cut bricks shall be not used except for closures which may be required to complete the bond. It shall be ensured that all horizontal and vertical joints are completely filled with mortars without any void in brickwork. Brickwork shall be raised truly plum (or true to required better where so specified). All courses shall be laid truly horizontal. Vertical joints shall be truly vertical and those in alternate courses shall be in the same vertical line. The thickness of brick courses shall be uniform. Great care must be taken to masonry in progress of construction damp. When work is left off for the day troughs shall be formed, by means of fillets of mortar 51mm high all-round the unfinished work and shall be kept filled with water. Vertical or inclined surfaces must be frequently watered from a rose headed can. Water should not be dashed with violence against new work as this washes out the mortar. Should the work be delayed owing to holidays or for other reason, the contractor must make adequate arrangements for keeping the work wetted, and shall continue to do so for at least ten days or such longer time as directed, after the brickwork has been completed.

a) Brick work in cement mortar with 75 designation brick including racking out joints and curing complete as directed, in sub structure and superstructure in mortar of specified proportion.
b) 115mm thick 75 designation brick nogged wall in cement mortar embedded with protruding M.S. rod 6mm dia in column including racking out joint and curing complete as directed in super structure above plinth in proportion as specified.

10.00 CEMENT MORTAR:

i) Must be freshly mixed: Cement mortar will only be mixed in such quantities as can be used up on the work within half an hour of mixing. Mortar which has been mixed longer or which has taken its initial set will on no account be used on the work or remixed with fresh mortar. It must be immediately removed from the site or work.
ii) Method of mixing: The cement and sand will be mixed dry in the specified proportions, by turning over at least three times on the mixing platform. Only sufficient water will then be added, thorough a rose of a watering can, to produce a workable mixture. The wet mortar will be thoroughly worked or mixed by repeatedly turning over, not less than three times on the mixing board.
iii) Size of mixing platform and precaution against list : All mixing of mortar must be done on platforms of angle size and workman bringing the material to and from the platform must not be permitted to walk about on it, thereby bringing mud or dirt to the place, where the mortar is being mixed. The platform must be clean and level and all joints closed or filled so that the cement is not washed out.

iv) Proportion of cement and sand: Where not otherwise specified, cement mortar for plaster will consist of one part of cement to two parts of sand. For mortar for brick or stone masonry work the proportion unless otherwise specified, will be one part of cement to three parts sand

11.00 PLASTER WORK

i) Preparation of surface: All putlog holes in brick work and junction between concrete and brick work shall be properly filled in advance. Joints in brick work shall be raked about 10mm and concrete surface hacked to provide grip to the plaster. Projecting burrs of mortar formed due to gaps at joints in shuttering shall be removed. The surface shall be scrubbed clean with wire brush/coil brush to remove dirt; dust etc. and the surface thoroughly washed with clean water to remove efflorescence, grease and oil etc. and shall be kept wet for a minimum of six hours before application of plaster.
ii) Proportion: The cement plaster shall be in specified proportion of cement and sand.
iii) Mixing: The cement and sand should be thoroughly mixed in dry condition. After dry mixing, the materials shall be wetted with just sufficient water to bring the mortar to proper consistency of thick paste. Mortar should be used immediately after mixing and arrangements shall be made so that not more than 30 minutes elapse between the cement first coming in contact with the moisture and laying. In all exterior plaster works waterproofing compound to be added to the mortar as per the specification of the manufacturer, if not indicated in the item rate quoted should be inclusive of the same.
iv) Placing: Plaster shall be laid over the prepared surface in one coat to the specified thickness and rubbed with "PATAS" and trowel and shall be smooth, free from waviness and trowel marks.
v) Sequence of operations: For external plaster, the plastering operations shall be started from the top floor and carried downwards. For internal plaster, the plastering operations may be started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall or the floor have been removed.
vi) Curing: Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used.

12.00 STEEL DOORS, WINDOWS AND VENTILATORS:

The type, over all sizes, side opening position of steel doors, windows and ventilators shall be specified as per details given in IS: 1038, specification for steel doors, windows & ventilators and as per drawings. Both the fixed and opening frames shall be constructed of sections, which have been cut to length and mitred. The corners of fixed and opening frames shall be electrically flash butt welded to form a solid and true right angle and all frames shall be square and flat.

Side-hung shutter windows - Window shutters shall be hung on projecting type hinges (not less than 65mm and not more than 75mm wide). One leaf of the hinge shall be welded into a slot in the outer frame and the other leaf of the hinge riveted to the opening shutters. Friction hinges may be provided for side-hung shutter windows in which case peg-stay may not be required. In cases where non-friction type hinges are provided, the windows shall be fitted with peg-stays, which shall be either of hot pressed brass, cast brass, aluminium or steel protected against rusting and shall be 300mm long with steel peg and locking bracket. The peg stay shall have three holes to open the side hung casements in three different angles.

Top Hung Ventilators - The steel butt hinges for top hung ventilators shall be riveted to the fixed frame or welded to it after cutting a slot in it. Hinges to the opening frame shall be riveted or welded and cleaned off. Top hung casements shall be provided with a peg stay three holes which when closed shall be held tightly by the locking bracket. The locking bracket shall either be fitted to the fixed frames or to the window.

Glazing of metal doors, windows and ventilators - Doors and windows shall normally be glazed with glazing clip & putty on unless otherwise specified. Putty shall be applied between glass panes and glazing bars. Putty shall be applied over the glass panes, which shall stop 2 to 3mm from the sight line of the back rebate to enable the painting to be done upto the sight line, to seal the edge of the putty to the glass. The oozed out back putty shall be cleaned and cut to straight line.

13.00 PLINTH PROTECTION AND STORM WATER DRAIN:

Plinth protection and storm water drain shall, unless otherwise specified or as directed by Engineer In-charge, shall be provided along the outer periphery of the building as per drawing and with PCC (1:3:6) over bricks flat laid in CM 1:4 and finished with 15mm thick cement plaster in prop. 1:2 with floating coat of neat cement finish.

14.00 SYNTHETIC ENAMEL PAINT:

Preparation of surface: The surfaces before painting shall be cleaned of all rust, scale, dirt and other foreign matter sticking to it with wire brushes, steel wool in case of steel surfaces and sand papering in case of wooden surfaces. Thereafter, one coat approved primer paint will be applied on the surface. Synthetic enamel paint (Superior quality as approved) shall be applied - two or more coats to give an even shade.

15.00 ANTI-TERMITE TREATMENT (IS 6313):

Injecting chemical emulsion of Chlorpyriphos ZOEC (IS - 8944) emulsificable concentrates 20% with 1% concentration for pre-construction anti-termite treatment and creating a continuous chemical barrier under and all round

the column pits, trenches, top surface of plinth filling, junction of walls and floor along the external perimeter of building expansion joints, surroundings of pipes and conduits etc complete as per specification (plinth area of the building at ground floor only shall be measured for payment) and to be executed by reputed party.

16.00 MANDATORY TESTS:

The various mandatory tests shall be carried out by the contractor and no separate payment shall be made unless otherwise specified in the schedule of rates. Following tests /test certificate to be produced by the contractor at his own cost.
i) Water for construction and curing to be tested before use ('PH' value should not be less than 6).
ii) Bricks as per IS : 1077
iii) Coarse and fine aggregates as per IS:383
iv)Cube test for Compressive strength test of RCC to be done as per relevant code of practice IS 456-2000.
v) Test certificate for Steel materials, Reinforcements shall be as per relevant IS Codes (latest edition).
vi) Any other tests as per the direction of Engineer-in-charge.

17.00 MEASUREMENT & PAYMENT:

Payment for all works done shall be made on the basis of actual work done as per the schedule of payment. For all extra work done on the advice of the Company's Engineer and which is not included in the scope of work, deviation order for the same shall be made per decision & power of the Company's Engineer.

18.00 SAFETY MEASURE:

Safety measure as per OIL regulations shall be strictly adhered to by the Contractor. Safety belts and other measure taken by the Contractors shall be borne by the Contractor. If any loss or damage caused to life during the erection and execution, the contractor shall be fully responsible for the loss.

19.00 RECORD KEEPING:

(i) A site order book will be maintained at site which will be in the custody of the Engineer-in-charge or his representative and all instructions given to the Contractor will be recorded in the site order book and the same has to be signed by the contractor to comply with the instruction given therein.

(ii) During construction, contractor shall be responsible for submitting 40(forty) colour digital photograph/slides/per location each month (not less than nine per week) of the works during progress.
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(E) MATERIAL, TOOLS AND PALNTS

(i) High Strength Deformed Steel Bars conforming to IS: 1786

(iii) Steel Sections, Plates & Sheets conforming to latest edition of IS codes

(iv)Tentative list of T&P to be deployed by the contractor for successful and timely completion of work is detailed below. These T&P are not to be shared with any other work/job during execution of the work. It may be noted that the list is not exhaustive and is only for general guidance.

SL NO	DESCRIPTION	NUMBER	MOBILISATION
1	Concrete mixing machine	03	As per requirement
2	Concrete Vibrator with needle	06	As per requirement
3	Reinforcement bending machine	02	As per requirement
4	Reinforcement cutting machine	02	As per requirement
5	Curing/dewatering pump – 1.5 /2 HP (pump for curing at heights)	02	As per requirement
6	Air compressor	01	As per requirement
7	Power driven earth rammer	02	As per requirement
8	Concrete cube moulds	54	As per requirement
9	Dumper / Truck	03	As per requirement
10	Excavator	01	As per requirement
11	Drinking water tank	03	As per requirement
12	Safety Gadgets	For Individual Location	As per requirement

(F) PAYMENT SCHEDULE

For individual Sub Station

(i) No advance payment is admissible

(ii) Pending completion of the whole work provisional progressive payments for the part of the work executed by the contractor shall be made on the basis of work completed and certified by the representative of Contract Engineer.

(iii) Non compliance to clause ii/19.0 under "PARTICULAR SPECIFICATIONS & INSTRUCTIONS", an amount of Rs. 10,000.00 per month shall be deducted from RA bill.

SL NO	DETAILS	PAYMENT SCHEDULE
On completion of foundation work up to plinth level		15%
On completion of structural work (RCC including concrete & reinforcement in columns, beams, slabs, chajja, projections etc		35%
On completion of Brick Work in super structure		10%
On completion of flooring works including sand filling, trench, plinth protection work, surface drain.		15%

On completion of finishing work including fixing of doors, windows etc in all respect 15%
After completion and handing over of all work 10%

(G) MATERIAL TO BE SUPPLIED BY THE COMPANY

(i) Cement: OPC cement of Grade 43 conforming to IS: 8122
Note: (a) Cement will be issued on chargeable basis at the rate prevailing during execution at Co's Stores at Duliajan.

(b) Total number of cement bags required for the job to the maximum of theoretical consumption as per the specification of CPWD. Additional and damaged cement requirement in excess of above shall be issued to the vendor on chargeable basis at a rate double the cost of company costing price. In case the consumption of cement is less than that the quantity issued to the contractor then the contractor shall arrange to return the excess quantity in good usable condition to the company at its stores.

(c) Empty Cement bag to be return to company in good condition failing which Rs. 8(eight) per bag will be charged from contractor's payment.

Electrical Part:

A sub-station installation work shall generally comprise of supply, installation, testing and commissioning of the following:
(a) High Voltage Panels.
(b) Step down Transformers, complete with associated auxiliaries as specified.
(c) High voltage cable for inter-connection between the H.V. panel and transformers including terminations of Overhead lines
(d) Power factor improvement capacitors/ Power Conditioner Savers: Provision for future connection is to be kept.
(e) Earthling system.
(f) Safety Equipments.
(i) Miscellaneous items.

1.4 CONFORMITY WITH STATUTORY ACTS, RULES, REGULATIONS,STANDARDS AND SAFETY CODES:

1.4.1 Indian Electricity Act and Rules:
1.4.2 Indian Standards
1.4.3 CEA, 2010
1.4.4 Any other Act or Rules in force.
1.4.5 Safety Codes and Labour regulations:

In respect of all labour employed directly or indirectly on the work, the bidder, here in after called the contractor, at his own expense will arrange

for the safety provision outlined in safety requirement and specifications to comply with the statutory regulations, ISI recommendations and OIL's practices.
The contractor shall provide necessary barriers warning signals and other safety measures to avoid accidents. He shall also indemnify OIL against claims for compensation arising out of negligence in this respect.
Nothing in these specifications shall be construed to relieve the contractor of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with applicable statutory regulations and safety codes in force from the safety angle.

1.5 Drawing:

1.5.1 Specification Drawing:

The tender specifications shall indicate, for a particular job, the reference drawings to help the contractor to work out the tender. The drawings shall also indicate the schematic of main connections and shall form part of the specifications. Single line diagram of substation is attached for knowing the scheme of HT panel, transformer and LT panel. The civil drawing is attached for cost estimation and other assessment purpose.

1.5.2 Schedule of Work:

The department shall supply a indicative single line diagram and a schedule of work as per format in **Annexure-I** detailing the equipments; materials required type and anticipated quantity/numbers in respect of each item. However, detailed drawings shall be prepared by the contractor & submitted to OIL for its approval.

1.5.3 WORKS TO BE DONE BY THE CONTRACTOR:

In addition to supply, installation, testing and commissioning of all equipments as per schedule of work, following work shall be deemed to be included within the scope of work, to be executed by the contractor.
(i) All building works, such as equipments foundation if required cutting and making good holes, grouting of channels belts as required. Cutting and making good damages etc.
(ii) Provision of supports / clamps for equipments, cables etc. wherever required.
(iii) Small wiring, inter-connection etc. inclusive of all materials and accessories, necessary to comply with the regulations as well as proper and trouble free operation of the equipment.
(iv) Closing of the cable entry points in sub-station against seepage of water, rodents etc.
(v) Tools and tackles required for handling and installation.
(vi) All necessary testing equipments for commissioning of the panel.
(vii) Watch and Ward of materials and/or installation and equipments till their handing over to the department.

1.6 SITE CONDITIONS:

All the equipments and their installation shall be suitable for the environmental conditions encountered at the location..

1.7 INSPECTION OF SITE AND COLLECTION OF DATA:

The contractor shall be deemed to have examined the tender documents, detailed specification, data etc. and to have visited the site or ascertained all relevant details for offering suitable equipments/installation.

1.8 INTER CHANGEABILITY:

All similar equipments, materials, removable parts of similar equipments etc. shall be inter-changeable with each other

1.9 INTERFERENCE WITH COMMUNICATION EQUIPMENT:

Suppressors or other protection devices shall be provided, if required as per schedule of quantities, wherever the sub-station installation is likely to interfere during the operation with any other electric or electronic equipment.

1.10 EXTENT OF WORK:

The scope of work shall consist of cost of all materials, labour transportation & Handling/supervision, installation, calibration, adjustments as required for commissioning of the sub-station. The term complete installation shall mean, not only, major item of the plant and the equipments covered by these specifications, but also, incidental sundry components necessary for complete execution and satisfactory performance of installation with all labour charges, whether or not specifically mentioned in the tender documents, which shall be provided by the contractor at no extra cost.

1.11 COMPLETENESS OF TENDER:

All fittings, unit assemblies accessories, hardware foundation bolts, terminals blocks for connections, cable glands and miscellaneous materials and accessories of items of work which are useful and necessary for efficient assembly and working of the equipment shall be deemed to have been included within the scope of the work in the tender and within the overall details for complete item whether they have been specifically mentioned or not.

1.12 DATA MANUALS AND DRAWINGS TO BE FURNISHED BY CONTRACTOR:

1.12.1. After award of Work

The contractor shall submit the following drawing within 30days of the award of the work or as specified in tender document which shall prevail, for approval by the department.
(i) General arrangement or location drawing of the equipment complete with dimensions and clearances. Civil drawings of the building to be submitted for approval.
(ii) General arrangement drawing of H.T Panel, Transformers, LT panels ,Earthing, Cable route etc. including details of grouting of channels / bolts of various equipments.
(iii) All panels' schematics & wiring diagram including control wiring.
(iv) Bar-chart indicating general programme for any work plan for supply, installation, testing and commissioning and handing over.
(v) Any other drawing or data that may be necessary for the job.
1.12.2. Before Commencement of Installation:
The contractor shall also furnish 3 copies of detailed installation, operation and maintenance manuals of manufacturers for all items of equipment together with all relevant data sheet, spare parts catalogues, repairs, assembly and adjustment procedure etc., in triplicate.

1.13 QUALITY OF MATERIALS AND WORKMANSHIP:

All parts of equipment shall be of such design, size and material so as to function satisfactorily under all rated conditions of loading and operation. All components of the equipment shall have adequate factors of safety. Materials/components which are not conforming to standards laid down by Bureau of Indian standards (BIS) shall be got approved from the department before use on the work.
The entire work of fabrication, assembly and installation shall conform to sound engineering practice and on the basis of "fail safe" design. The mechanical parts subject to wear and tear shall be of easily replaceable type.
The construction shall be such as to facilitate ease of operation, inspection, maintenance and repairs. All apparatus shall also be designed to ensure satisfactory operation under working conditions as specified.

1.14 INSPECTION, TESTING AT MANUFACTURERS WORKS.

The contractor will be required to furnish such facilities as will be necessary for inspection of the equipment before dispatch at the manufacturer's works and also for witnessing such tests, at the works, required by the department. The contractor shall furnish information for this purpose and will give 30 days notice regarding the dates proposed for such test to Inspection agency.

1.15 TEST CERTIFICATE:

Copies of all documents for routine, acceptance and type test certificates of the equipment carried out at the manufacturers premise shall be furnished to the department along with supply of the equipment.

1.16 DISPATCH OF MATERIALS AND STORAGE:

The contractor shall commence work as soon as the drawings submitted by him are approved. Safe custody of all machinery and equipment supplied by the contractor shall be his own responsibility till the final taking over by the OIL.

1.17 COORDINATION WITH OTHER AGENCIES:

The contractor shall coordinate his work and cooperate with other agencies by exchange of all technical information like details of foundation if required, weight, overall dimensions, clearance and other technical data required for successful and proper completion of his portion of the work in relation to the work of others without any reservation. No remuneration should be claimed from the department for such technical cooperation. Care shall be taken not to damage the water proofing done in the case of substations constructed below ground level. If any unreasonable hindrance is caused to other agencies and any completed portion of the works has to be dismantled and redone for want of the cooperation and coordination by the contractor during the course of work, such expenditure incurred will be recovered from the contractor during the course of work, if the restoration work to the original condition of specification of the dismantled portion of the work was not under taken by the contractor.

1.18 CARE OF BUILDINGS

Care shall be taken, while handling/installing the equipment to avoid damage to the building. On completion of the installation, the contractor shall arrange to repair all damages to the building caused during plant installation so as to bring to the original condition. He shall also arrange to remove all unwanted waste materials from substation room and other areas used by him.

1.19 PAINTING AND PROTECTION:

All damages to painting during transport and installation shall be set right to the satisfaction of the department before handing over. All structural frame work for support of various items of equipment shall be given the final coat of paint of approved shade at site after erection is complete.
Additional protection measures against corrosion shall be provided when installed in special environment.

1.20 TRAINING OF DEPARTMENTAL PERSONNEL:

The operation and maintenance staff of the OIL shall be associated with the contractor's personnel during the installation, testing and commissioning of the equipments.

1.21 COMPLETION DRAWING:

Three Sets of completion drawings comprising the following shall be submitted by the contractor while handing over the installation.
(a) Equipment layout drawing (s) giving complete details of the entire equipments.
(b) Electrical drawings for the entire electrical equipments showing cable sizes, equipment capacities, switch-gear's ratings, control components, control wiring etc.
(c) Schematic diagram of the entire sub-station installation.

1.22. FINAL INSPECTION AND TESTING

When the installation is complete, the contractor shall arrange for inspection and testing of the installation. Test results obtained shall be recorded. The installation shall not be accepted unless it complies with the requirement of these Specifications. The Sub Station installation shall be got inspected by the contractor from local licensee and/ CEA and their clearance taken before energizing the Sub Station. The responsibility of the contractor is to arrange inspection of substation by central Electricity Authority (CEA), Shillong and their clearance will be taken before energizing of substation. All the observations/ deficiencies pointed out by the inspecting authorities shall be complied with by the contractor on priority
The department shall render necessary help and reimburse pay mandatory fees paid to CEA by the contractor if any, in this regard against submission of receipt.

1.23 DATE OF ACCEPTANCE:

The contractor shall operate the substation for a period of one month after it is energized. The date of taking over of the substation shall be reckoned after its trouble free operation during the running in period.

1.24 GUARANTEE:

The contractor shall guarantee the entire sub-station installation as per specifications. All equipments shall be guaranteed for one year from the date of completion of work against unsatisfactory performance or break down due to defective design, manufacture and installation. The installation shall be covered by the conditions that whole installation or any part is found defective within one year from the date of taking over shall be replaced or repaired by the contractor free of charge as decided by the department. The warranty shall cover the followings:-
(a) Quality, strength and performance of materials used.
(b) Safe mechanical and Electrical stress on all parts under all specified conditions of operation.
(c) Satisfactory operation during the maintenance period.
(d) Performance figures and other particulars as specified by the bidder under schedule of guaranteed technical particulars.

1.27: Buy back of substation electrical equipment for 11KV Substations.

(i) In this LSTK, 2nos. of 11KV/415 electrical substations shall be upgraded to 11KV/415V, AC. After commissioning and running of minimum 1 months of proposed new 11KV substations, the old 11KV substation equipment like transformers, OCB & LT panel shall be disconnected and can be taken away from the substation by the party.
(ii) It is essential for OIL to remove the existing 11KV substation equipment from the substation for which a buyback system is incorporated. In work schedule, buyback is incorporated and essential to be filled up by bidders. It is mandatory to quote against buy back for equipment like Transformers, Oil circuit breakers and LT panels. The quoted price shall be deducted from total price against work schedule. The details and quantity of equipment is mentioned against each substation for buyback of equipments.

Technical specifications of 11KV VCB Panel:

Supply, installation and commissioning of 11 KV VCB Panels comprises of the following specifications:

The 11 KV Switchgear Panel comprising of indoor type VCB panel suitable for solidly grounded system, fully factory built and assembled for direct installation. Designed, manufactured and tested in accordance with IEC 62271-100/200. Circuit breaker and cubicle must have type test certificate from CPRI/NABL accredited laboratory for design and performance as per above standards.

The VCB (cubicle and circuit breaker) panel should be made of steel clad, free standing, floor mounting, dust and vermin proof and horizontal isolation horizontal draw out, compartmentalized type, indoor switch board in standard execution with VCB. The panel shall be provided with 11KV,3 phase 50 HZ air insulated copper bus bar and suitable for short circuit capacity 31.5 KA for 3 second.

CUBICLE AND CIRCUIT BREAKER DETAILS:

1.0 CUBICLE.

1.1 The draw out type circuit breaker cubicles should be fabricated using high quality CRCA sheet steel of minimum thickness 2.5 mm for load bearing members and 2.0 mm for other sheet work. The sheet metal should be given seven/ nine tanks anti corrosion treatment & then powder coated colour- SIEMENS GREY.

1.2 The totally metal enclosed panel shall be compartmentalized with internal positioning by insulated material of epoxy reinforced fibre glass to constitute the followings:

a) Bus bar compartment
b) Circuit Breaker Compartment.
c) CT and Cable compartment.
d) Relay & metering compartment (LT compartment).
The Circuit Breaker & LT compartment shall be of front open type.

2.0 Bus-Bar Compartment:

Bus bar shall be rectangular in cross section and made from electrolytic grade electro tinned copper having 99.99% high conductivity. Bus-bar current rating shall be1250Amp. Fault current rating- 50 kA. Heat shrinkable sleeve insulation of 11KV voltage grade should be provided on bus-bar, its risers & connections and shall be marked in different colour codes for identification of three different phases(R, Y, B). Thickness of bus-bar sleeve shall be 3 mm and shall be made of Raychem RPG 11 kV grade or similar type. Bus-bar arrangement should be such that in future similar cubicles can be connected with this cubicle. Cast epoxy insulators supports for bus-bar & cable termination links designed to withstand full short circuit current at specified fault level for 3 seconds shall be provided.

3.0 Circuit Breaker Compartment:

The circuit breakers shall be mounted on horizontal draw out truck. The circuit breaker truck should have horizontal isolating and horizontal draw-out type system. The front door shall have view glass to facilitate observation of mechanical ON/OFF indication and operation counter.
The draw out truck shall have the following positions:
a) Isolated (b) Test (c) Service

4.0 CT and Cable compartment:

The CT and the incoming and outgoing feeder cable compartment shall be in the rear. The LT control cable terminal arrangement shall be provided in the rear side in a separate box so as to have isolation from high voltage terminals. All the cable entry plates shall have removable gland plates. The CT required for metering and protection shall be as per IS-2705 & IS 4201 and shall be of adequate size and its insulation will be epoxy cast resin type. Make of the CT shall be as per acceptable make list of **Annexure-III**

For Incomer Feeder:

Metering CT 15VA, Class-1, ratio: 400-200/5-5. Protection CT 15VA, Class-5P10, Accuracy class: 0.5 Ratio: 400-200/5-5 suitable directional Relay is required for over current, short-circuit & earth fault protection.

For Transformer Feeder:

Metering CT- 15VA, Class-0.5, ratio: 100-50/5-5. Protection CT- 15VA, Class-5P10, Ratio-100-50/5. Suitable non directional relay is required for over current, short circuit & earth fault protection

For outgoing Feeder:

Metering CT- 15VA, Class-1, ratio: 100-50/5-5.Protection CT 15VA, Class-5P10, accuracy class: 0.5. Suitable non directional relay is required for over current, short circuit & earth fault protection.

5.0 Relay & metering compartment(LT compartment):

The L.T. chamber of suitable height shall be positioned on the top of the panel & at the front. Protective relay, measuring equipments and auxiliary controls along with the switches and indications are to be accommodated in the L.T. Chamber. Three nos. of bright steel hinges shall be used on front door with door opening limited to 135Degree (approx). All devices in the LT box are to be marked with permanent labels. Panel rating plate shall be provided on the door.
Control wiring and CT wiring shall be done using single core, PVC insulated, stranded copper cable of 1100V grade and 2.5sqmm size. All cables and wires shall be numbered with suitable ferrules. Suitable lugs shall be used for control wiring and ring type lugs shall be used for CT wiring. All wires shall terminate on suitable Terminal Blocks. All TBs shall have 10% spare terminals. TBs shall be marked. Reinforced flexible conduit shall be used for wiring and PVC spiral shall be provided on exposed wires near the door hinge in LT box. Colour coding of control cables shall be followed as required by ISI. Control cables shall be approved by IS-694.

6.0 PANEL METERING AND INDICATION EQUIPMENT:

Microprocessor based digital multifunction energy meter with accuracy class 0.5 and with RS485 port with MODBUS protocol for data logging/downloading shall be provided for all panels. The meter shall be of size 96mmx96mm and shall measure the following electrical parameters: Frequency, Voltage, current, power factor, KVA, KVAr, PF, KWH and harmonic components of current, voltage. The multifunction meter shall have inbuilt selector switch and memory to store data for minimum 75 days. The maker of multifunction meter shall be as per acceptable make list of Annexure -III.

(a) Breaker ON and OFF/TNC switch (b) Trip circuit healthy push button(c) LED type Indication lamp for each panel for: (i) CB Close, (ii) CB open, (iii) Trip on fault, (iv) Trip circuit healthy v)Spring charged LEDs shall be LVGP & industrial type.
Make of LED shall be as per acceptable make list of Annexure -III

7.0 Closing and tripping:

i) Manually: Spring charging, closing and tripping.
ii) Electrically: Motorised Spring charging, closing and shunt tripping.

8.0 Dry type cast resin V.T: One in each incomer panel shall have cast resin, draw out type Voltage Transformer(One Additional winding of open delta for directional E/F relay) V.T Ratio = (11kV / 110V), Burden - 100VA, Accuracy class - 0.5 as per IS 3156(Part I,II,III) and protected with HRC fuse on HT & MCB on LT side. VT shall be horizontally draw out type and mounted on the top of the panel. Cable entry shall be from bottom side.
Make of the VT shall be as per acceptable make list of Annexure-III

9.0 CONTROL SUPPLY:

Control power supply shall be taken from 1 no battery bank for 24 V AC with battery charger. It consists of the following:
(i) Each cell voltage: 2.0 V, 200 AH, sealed maintenance free (SMF)
(ii)12 Nos. batteries shall be connected to give 24 V DC
(iii)12 Nos. cells shall be kept in insulated type rack and connected with silicon insulated Cable with terminal
(iv)Incomer to battery charger shall have three phase supply with 32Amps 3 pole MCCB with overload, short circuit protection.
(v) Charging current: 0-20 A
(vi)Float and boost charging facility shall be available.
(vii)Outgoing shall be double pole 20A MCBs-3 Nos
(viii)Protection for control circuit shall be provided.
Make of battery and charger shall be as per acceptable make list of annexure -III

10.0 EARTHING:

Panel shall have proper protective earthing terminals for connection to external earth cable. Earthing connection between truck and cubicle shall be provided by means of sliding contact. The truck earthingshould be arranged in such a way that the truck is earthed in isolated position when inserted. While the truck is being withdrawn, the earthing connection shall not be interrupted until the truck has moved past the isolated position.

10.1 The panel shall be provided with 2nos, 80 W space heaters in each panel and adjustable thermostats of suitable rating for heater temperature monitoring along with protective HRC fuses and ON/OFF switch.

10.2 The front door shall have glass window to facilitate observation of mechanical ON/OFF indication and operation counter.
10.3 Two nos. cubicle lamps (15 W CFL) in each cubicle shall be provided along with switch.

11.0 Safety Interlock:

The following minimum safety devices shall be provided to ensure the safety of operating personnel:
a) Individual explosion vents for Bus bars/Breaker/Cable and CT chambers on the top of the panel to let out the gases under pressure generated during unlikely event of a fault inside the panel.
b) Cubicle with front door/panel pressure tested for arc faults.
c) CB and metal enclosure earthed in accordance with latest IS published by BIS (IS-2516, part-1, section -1)
d) Self operating shutters, shielding live fixed contacts, shall be provided which closes automatically when truck is withdrawn to test position. Locking arrangement should be provided for the shutters.
e) Breaker shall not be moved in ON condition from service to test position & vice versa.
f) The CB cannot be switched ÓN' when the truck is in any position between test and service.
g) All nut & bolts used inside the panel should be of high tensile, bright zinc plated, hexagonal headed, metric size, manufacture to DIN 931 from 8.8 grade of steel, tensile strength minimum 80kgf/SQ.MM, coarse threaded with two nos. bright zinc plated flat and spring washers.
h) Lifting hooks shall be provided for the panels.

I) Panel Markings:

The switchgear panel shall have the following identification markings in a permanent manner:
a) Panel name both in front and rear side.
b) Caution boards conforming to IS-2551 both in front and rear sides.
c) CT specification name plate on CT and at panel cover at rear.
d) Incoming & outgoing cable box.
The markings and identifications of conductors, apparatus terminals shall be as per IS:5578 & IS:11353.

12.0 Cable Terminal box:

HT cable boxes with termination links for termination of incoming and outgoing HT cables should be provided in the rear and side of the unit. Rear incoming cable box should be of suitable size for safe entry of two nos. of incoming cables and should have suitable terminal links for safe termination of both the incoming cables for loop in/ loop out connection as is done in case of ring main unit. The termination arrangement should be such that it should be possible to disconnect one cable in the event of fault in that cable and power-up the unit with the other incoming cable. Link rating shall be 600amp (min). One no. outgoing cable will be terminated in the cable box mounted on side. Size for incoming and outgoing cables shall be 3 x 240sq. mm, 11kV grade, XLPE insulated, PVC sheathed, Aluminium Conductor, Armoured cable. Suitable nos. of detachable gland plates with suitable size of heavy duty cable glands shall be provided in the bottom

entry plates of both the cable boxes. Separate gland plates shall be provided for both the incoming cables in the incoming cable box.
Rear entry LT cable termination box with suitable single compression cable glands for heater supply cable and control cable from transformer marshalling box should be provided.

13.0 Site Condition:

a) Maximum Ambient air temperature: 40 ° C
b) Minimum ambient air temperature: 2.5 ° C
c) Maximum humidity at site (at 40 ° C): 98 %
d) Surrounding atmospheric condition: Humid
e) Site altitude: 150 mtr.

14.0 CIRCUIT BREAKER DETAILS:

The VCB shall have the following features:

a. Horizontal draw out type with Horizontal Isolation mounted on truck with rollers.
b. Truck cover with two handles and fixed to truck frame with four screws.
c. Truck earthing with welded boss.
d. Insulation bushings shall be epoxy cast resin type and suitable for ambient conditions mentioned above.
e. Manual & motor operated spring charging system. Motor working voltage 230 V AC, 50 Hz
f. 11kV, Three pole, vacuum type 1250 A continuous rating for incomer and 1250 A/800A continuous rating for outgoings, 31.5 kA fault level.
g. Auxiliary contacts (6 NO + 6NC).
h. Operation counters of 5 digits.
i. High mechanical endurance of 50,000 (minimum) operations.
j. Mechanical ON/OFF indication.
k. Spring FREE/ CHARGED indication.
l. Position indicator # SERVICE/ TEST/ ISOLATE.
m. Low maintenance.
n. Manual ON and TRIP button.
o. Operating sequence: O #0.3 sec # CO # 3 min # CO.
p. Shunt trip coil, closing coil: 110v DC rated.
q. Insulation level:
Rated insulation level at power frequency: 28KV
Peak withstand voltage: 75 kV
r. Short time withstands current (3 s):31.5 kA
s Rated breaking capacity:31.5 kA (rms)
Rated making capacity: 78.75 kA (peak)

15.0 PROTECTION SCHEMES:

1.0 Each incomer feeder panel shall have numeric relay with following protections/features:
i. Directionl over current(67,67N)

ii. non directional -overcurrent protection (50, 50N,51,51N)
iii. Sensitive dir/non directional ground fault protection
iv. Overload protection (49)
v. Under/Overvoltage protection (27/59)
vi. Under/Over frequency protection(81O/U)
vii. Breaker failure protection (50BF)
viii. Phase unbalance or negative sequence protection (46)
ix. Auto reclosure (79)
x. Trip circuit supervision (74TC)
xi. Fault recorder
xii. Disturbance recorder and sequential events recorder
xiii. RS-232/485 communication

2.0 Outgoing feeder panel: Each panel shall have Numeric relay with following protection/feature:

i. 3phase over current (50/51)
ii. Earth/overcurrent(50/51N)
iii. Negative phase sequence overcurrent (46)
iv. Thermal overload(49)
v. Broken conductor detection(46BC)
vi. Circuit breaker failure detection(50BF)
vii. Fault recorder (25)
viii. Disturbance recorder(5)
ix. Events recorder(250)
x. RS-232/485 communication
xi. Trip circuit supervisory relay- 1 no.

3.0 Protection of Bus-coupler: Same relay with same protection as outgoing feeder having Synchro-check facility for paralleling of feeders. Make of numerical relay shall be as per acceptable make list of Annexure -III

16.0 GENERAL NOTES:

1. Vacuum interrupter and circuit breaker should be of the same make.
2 .VCB manufacturer of panel must have powder coating facilities for painting of panel.
3. Height of the panel shall not exceed 2.4 m.
4. Manufacturer of 11KV, VCB panel shall have the testing facilities to carry out the routine tests of the VCBs panel as per BIS-13118 in their manufacturing works.
5. Type test certificate for dry type Voltage transformer & cast resin type current transformer shall be submitted.
6 The H.T switchgear and the components should confirm the relevant Indian Standard (with latest amendments) and type tested by CPRI/NABL accredited laboratory for desired performance. Type test certificates should be submitted with the quotation.
7 Bidder has to filled up the DATA SHEET enclosed (Annexure-II) otherwise the offer will not be considered.

8. The following documents are required to be submitted with the offer.
a. Detail as per specification mentioned above. Specific comment against each point is required.
b. Copy of report of type tests done on similar panel & VCB at CPRI/NABL accredited laboratory.
c. General arrangement drawing of the panel.
d. Guarantee confirmation as per point no. 5 of general notes for HT panel.
e. An undertaking from the panel manufacturer stating that in the event of an order on the party the panel manufacturer will supply the panel through the party as per specifications of the tender and order.
f. Detail foundation drawing, drawing of panel with detail of HT and LT cable boxes showing termination details, wiring diagram and complete bill of material must be submitted to OIL for approval within 30 days after placement of the order. The manufacture of panel should start after approval of the drawings by OIL.

9 Following drawings and literatures are to be supplied with the supply:
a. Four sets of installation, commissioning & operation manual of the Panel and Vacuum Circuit Breaker (VCB).
b. Four sets of literature of main components like protection & auxiliary relays
c. Four copies of general arrangement, schematic diagram and wiring diagrams.
d. Two copies of foundation drawings.
e. Four sets of test report containing result of tests done at manufacture's work during inspection.
f. Four copies of Guarantee certificate duly signed by the party.
g. Recommended list of spares with part no. & price for maintenance of panel.
h. VCB, which are switching dry type transformer, the circuit breaker should have the surge suppressor/snubber circuit in- build with the VCB.

5.0 TEST AND INSPECTION:

5.1 The Circuit breaker and cubicle must have type test certificate from CPRI/NABL accredited laboratory for design and performance as per relevant IS.
5.2 Routine tests on switchgear, relay including primary & secondary injection tests in accordance with IS shall be carried out at the manufacturers works which shall be witnessed by OIL engineer.
5.3 Equipment shall be inspected by OIL engineer at manufacturer's premises prior to dispatch.
5.4 The supplier will give 30 day advance intimation to enable depute OIL representative for witnessing the acceptance and routine tests.

6.0 Warranty:
The goods/ equipment shall be of best quality and workmanship. The equipment shall be guaranteed for 12 (Twelve) months from the date of

commissioning against defects arising due to material, workmanship or design. Relay will also be included in this guarantee.

Technical specifications of LT PCC panel:

Scope :

This Section covers the detailed requirements of, PCC Panel for 415V, 3 phase 50Hz 4 wire system. These shall be branded and/or assembled/ fabricated from a factory of repute. All switchgears shall be fully rated at an ambient of 400 C.

Type of Panel :

(i) The medium voltage switch board panel shall comprise of any one of the following types of switchgears or combination thereof as specified.
(ii) Air Circuit breakers draw out type
(iii) MCCBs of suitable Ics ratings and MCCBs shall invariably be Current Limiting type. Features like Double Break, Positive Isolation functions shall be preferred.
(iv) The Panel shall be indoor type having incoming sectionalisation and outgoing switchgears as specified. The design shall be cubical type. The degree of enclosure protection shall be IP 42 as per IS: 13947(Part-I).

General Construction :

The PCC shall be floor mounted free standing totally enclosed and extensible type. The PCC shall be dust & vermin proof and shall be suitable for the climate conditions as specified. The design shall include all provisions for safety of operation and maintenance personnel. The general construction shall conform to IS: 8623/1993 for factory assembled switch board.

Cubical Type Panels :

(i) Cubical type panels shall be fabricated out of sheet steel not less than 2.0 mm thick. Wherever necessary, such sheet steel members shall be stiffened by angle iron frame work. General construction shall employ the principle of compartmentalization and segregation for each circuit.
(ii) Unless otherwise approved, incomer and bus section panels or sections shall be separate and independent and shall not be mixed with sections required each feeders.
(iii)Each section of the rear accessible type panel shall have hinged access doors at the rear. Overall height of the panel shall not exceed 2.4 meters.
(iv) Operating levers, handle etc. of highest unit shall not be higher than 1.7 meters. Multi-tier mounting of feeder is permissible.
(v) The general arrangement for multi tier construction shall be such that the horizontal tiers formed present a pleasing and aesthetic look. The

general arrangement shall be approved before fabrication. Cable entries for various feeders shall be either from top or bottom.
(vi) Through cable alleys located in between two circuit sections ,either in the rear or in the front of the panel. All cable terminations shall be through detachable gland plates.
(vii)There shall be separate detachable gland plate for each cable entry so that there will not be dislocation of already wired circuits when new feeders are added. Cable entry plates shall therefore be sectionalized. The construction shall include necessary cable supports for clamping the cable in the cable alley or rear cable chamber.
(viii)Cubicle panels with more than 1000 Amps bus shall be made of tested structural modular sections.

The PCC Panel shall have the following features:

(i) Panel shall be indoor, cubicle type with provision of extension of panels in future and Panel shall be built on Self supporting, floor mounting, rigid framework.
(ii) The frame of the panel shall be sufficiently strong and made of minimum 50 x 50 x 6mm MS angle iron with intermediate members of suitable section & size. The frame shall be mounted on a bottom structure made from 75 x 40mm MS channel.
(iii) The maximum size of the panel board shall not be more than 8000mm (L) x 600mm (B) x 1800mm (H).
(iv) Panel shall be sheet steel clad, cubicle type made of 2.0mm thick MS CR sheet and panel shall be Dust / vermin proof and weatherproof with IP52 degree of protection.
(v) Bottom detachable gland plates made from 3.0mm thick MSCR sheet shall be provided for all cable entries. Height of bottom detachable gland plate shall be 450 mm from floor level.
(vi) The entire metal work shall be treated with nine tank antirust treatment as per IS and then powder coated in DA Grey colour. Documentary evidence confirming the same shall be provided with the offer.
(vii)Non-deteriorating Neoprene rubber gaskets shall be provided between all joints and Panel shall be designed for Ambient of 45°C (Max)/ 5°C (Min) and Humidity-95%.
(viii) All feeders shall be suitable for operation from front side and shall have provision of inspection from backside and all panel doors shall be provided with single turn latches for opening / closing.
(ix) Internal barriers shall be provided between cubicles to provide Form-2 separation as per IEC to prevent transmission of flashover from one panel to other panels.
(x)Danger plates shall be fitted on front and back of the panel and Legend plates of the feeders shall be provided in the front as well as at back of each feeder.
(xi) Adequate nos. of lifting lugs shall be provided on top and Ventilation louvers shall be guarded with wire mesh.

(xii) Internal earthing shall be provided for all equipment having earthing terminal and panel doors with suitably rated, PVC insulated, flexible copper earth wires or copper braids of suitable rating as per IS.
(xiii)Earthing bus shall be provided at bottom of the panel. Earthing Bus shall be made of 50x5 mm GI straps with 80 micron galvanisation thickness. Brought out studs shall be provided on two sides complete with suitably sized zinc passivated double nuts and spring washers. Earth bus shall have holes drilled for connection with main earth electrodes and earth cable/ strap of outgoing feeders. All feeders shall be adequately connected to the earth bus.
(xiv)BIS ref.: Confirming to IS-8623, IS 13947 and Legend LT POWER CONTROL CENTRE shall be provided at the top centre.

2.0 PANEL COMPARTMENTS / SECTIONS:

The panel shall broadly have the following compartments / sections.
A) Incomer section
B) Bus chamber
C) Outgoing section
D) Cable chamber / cable alley

A) INCOMER SECTION:

EDO Four Pole Air Circuit Breakers housed in a sheet steel enclosure and as specified in sec 3.0.

Legend: 1. INCOMER 1
2. INCOMER 2

The incomer units shall be complete with brought out terminals of suitable rating and single compression cable gland suitable for 3 nos. x 3½ C x 240 mm^2, PVCA, Al cable provided on the bottom detachable gland plate. Suitably rated tinned copper lugs for all incoming cable connections shall be supplied with the brought out terminals.

Incoming Feeder Instruments

Each incoming feeder shall comprise the following instruments in an instruments panel complete with all necessary interconnections, fine wiring and duly tested:

1. Three phase digital Multifunction Energy meter with maximum, minimum and average value for voltage, current, power values, KWH, frequency, power factor and THD.
Voltage range: 0-500V, current range: 0-1000 A, SIF-96,class of accuracy 0.5,CT operated with 800/5 CTs(15VA, 0.6kV, Class1)
Qty: 1 no.

Model: DIRIS A40 (HPL-SOCOMEC)/EM6600 SERIES (Conzerv. Pvt Ltd.)/SENTRON PAC 3200(Siemens)

2. HRC Instrument Fuse Holders fused 4 Amps, SM type
Qty: As per circuit requirement.

3. LED type Indication Lamps for 'Phase Healthy' indication in Red, Yellow and Blue in colour,
Qty: 3 nos.

Auxiliary power supply of digital multifunction energy meter shall be 230V and shall be connected with separate HRC fuse and link system.

B) BUS CHAMBER

The bus chamber shall be sheet steel clad having front and rear bolted covers and shall consist of 1 set TP & N electrolytic grade, high conductivity Copper Bus Bars, conforming to BIS. Current rating of bus bar sections shall be 2200 amps suitable for 415 V AC, 50 Hz system. Neutral bar shall be of same size as phase bus. The bus-bar shall be insulated with heat shrinkable PVC sleeves and shall be supported at required intervals with non- hygroscopic, non-deteriorating, and non inflammable SMC / FRP supports having adequate mechanical strength and a high tracking resistance, to withstand short circuit fault levels up to 50 kA for 1 sec. All risers and connections from bus bar shall be done with same material as the main bus bars of current rating as per rating of individual cubicle switch. To suit the stringent site conditions, the bus bar system shall be designed with generous clearance between phases than specified in the standards. Adequate non-hygroscopic insulating sheet barriers between the bus chambers and feeders shall be provided.

The manufacturer of the panel must have test certificate and temperature rise certificate for busbar fault level of 50kA. A copy of the test certificate shall be enclosed with the offer.

C) OUT GOING SECTION

a) Feeders:

(i) Four pole, 630 Amps MCCB of breaking capacity min 36kA with adjustable OL protection (Ir=0.4 x In to 1XIn, Tr=5-10s), Short Circuit protection (Im= 4x In to 10x In, Tm=0.01-0.3s) & EF protection (Ig=0.2xIn to 1xIn,Tg=0.1-1s) through inbuilt electronic trip unit in MCCB.
(ii) Four pole, 400 Amps MCCB of breaking capacity min 36 kA with adjustable OL protection (Ir=0.4 x In to 1XIn, Tr=5-10s), Short Circuit protection (Im= 4x In to 10x In, Tm=0.01-0.3s) & EF protection (Ig=0.2xIn to 1xIn,Tg=0.1-1s) through inbuilt electronic trip unit in MCCB.
(iii) Four pole, 250 Amps MCCB of breaking capacity min 36 kA with adjustable OL protection (Ir=0.4 x In to 1XIn, Tr=5-10s), Short Circuit

protection (Im= 4x In to 10x In, Tm=0.01-0.3s) & EF protection (Ig=0.2xIn to 1xIn,Tg=0.1-1s) through inbuilt electronic trip unit in MCCB.
(iv) Four pole, 125 Amp MCCB of breaking capacity of min 25KA with adjustable OL Protection, short circuit protection and earth fault protection shall be fitted in MCCB. Electronic timer with contactor shall be provided for street lighting feeder for auto matic ON/OFF purposes.

Instruments in feeder panels:

Each outgoing feeder shall comprise the following instruments in an instruments panel complete with all necessary interconnections, fine wiring and duly tested:
(i) Three phase digital ammeter (with inbuilt selector switch) of required range, SIF-96, class of accuracy 1.0, CT operated with CT ratio600/5,400/5 and 200/5 respectively (of burden 10VA) and Qty: As per circuit requirement.
(ii) HRC Instrument Fuse Holders fused 4 Amps and Qty: As per circuit requirement.
(iii) LED type Indication Lamps for #Feeder ON' indication in Red and #Feeder OFF' indication in Green colour and Qty: 3 nos.
(iv) Auxiliary power supply of digital ammeter shall be 230V and shall be connected with separate HRC fuse and link system.
(v) Distribution Board: 1 No. MLDB [Main Lighting Distribution Board] for general lighting, comprising of 125A, FP MCCB with breaking capacity min 25 kA & adjustable OL protection from 0.4xIn as Incomer; one no. 4P-63A-230V coil Contactor; an auto/manual switch; one no. 24 hrs time switch; ON/OFF push buttons and 6 nos. DP-10A, RCBOs (sensitivity 300mA) distributed evenly in three phases & neutral. The contactor shall be operated either in the auto mode through the timer or by the ON/OFF push buttons in the manual mode. Terminals shall be provided for a remote PBS.
(vi) Legend: MLDB and c) Outlets: 2 Nos. Industrial Type outlets rated 20 A

D) CABLE CHAMBER / CABLE ALLEY :

Suitable cable chamber/cable alleys shall be provided in between sections of the panel with brought out terminals to drive the cables. Supports as required shall be provided along the cable alleys for supporting the cables / wires.

3.0 GENERAL SPECIFICATIONS OF AIR CIRCUIT BREAKERS:

3.0.1 Technical Specifications:

The air circuit breaker shall comply with the following specifications:
(i) Type: Indoor, horizontal isolation, horizontal draw out type.
(ii) Mounting: In cassette type enclosure
(iii) Insulation Medium: Air.
(iv) Rated operational voltage of circuit Breaker: 415 V
(v) Rated insulation voltage: 1000 V.

(vi) Systemearthing: Effectively earthed.
(vii) No of poles: Four.
(viii) Rated frequency: 50 Hz
(ix) Rated current: 1600 A for incomers/1000A outgoing feeder
(x) Rated making current: 125 kA
(xi) Rated short time withstand capacity:50 kA for 1 sec at 415V
(xii) Ultimate rated breaking capacity: 50 kA at 415 V
(xiii) Spring Charging: Motorized as well as manual.
(xiv) Method of closing: Through closing coil as well as Manual.
(xv) Closing coil voltage: 230 V AC
(xvi) Method of tripping:
(xvii) Shunt trip coil voltage:230 V AC
(xviii) Manual with mechanical open button.
(xix) Auxiliary Switch: 4NO+4NC.
(xx) Mechanical indication:
(xxi) a) Breaker ON/OFF b) Position SERVICE/TEST/ISOLATED

3.0.2 Technical Specifications:

The air circuit breaker shall be equipped with Microprocessor based protection release with minimum following features:

i. Standard Protection-Overload protection(Ir=0.4xIn to 1xIn,Tr=5-10s),Short circuit protection(Im=2XIn to10xIn with time delay)& Earth fault(Ig=0.2xIn to 1 xIn,Tg=0.1 -1s)

3.0.3. General Requirements:

(i) The circuit breaker shall conform to latest edition of IS 13947 except where specified otherwise in the specification.
(ii) The circuit breakers shall be with air as insulating medium and shall comprise of four independent poles. Each pole of a breaker shall constitute a separate breaking chamber. These four breaking chambers shall be mounted to a common chassis and connected together for operating by a common operating mechanism.
(iii) Main contact material shall be of copper alloy with silver facing and shall have ample contact area and contact pressure for carrying rated normal / short time currents and shall be adequate to keep temperature rise within limits.
(iv) Working parts of operating mechanism shall be of corrosion resisting materials .Bearings, which require grease, shall be equipped with pressure type grease fittings. Bearings, pins, bolts, nuts etc shall be adequately pinned or locked to prevent loosening or changing adjustments with repeated operation of the breaker. The outside parts of the breakers and ferrous parts such as hangers, supports, bolts and nuts shall preferably be hot dip galvanized or zinc plated.
(v) The ACBs shall be supplied complete with enclosures as may be necessary. Short circuit performance test shall be conducted on the ACBs along with the enclosures.

(vi) The enclosure shall not be liable to distortion and misalignment.
(vii) The formed and welded steel construction shall be given corrosion resistant treatment following fabrication work. The enclosure / cubicle and doors shall be finished with stove enamel paint.
(viii)The breakers shall have three distinct positions- SERVICE/TEST/ISOLATED, within the cubicle and this shall be achieved by suitable racking cam and slide rails system operated from the front of the equipment. Visual indicators shall be provided to show these three positions.
(ix) A STOP shall be provided on the guide rails to prevent accidental falling of the breaker while withdrawing the moving portion.
(x) SAFETY SHUTTER ASSEMBLY shall be provided for shrouding of the main contacts when the breaker is withdrawn. This must operate automatically during insertion and withdrawal of the circuit breakers.

3.0.4. Operating Mechanism:

(i)There shall be provision for manual as well as motorized spring charging. Closing shall be through 230 V AC closing coil. Provision for manually closing the breaker shall also be there. It shall be ensured for each breaker that it closes at the correct speed.
(ii) A direct mechanical coupling shall give indication of ACB ON or OFF.
(iii) A shunt release shall be provided for electrical tripping of the breaker. Power packs to be provided if necessary.
(iv) Vendor shall ensure correct wiring to facilitate tripping of the breaker.

3.0.5. Control Circuit:

(i) Control wiring shall be done with 1.5 sq. mm PVC insulated and PVC sheathed FRLS Cables with copper conductor wires of 1100V grade.CT wiring shall be done with 2.5 Sqmm, PVC insulated and PVC sheathed FRLS Cables with copper conductor wires of 1100V grade.
(ii) Suitable lugs shall be used for termination and all wires shall be numbered with ferrules, as per drawings.

3.0.6. Interlocks:

The following minimum safety interlocks shall be provided.
(i) The breaker cannot be closed in any intermediate position other than three distinct positions
SERVICE /TEST/ISOLATED.
(ii) The front door / cover cannot be opened when the circuit breaker is in closed condition.
(iii) The moving portion of the breaker shall be earthed before the main circuit breaker controls are plugged in the stationary contacts i.e. .before the control circuit is completed. Positive earthing of the circuit breaker shall be maintained in the connected position.
(iv) Anti pumping feature shall be provided for each breaker.
(v) The goods/equipment shall be of best quality and workmanship.

4.0 DOCUMENTS:

1. The following documents shall be submitted with the offer:

(i)Type test certificate from reputed test house accredited by National Accreditation Board for testing and calibration Laboratories (NABL), India for Short time current withstand test (50 kA for 1 sec)and temperature rise test of the panel.
(ii) Deviation of offer from tender specifications with justification and backup documents from principal wherever required. All deviations subject to acceptance by OIL in writing

2. The successful bidder shall obtain approval for the following drawings, documents. All electrical details shall be submitted within 45 days of placement of order. OIL shall require minimum 30 days time for approval of drawings. The approval time may increase depending upon clarifications required from the bidders.

3. List of recommended spares with part nos. for two years

5.0 GENERAL NOTES ON PCC:

1. All main riser connections shall be done by suitably sized and rated copper links or copper cables as recommended by the switch manufacturer. In case of cables, terminations at both ends shall be done through suitably rated tinned copper lugs.

2. Brought out terminals of suitable rating (as per rating of the feeder) shall be provided for all cable terminations of incoming / outgoing feeder units.

3. Suitably rated tinned copper crimping lugs for each conductor of all outgoing cable connections shall be supplied with the brought out terminals including terminals for remote push buttons.

4. All cable entries shall be from bottom. Suitable cable entry arrangement with detachable gland plates shall be provided. Adequate nos. of single compression heavy duty nickel plated brass cable glands suitable for correspondingly rated PVCA, 4C, Al cable shall be provided on the bottom detachable gland plate. Adequate nos of glands shall also be provided for circuits to be fed from DBs.

5. Sufficient space shall be provided for cable termination, dressing and connecting cable leads to the brought out terminals.

6. Control wiring shall be done with 1.5 sq. mm PVC insulated and PVC sheathed FRLS Cables with copper conductor wires of 1100V grade. CT wiring shall be done with 2.5 Sqmm PVC insulated and PVC sheathed FRLS Cables with copper conductor wires of 1100V grade. All power and Control

wires shall have ferrule numbers. All joints in control & CT wiring shall be done with suitable TBs. All cables / wires shall have ferrule numbers for proper identification as per drawing. All terminations shall be done through lugs.

7. All feeders shall have Moulded fuse holders, suitably fused, for control & instrument circuits.

8. Legend plates for the indication lamps, meters, control switches / buttons and labels for the terminals shall be provided.

9. The board should be properly packed to avoid ingress of rain water/moisture and damage during the transit.

10. The panel shall be guaranteed for 1 (one) year from the date of supply or 18 months from the date of delivery whichever is earlier. Guarantee cards shall be duly signed and stamped by the supplier and shall be provided along with the supply.

11. In their offer the party must mention their detailed comments point-wise against each point of tender specifications and general notes. Any deviation from the tender specification shall be specifically mentioned. In case of no deviation, it shall be clearly mentioned in the offer as #NO DEVIATION#.

12. Specific type and make of all equipment shall be clearly mentioned. All the information required as per tender specifications must be submitted.

13. In case of an order the complete tender specification shall be mentioned in the order. However, deviations from tender specifications, as mentioned by party in their offer and subject to acceptance by OIL shall be mentioned in the order.

14. The manufacture of the equipment is to be started only after written approval of the drawings/ documents by OIL.

6.0 TEST AND INSPECTION:

1. All routine tests shall be carried out as per relevant IS and IEC.
2. The equipment shall be inspected by engineer(s) of OIL prior to dispatch. Routine tests in accordance with relevant IS shall be carried out at manufacture's works which shall be witnessed by OIL#s engineer(s). The inspection shall include accuracy of dimensions & circuitry as per approved drawings, insulation tests, mechanical & electrical operation tests, primary current injection tests and any other test of the relays as recommended by the manufacturer. All necessary arrangements for the tests shall be made by the vendor at their works during the inspection.
3. Any alteration requirements pointed during the inspection shall be carried out by the manufacturer and confirmed before dispatch, without which dispatch clearance shall not be given.

4. Copies of the test certificates along with bound copies of complete test results shall be submitted for approval of OIL prior to dispatch of the PCC. This shall include complete reports and results of the routine tests as also certified copies of the type tests.

7.0 WARRANTY/GUARANTEE:

The supplier shall guarantee the equipment for a period of 18 months from the date of supply or 12 (twelve) months from the date of commissioning against defects arising from faulty design, material and workmanship.

TECHNICAL SPECIFICATIONS OF TRANSFORMER :

SCOPE :

This section covers the detailed requirements regarding supply, installation, testing, commissioning and handing over of transformers required for the sub-station.use of cast resin dry type transformers is planned inside the substation building

General Construction

The Transformers shall comply with the following Indian Standards as amended up to date:
(i) IS 11171: 1985 - Dry type power transformers.
(ii) IS 10028 (Part II & III) - Installation and Maintenance of Transformers.
(iii) IS 2099 - Bushing
(iv) IS 2705 - Current Transformers.
Constructional Features: All the MS parts shall be either Hot dipped galvanized or cold galvanized to make them corrosion free. The core shall be made up of high grade low loss cold rolled grain oriented silicon steel. Both low & high voltage windings shall be made of copper conductor. The class of winding insulation shall correspond to class 'F'. The construction of the windings of the transformer shall be such that no creepage path is found even in dusty & corrosive ambient conditions. The core coil assembly shall be housed in a prefabricated enclosure.
The enclosure shall be fabricated with mild steel CRCA sheets with adequateprovision for ventilation. The enclosures shall undergo the seven tank process.Finally the external and internal surfaces of the enclosure shall be powder coated with the required paint shade.

General Requirements: The transformer shall be indoor as specified. Unless otherwise specified the transformer in addition shall have thermal and dynamic ability to withstand external short-circuit as per clause 9 of IS 2026 (Part I) 1977 and clause 5 of IS 11171-1985.
Capacity and Rating: The KVA ratings for three phase transformers are given below: - 2x750KVA

Continuous rating specified shall be irrespective of tapping position.Indoor transformers shall be suitable for IP-23 protection
Temperature Rise: The reference ambient temperatures assumed for the purpose of this specification are as follows: -
(a) Maximum ambient air temperature 50 degree centigrade.
(b) Maximum daily average ambient air temperature 40 degree centigrade
(c) Maximum yearly weighted average ambient temperature 32 degree centigrade
(e) Class of insulation F
(f)The temperature rise limit at the above conditions and at the altitude not exceeding 1000 meters shall be as specified. If the site conditions indicated for a particular job is more severe than the referred ambient temperature mentioned above, the temperature rise above ambient shall be suitably scaled down such that the hot spot temperature shall not exceed the values for the reference conditions 900 C (F class insulation).

(A) Tap Changing Device: Preferred tapping range is +5% to -7.5% in 2.5 percent steps by means of off load tap changing links or tap switch. The device shall be provided on HV for HV Voltage to keep LV Voltage constant.

(B) Terminal Markings Connections: Relevant provisions of IS:2026 (Part-IV)-1977 shall be applicable.

Voltage Ratio: Unless otherwise specified, the transformer shall be suitable for avoltage ratio of 11 KV/415 V.

Vector Group: In case of step down transformers, the winding connections shall
conform to vector group Dyn 11 unless otherwise specified.

Cooling: Unless otherwise specified the transformer cooling shall be air and naturally cooled (AN)

Accessories: The transformer shall be with enclosure or without enclosure with HV and MV terminations as specified both on HV and MV side. The MV side shall be suitable to receive MV cable inter-connection suitable for full load current of the transformer.
Fittings: The transformer shall be complete with the following fittings: -
(a) Off load type tap changing link or tap switch.
(b) RTD temperature controller.
(c) Lifting lugs for all transformers.
(d) Bi-directional /Unidirectional Rollers to be specified.
(e) Rating diagram and terminal marking plate for all transformers.
(f) Additional Neutral separately brought out on a bushing for earthing for all transformers.
(g) Earth terminals (2 Nos.) for body earthing for all transformers.750kVA, 11Kv/415 Volts, 3 Phase, 50 Hz, double winding, copper conductor, Dry type, natural air cooled distribution transformer for indoor installation & as per following specifications:

A. GENERAL:

1. Applicable Indian Standard: IS: 11171 and IS:2026 with latest amendments.
2. Service duty : Continuous.
3. Installation : Indoor.
4. Auxiliary power supply : 230V AC ± 10 %
5. Control Voltage : 230V AC ± 10 %

B. SITE CONDITION:
1. a) Maximum Ambiant air température : 40ºC
   b) Minimum Ambiant air température : 6.0ºC
2. Maximum humidity at site (at 40 º C) : 98 %
3. Surrounding atmospheric condition : Humid
4. Site altitude : 120 mtrs.
5. Seismic design co-efficient : As per IS: 1893.
6. Rainfall : 200 cm (annually.)

C. RATING AND GENERAL DATA:
1. Rating: 750kVA
2. No. of phases: 3.
3. Frequency: 50 ± 3 %
4. Type of Insulation: Class-F. Temp. rise-90 º C
5. Partial discharge: As per IS-11171, IS-6209.
6. Type of cooling: AN
7. Installation : Indoor
8. Vector group : Dyn 11
9. Percentage impedance: 5.0%. Tolerance as per IS-2026.
10. Nominal system voltage: 11kV/ 415 Volts
11. Type of neutral earthing: Solidly grounded Neutral.
12. Symmetrical short circuit withstands capacity: As per IS-11171.
13. Rated short duration power frequency withstands voltage: As per IS 11171.
14. Rated lightning impulses withstand voltage: As per IS 11171 (List-2). As Vacuum circuit breaker will be used as incomer to the transformer, BIL voltage shall be 95KV.
15. Transformer sound level should not exceed 60 db.
16. Water absorption (24hrs @25C): less than 0.05% (superior insulation, longer life)
17. Chemical Resistance: Painting must have excellent performance rating.
18. Dielectric Strength: Minimum of 3200 volts/mil dry (for superior stress, Over voltage tolerance)
19. Dissipation Factor: Max. 0.02 @25 degree C to reduce aging of insulation.

20. TAP CHANGER:

Type : Off-Circuit Tap Links
Total tapping range : ± 5.0 %
Tapping steps : In steps of 2.5 %.
Markings shall be clear enough to indicate the tap position.

21. TERMINAL ARRAGEMENT:

HV winding line end : Cable box
LV winding line end : Cable box

One neutral bushing outside the cable box shall be provided for grounding.

22. BUSHING:

Made from non hygroscopic epoxy resin cast material suitable for site condition mention in Para- B & conforming to IS-2099

23. CABLE BOX:

a) HV cable box should be suitable for termination of 3 nos 1 Cx240 sq. mm XLPE armoured, copper conductor cable with heat shrink type cable termination. The bottom plate shall be detachable type and 3 nos. heavy duty single compression cable glands suitable for 1x240 sqmm XLPE armoured cables shall be fitted. Cable Box standard should be as per IP-54.
b) LV cable box should have brought out electro-tinned copper bus bars of suitable rating & size for termination of 4 nos. of 3½x 240 sq. mm Copper cables. The cable box should have detachable cable gland plate fitted with suitable heavy duty single compression cable glands for the cables mentioned above. Support bar in LV cable box should be made up of fiber glass. Cable Box standard should be as per IP-54.
c) Terminals should be marked as per IS: 2026 -1977.

24. TRANSFORMER CORE:

a) Material : High grade cold rolled grain oriented silicon steel.
b) Structure : Grounded and sharp corners avoided.
c) Lamination : Treated and coated with suitable insulations. The core limbs & yokes are branded by means of resin glass tape to reduce vibration & noise.

25. TRANSFORMER WINDING:

The winding material should be high conductivity electrolytic grade copper. The insulation should be Cast Resin type, Class-F. Conductor should have thermally upgraded paper (Nomex) insulation reinforced with fiber glass. The coil assembly is to be impregnated & cast under vacuum with epoxy resin for achieving non-hygroscopic, acid & alkali resistant insulation. The complete winding should have smooth cylindrical finish after impregnation to ensure high mechanical strength. The thickness of resin should be uniform. The insulation should be self- extinguishing type.

Mounting of the winding to the transformer case shall be of vibration resistance pad placed uniformly in all direction.

(i) The windings/connection of transformer shall be braced to withstand shocks, which may occur during transport or due to short circuit, repeated peak loads and other transient conditions during service.

(ii) Windings shall be subjected to a shrinkage treatment before final assembly so that no further shrinkage occurs during service.

(iii) The conductors shall be transposed at sufficient intervals in order to minimise eddy currents and equalise the distribution of currents and temperature along the windings.

(iv) Windings shall not have sharp bends which might damage insulation and /or produce high dielectric stresses.

(v) Coils shall be supported using dried and high pressure compressed wedge type insulation spacers at frequent intervals.

(vi) All threaded/bolted connections shall be locked. Leads from the winding to the terminal board and bushings shall be rigidly supported to prevent injury during short circuits/vibration.

(vii) Permanent current carrying joints in the windings and leads shall be welded or brazed.

26. ENCLOSURE:

Enclosure for transformer shall be fabricated of minimum 14 SWG gauge properly cleaned degreased and painted as per manufacturer's standard practice.The core & winding assembly should be housed inside a sheet steel enclosure with removable inspection & tap changer covers. The enclosure should offer IP-23 protection as per IS-2147 and should have suitably designed louvers for circulation of cooling air. All the gaskets should be of neoprene rubber. All non energized metallic parts of the transformer shall be grounded.

27. Name plate:

Transformer shall be furnished with a non-corrosive diagrammatic name plate permanently attached with non corrosive hardware with following informations:

(i)KVA rating
(ii)Primary and secondary voltage.
(iii)Primary and secondary current.
(iv)Frequency.
(v)Nos. of phases.
(vi)Percentage of impedance.
(vii)Types of cooling.
(viii)Connection & symbol.
(ix)Tape configuration.
(x)Insulation system and rated maximum temperature rise.
(xi)Sound level.
(xii) K- factor rating (if available)
(xiii)Year of manufacture.
(xiv)Design impedance.

(xv)Manufacturer's name.
(xvi) Net weight.
(xvii) IS standard.
(xviii) OIL's P.O. no. and date.

28. Lifting hook.

Suitable Lifting hook shall be provided on the top of the transformer for transportation/installation of transformer.

29 LIST OF FITTNGS AND ACCESSORIES:

a. HV bushings inside HV cable box: 3 nos. rated for 11kV.
b. LV bushings in side LV cable box : 4 nos.(3P+1N) rated 415 Volts
c. Outside LV cable box : 1 no. for grounding.
d. Digital Winding temperature scanner connected with three nos. RTDs, one each for each LV winding, should be provided in a metallic enclosure (Marshalling box) that is mounted on the main enclosure. The scanner shall have potential free NO contacts to provide indication, alarm & trip contacts. Winding temperature indicator should show maximum temperature attained. The RTDs should be properly wired up to the scanner terminals. Temperature setting of each contact shall be independently adjustable at site.
e. Earthing terminals - 2 nos for body earthing.
f. Jacking lugs.
g. Inspection cover - 2 nos placed in opposite site
h. Base channels with bi-directional rollers - 2 nos.
i. Any other accessories which bidders think essential may also be included as optional.

30. Earthing:

Earthing shall be as per IS-3043.All metal parts of the transformer with the exception of individual core laminations core bolts and associated individual clamping plates shall be earthed internally. Suitable arrangement shall be made for earthing of neutral externally.

31. Wiring:

All internal wiring shall be done with 1.1kv grade fire retardant PVC insulated tinned copper multi stranded cable of standard size of 2.5sqmm with proper lugs. Ring lugs shall be used at all connections such as CTs connection etc. All terminal strips shall have minimum 2 nos. spare terminals to accommodate any modification required during commissioning /operation. All terminals shall be accessible for testing and trouble shooting/ maintenance. All cable shall have ferules.

32. INSPECTION.

(i) All the NIT specified routine tests and special tests as per IS: 11171 are to be carried out in presence of OIL's Engineer at manufacturer's works. The supplier will give intimation to OIL 15 days advance prior to commencement of tests so that OIL can depute representative for witnessing tests in time.
(ii) The dispatch will be cleared only if the test results comply with the specifications and testing results are within the tolerance limits.
(iii) Materials / equipments failed to conform to the specifications/during testing, OIL's representative shall have the right to reject the materials and in that case, the supplier will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs.

GENERAL TERMS AND CONDITIONS:

1. Transformer winding shall be specially braced to withstand to thermal and mechanical stresses of harmonic current and voltage.
2. The transformer shall be type tested and following CPRI Type test certificates on similar transformer of specified rating should be furnished along with the quotation. These type test certificates should not be more than 5 (five) years old on the date of bid opening. Offers without these type certificates may not be considered for evaluation.
Type test shall constitute the followings;
(a) Measurement of winding resistance,
(b) Measurement of voltage ratio and check of voltage vector relationship,
(c)Measurement of impedance voltage, short circuit impedance and load loss,
(d)Measurement of no load loss and current,
(e) Separate-source voltage withstand test,
(f) Induced overvoltage withstand test,
(g) Lightning impulse test,
(h) Temperature-rise test and
(i) Short-circuit test.

3. Manufacture's test certificates for all the components & assemblies as required by IS-11171 with latest amendments should be submitted to us along with dispatch of the materials.
4. The transformer should be offered for pre-dispatch inspection at the manufacturer's works and the NIT specified tests shall be made at the manufacturer's works only (party shall confirm the availability of the testing facility in the offer). The pre-dispatch tests to be carried out in presence of OIL's engineer as per IS: 11171 are:

(a) ROUTINE TESTS:
(i) Measurement of winding resistance of each winding of each phase at Principal tap and at all other taps,
(ii) Measurement of voltage ratio(at all taps), polarity and check of voltage vector group,
(iii)Measurement of impedance of voltage (principal tap, lowest and highest tap), short-circuit impedance and load loss at rated current;

(iv) Measurement of no-load loss and no load current at normal & 112.5 % over voltage.
(v) Measurement of Insulation resistance & PI value by motorized insulation tester.
(vi) Induced over voltage withstand test,
(vi) One minute power frequency withstand voltage test,
(vii) Magnetic balance test,
(viii) Calibration of winding temperature indicators.

(b)TYPE TESTS:
(i) Temperature-rise test shall be carried out up to 110 degree centigrade.

(c) SPECIAL TESTS:
(i)Partial discharge test shall be carried at 120%,
(ii) Measurement of acoustic sound level.

5. Party should get the detail transformer drawings approved from OIL prior to manufacturing of the transformer.
6. Bidder should submit with quotation the list of customers to whom the bidder has supplied transformers of similar rating & type (as per NIT) during last five years.
7. Bidder's shall submit the list of manufacturer's authorized dealers of eastern region along with the offer.
8. Bidder's shall fill up the technical data sheet as per format attached as **ANNEXURE-IV** and submit along with the offer.

Technical specifications for 11KV (UE) XLPE Cable:

Specifications of cable:
Cable, electric with stranded compact circular Aluminium conductor screened with non-metallic semi-conducting tape, cross linked polyethylene (XLPE) insulated, insulation screened with extruded semi conducting compound and copper tape screening ;core identification tape, core laid up with Polymeric Fillers, inner PVC compound sheath (bedding); galvanized steel strip armoured and overall PVC sheathed conforming to IS 7098 (with latest amendment) suitable for 11kV unearthed system [11kV / 11kV (UE)] having following specification and features : The cable shall conform to IS-1554, Part II and BIS approved.

1. Size: 3Core x240 Sq mm.

2. Marking:

a). Manufacture's name ,voltage grade ,size of cable, year of manufacture shall be embossed on the outer sheath of the cable at one meter interval throughout the length of the cable.

b). Cable drum shall be marked with manufacture's name, voltage grade ,size of cable, year of manufacturing ,length of cable, ISI mark & OIL#s purchase order number with suitable paint in permanent manner.
c). Cable length shall be embossed in permanent manner with suitable paint at one meter interval.
3. Construction: Cable shall be so constructed that its outer side is completely round in shape.

Specifications of 1100 V cable:

(1) 1.1 KV grade XLPE insulated PVC sheathed armoured Aluminum / Copper cable shall be 3 ½ /4 core of sizes as specified. The cable shall conform to IS: 1554 Part I.

Technical specifications of Earthing System:

1:Scope:

This section covers the general requirements of the earthing system for Sub-station installation. G.I. Pipe earthing with G.I. strip and single core insulated cable for sub-stations of 2X750KVA capacity and for sub-stations of higher capacity shall preferably used.

2: SYSTEMS:

Earthing system shall comprise of chemical earth electrode of 80mm diameter of G.I pipe of 3mtrs length shall be used as an individual electrode. For each transformer 2 more separate and distinct earth electrodes shall be provided for neutral earthing. The body earthing for transformers, HV & LT panels shall be done to a common earth bus connected to two separate and distinct chemical earth electrodes.

Note: For a single transformer Sub-station, the total number of earth electrodes shall be 4 (2 for neutral and 2 for connection to a common earth bus for body earthing). For a two transformer sub- station total number of earth electrodes shall be 8 (4 for neutral earthing, two each for two transformers, and 2 for connection to VCB & 2no. for PCC panel of common earth bus for body earthing). The no. of earth electrodes shall be more depends upon soil resistivity and the value of earth resistance which shall be not less than 5ohms when connected together.

3: ELECTRODES:

Supply and burying a heavy duty, Chemical electrode with suitable chemical for soil treatment GI pipe, 3mtrs x 80mm, as an earth electrode, with accessories and providing masonry enclosure size 600mmx 600mm

x600mm with RCC cover plate having 2nos. metallic hooks for lifting cover and funnel type arrangement for watering pipe etc. complete as required.

4: LOCATION OF EAFRTH ELECTRODES:

Normally an earth electrode shall not be situated less than 1.5m from any building. Care shall be taken that the excavation of earth electrode may not affect the column footings or foundation of the building. In such cases electrodes may be farther away from the building. The location of the electrode earth will be a place where the soil has reasonable chance of remaining moist. As far as possible, entrances, pavements and road ways, are to be definitely avoided for locating the earth electrode. The distance between two earth electrodes shall be min length of electrode.

5: SIZE OF EARHT LEAD:

The recommended sizes of G.I earth bus lead in case of sub-stations shall be 50mmx6mm.The minimum size of earth lead shall be PVC insulated 120sqmm of single core aluminium conductor cable. 2Nos. of 50x6mm GI strap shall be kept in each Pucca cable trench with no. of holes from there single core 120sqmm PVC insulated aluminium conductor cable can be connected to earth electrode and body of equipment

Installation of VCB panel

(i) The installation work shall cover assembly of panels lining up, grouting the units etc. In the case of multi panels switch boards after connecting up the bus- bar all joint shall be insulated with HV insulation tape or with approved insulation compound.
(ii) A common earth bar shall be run preferably at the back of the switch board connecting all the sections for connecting the earth system. All protection, indications & metering connections and wirings shall be completed.
(iii) Where trip supply battery is installed the unit shall be commissioned, completing initial charging of the batteries.
(iv) All relay instruments and meters shall be mounted and connected with appropriate wiring. Calibration checks of units as necessary and required by the licensee like CTs, VTs Energy Meters etc. shall be completed before pre-commission checks are undertaken.

TESTING AND COMMISSIONING of VCB panel

(i) Procedure for testing and commissioning of relay shall be in general accordance with good practice.
(ii) Commissioning checks and tests shall include in addition to checking of all small wiring connections, relays calibration and setting tests by secondary injection method and primary injection method. Primary injection test will be preferred for operation of relay through CTs. Before panel board is commissioned, provision of the safety namely fire extinguishers, rubber

mats and danger board shall be ensured. In addition all routine insulation tests shall be performed. Checks and test shall include following.

(iii)(a) Operation checks and lubrication of all moving parts.

(b) Interlock function checks.

(c) Continuity checks of wiring, fuses etc. as required.

(d) Insulation tests.

(e) Trip test and protection gear tests.

(f) The complete panel shall be tested with 5000V insulation for Insulation between poles and poles to earth. Insulation test of Secondary of CTs and VT to earth shall be conducted using 500V megger.

(g) Any other tests as may be required by the Licensee / Inspector shall be conducted.

(h) Where specified, the entire switch board shall withstand high voltage test after installation.

(i) Any other test required by the consignee/inspecting officer.

INSTALLATION of LT panel

(i) The installation work shall cover assembly of various sections of the panels lining up, grouting the units etc. In the case of multiple panel switch boards after connecting up the bus bars etc., all joints shall be insulated with necessary insulation tape or approved insulation compound. A common earth bar as per specifications shall be run inside at the back of switch panel connecting all the sections for connection to frame earth system.

(ii) All protection and other small wirings for indication etc. shall be completed before calibration and commissioning checks are commenced. All relays, meters etc. shall be mounted and connected with appropriate wiring.

TESTING AND COMMISSIONING of LT panel

(i) Commissioning checks and tests shall include all wiring checks and checking up of connections. Relay adjustment/setting shall be done before commissioning in addition to routine Megger tests. Checks and tests shall include the following: -

(ii)(a) Operation checks and lubrication of all moving parts.

(b) Interlock function checks.

(c) Continuity checks of wiring, fuses etc. as required.

(d) Insulation test: When measured with 500V Megger the insulation Resistance shall not be less than 100 mega ohms.

(e) Trip tests and protection gear test

Installation and Commissioning of Transformer

(i) The transformer shall be installed in accordance with IS 10028-Code of practice for Installation and maintenance of transformer. Necessary support channels shall be grouted in the flooring.

(ii) The Transformer shall be moved to its location and shall be correctly positioned. Transformer wheels shall be either locked or provided with wheel stoppers.
(iii) Wiring of devices shall be carried out as per drawings; Earthing of neutral and body of the transformer shall be done in accordance with of these specifications.
(iv) All devices shall be checked for satisfactory operation.
(v) All tests specified above of these specifications shall be carried out by the contractor in the presence of inspecting officer/consignee free of cost.

Installation and commissioning:

Technical Specifications for laying and commissioning of 11KV (UE), 3core, 240smm, XLPE Aluminium cable from electric substation to 11KV incoming and outgoing overhead lines and interconnection of substations as per schedule of work.

Scope of work for HT cable:

(i) The scope of work includes supply, laying, jointing, end termination, testing and commissioning of 11 kV (UE,) 3x240 sqmm, XLPE, Al power Cables.
(ii) The scope of work also includes laying of above cables in pre constructed pucca cable trench.
(iii) The scope also includes excavation of soil/strata/concrete of size 1.05mx.45 m for laying , jointing, installation and commissioning of 3x240 Sqmm cable including sand cushioning, placing of bricks, backfilling and covering the surface to original finish all as per standards and as directed by Oil's Engineer.
(iv) The scope also covers straight through jointing and end termination of cables with standard practice with kits supplied by the bidder and approved by OIL. The price of the kits shall be included in the bid.
(v) The cable shall be laid through 4" GI pipes at road crossings, across trenches, drainages and wherever necessary and the cost of the same shall be included in the bid.
(vi) Cable route markers (FRP) and cable identification tags shall be provided along the route and length of the cable at a distance of 30mtrs and cost of markers and tags shall be included in the bid. The details of FRP cable marker drawing is enclosed as **Annexure-V**
(vii) Any other items that are not included but part of the execution shall be deemed to be included in the scope of and shall be included the cost of such items in their bid.
(viii) The quantities indicated in the schedule of items are tentative and payment shall be made to the actual quantities of work done only.

1.0 Transportation, STORAGE AND HANDLING :

1.0.1: Transportation:

The cable drums shall be supplied directly to the site. Proper care shall be taken during transportation so that cable drums do not get damaged during transportation. If cable or drum gets damaged during transportation, it is sole responsibility of the bidder to take care of such damages. In case, if it requires replacement of damaged cable, the bidder has to replace the damaged cable with new cable at free of cost.

1.0.2: Storage:

(i) The cable drums shall be stored on a well drained, hard surface, so that the drums do not sink in the ground causing rot and damage to the cable drums. Paved surface is preferred, particularly for long term storage.
(ii) The drums shall always be stored on their flanges, and not on their flat sides.
(iii)Protection from rain and sun is preferable for long term storage of cables. There should also ventilation between cable drums.
(iv) Damaged battens of drums etc. should be replaced as may be necessary.

1.0.2 Handling :

(i) When the cable drums have to be moved over short distances, they should be rolled in the direction of the arrow marked on the drum.
(ii) For manual transportation over a distance, the drum should be mounted on cable drum wheels, strong enough to carry the weight of the drum and pulled by means of ropes. Alternatively, they may be mounted on a trailer or on a suitable mechanical transport.
(iii) For loading into and unloading from vehicles, a crane or a suitable lifting tackle should be used. Small sized cable drums can also be rolled down carefully on a suitable ramp or rails, for unloading, provided no damage is likely to be caused to the cable or to the drum.

2.0 INSTALLATION

2.0.1 General

(i) Cables with kinks, straightened kinks or any other apparent defects like defective armouring etc. shall not be installed.
(ii) Cables shall not be bent sharp to a small radius either while handing or in installation. The minimum safe bending radius for XLPE (MV) cables shall be 12 times the overall diameter of the cable as per IS 1255. At joints and terminations, the bending radius of individual cores shall not be less than 15 times its overall diameter.

2.0.2 Route :

Cable shall be laid thorughkaccha trench, the route of which shall be decided by the Engineer-in-Charge considering the following:
(i) While the shortest practicable route should be preferred, the cable route shall generally follow fixed developments such as roads, foot paths etc. with proper offsets so that future maintenance, identification etc. are rendered easy.
(ii) Cable route shall be planned away from drains and near the property, subject to any special local requirements that may have to be necessarily complied with.
(iii) As far as possible, the alignment of the cable route shall be decided after taking into consideration the present and likely future requirements of other services including cables enroute, possibility of widening of roads/lanes etc.
(iv) Corrosive soils, ground surrounding sewage effluent etc. shall be avoided for the routes.

Proximity to communication cables
Power and communication cables shall as far as possible cross each other at right angles. The horizontal and vertical clearances between them shall not be less than 60cm.

2.0.3 Methods of laying :

Laying direct in ground:

(a) The trenches shall be excavated in reasonably straight lines. . Wherever there is a change in the direction, a suitable curvature shall be adopted complying with the requirements of clause 1.0.1(ii).

(b) Where gradients and changes in depth are unavoidable, these shall be gradual

(c) The excavation should be done by suitable means-manual or mechanical. The excavated soil shall be stacked firmly by the side of the trench such that it may not fall back into the trench.
(d) Adequate precautions should be taken not to damage any existing cable(s), pipes or any other such installations in the route during excavation. Wherever brick or any other protective covers or bare cables are encountered, further excavation shall not be carried out without the approval of the Engineer-in-Charge.
(e) Existing property, if any, exposed during trenching shall be temporarily supported adequately as directed by the Engineer-in-Charge. The trenching in such cases shall be done in short lengths, necessary pipes laid for passing cables therein and the trench refilled as per clause 1.0.3.(i)
(f)The normal size of the trench will be 45 cms. wide and depth for 11KVshall be 105 cms and size of the pit is 120 cms. to 150 cms. diameter with same depth that of the trench. The bottom of the trench must be leveled and properly dressed. Any change in the above mentioned size shall be instructed by the Engineer- in - Charge.

g) 75mm. thick sand bed shall be spread at the bottom of the trench pit. Then unrolling and laying of cable shall be done as per instruction and again shall be covered with another 75mm of sand over the cable. Sand bed should cover entire width of trench and pits. Supply of sand is in the scope of the bidder.

h) Bricks shall be placed crosswise (irrespective of one or more cables laid in the trench pit) over the cable /cables as well as the entire pit as per instructions. There shall be at least ten bricks in every 1150mm long normal trench and covering the entire cable/cables (brick size 230mm x 115mm).The bricks should be placed close to each other without any gap. Broken bricks shall not be allowed to use. Supply of bricks is in the scope of the bidder.

i) The trenches shall be then back-filled with excavated earth, free from stones or other sharp ended debris and shall be rammed and watered, if necessary in successive layers not exceeding 30cm depth.
j) Where road beams or lawns have been cut out of necessity, or kerb stones displaced, the same shall be repaired and made good, except for turfing /asphalting, to the satisfaction of the Engineer-in-Charge and all the surplus earth or rock shall be removed to places as specified.
k)There shall be of road crossings.. During road crossing,4# dia GI pipes shall be used for routing the cables. Spare pipes shall be provided for future extension .Spare pipes shall be sealed off at both ends. Pipes shall be upto the edge of the road to permit smooth entry of cable without bending.
l) 4 inch dia GI pipes shall be provided for individual cable entries to the sub-station buildings at both the ends of cables. The pipe for this purpose shall slope downwards from the building. The pipes at the building end shall be suitably sealed to avoid entry of water, after the cables are laid.
Testing of cable before laying:
All the time of issue of cables for laying, the cables shall be tested for continuity and insulation resistance.

Testing before sand cushioning:

The cables shall be tested for continuity of cores and insulation resistance and the cable length shall be measured, before closing the trench.

Laying in pucca cable trench:

a) While laying cables in pucca cable trench same general guidelines as mentioned above shall be followed.
b) After laying of cables in pucca cable trench, the trench shall be completely filled with dry and approved quality sand.

2.0.4 Route Markers:

FRP cable route markers shall be provided, as per the drawing attached along the runs of cables at locations approved by the Engineer-in-Charge

and generally at intervals 30mtrs. Markers shall also be provided to identify change in the direction of the cable route and at locations of underground joints. Details & drawing of FRP cable markers with the inscription text with OIL logo is enclosed for estimation and reference.

2.0.5 Cable identification tags:

Whenever cable is laid, GI tags inscribed with cable identification details as directed by Engineer-in-charge shall be permanently attached to all the cables at a distance of 30 mtrs . In case of cables laid directly in grounds the tags shall be attached before trenches are backfilled.

2.0.6 Cable termination & jointing Location:

(i) Before laying of a cable, proper locations for the proposed cable joints, if any, shall be decided, so that when the cable is actually laid, the joints are made in the most suitable places. As far as possible, water logged locations, carriage ways, pavements, proximity to telephone cables, gas or water mains, inaccessible places, ducts, pipes, racks etc. shall be avoided for locating the cable joints.
(ii) Joints shall be staggered by 2m to 3m when joints are to be done for two or more cables laid together in the same trench.

Jointing Pits:

(i) Joint pits shall be of sufficient dimensions as to allow easy and comfortable working. The sides of the pit shall be well protected from loose earth falling into it. It shall also be covered by a tarpaulin to prevent dust and other foreign matter being blown on the exposed joints and jointing materials.
(ii) Sufficient ventilation shall be provided during jointing operation in order to disperse fumes given out by fluxing.

Safety precaution

(i) A caution board indicating #CAUTION # CABLE JOINTING WORK IN PROGRESS# shall be displayed to warn the public and traffic where necessary.
(ii) Before jointing is commenced, all safety precautions like isolation, discharging, earthing, display of caution board on the controlling switchgear etc. shall be taken to ensure that the cable would not be inadvertently charged from live supply. Metallic armour and external metallic bonding shall be connected to earth.

Jointing & end termination materials :

(i) Heat shrinkable cable jointing kits of following specification shall be supplied and used.

Heat Shrinkable straight through jointing kit:

In case straight through joint is required while laying of cable, party has to supply all the materials for straight through joint kit, outdoor type along with cable jointer. The details of kit are given below:
Heat Shrinkable through jointing kit for following cable and having the following features:
Size of cable: 3 core, 240 sq.mm, Aluminium
Voltage grade: 11,000 V,AC (UE)
Cable type: Cross linked polyethylene (XLPE), armoured
Shelf life: Minimum 5 years.
Make: Raychem/Heat shrink/ Xicon
Note:The package shall contain the following information/ documents :
1. Make.
2. Batch no.
3. Date of manufacture.
4. Date of expiry.
5. Shelf life of the kit.
6. Guarantee certificate.
7. Installation manual.

Heat Shrinkable indoor type end termination kit:

11KV (UE) XLPE cable shall be terminated for indoor and outdoor use especially for indoor connection of 11KV VCB and outdoor connection of 11KV overhead lines. All the materials for indoor and outdoor termination shall be supplied by contractor along with cable jointer. The details of cable termination kit are given below:
Heat Shrinkable end termination kit for following cable and having the following features:
Size of cable: 3 core, 240 sq.mm, Aluminium
Voltage grade: 11,000 V, AC (UE)
Cable type: Cross linked polyethylene (XLPE), armoured
Type of kit: Indoor and outdoor type
Shelf life: Minimum 5 years.
Make: Raychem/Heat shrink/ Xicon
Note:
The package shall contain the following information/ documents: 1. Make.
2. Batch no.
3. Date of manufacture.
4. Date of expiry.
5. Shelf life of the kit.
6. Guarantee certificate.
7. Installation manual

ii) Storing as well as jointing instructions of the manufacturer of such materials shall be strictly followed.

Jointer :
Jointing work shall be carried out by experienced cable jointers having licence for HT cable laying and jointing (Electrical workman's permit; part VII for state of Assam or equivalent in other states).

Cable work with joints:

(i) About 3m long surplus cable shall be left on each side of joints .
(ii) Insulation resistance of cables to be jointed shall be tested prior to jointing. Unless the insulation resistance values are satisfactory, jointing shall not be done.
(iii) Cores of the cables must be properly identified before jointing.
(iv) Where cable is to be jointed with the existing cable, the sequence should be so arranged as to avoid crossing of cores while jointing.
(v) Whenever the aluminium conductor is exposed to outside atmosphere, a highly tenacious oxide film is formed which makes the soldering of aluminium conductor difficult. This oxide film should be removed by using appropriate type of flux.
(vi) The clamps for the armour shall be clean and tight.

Jointing procedure:
It is necessary to follow strictly the instructions for jointing furnished by the manufacturers of cables and joint kits.

3.0 TESTING

Testing before laying:

All cables, before laying, shall be tested with 2500/5000V megger. The cable cores shall be tested for continuity, absence of cross phasing, insulation resistance from conductors to earth / armour and between conductors.

Testing before backfilling:

All cables shall be subjected to the above mentioned tests, before covering the cables by protective covers and back filling and also before taking up any jointing operation.

Testing after laying:

After laying and jointing, the cable shall be subjected to a 15 minutes pressure test. The test pressure shall be as per IS 1255, DC pressure testing may normally be preferred to AC pressure testing.

4.0 CABLE INSTALLATION PLAN :

On completion of laying, terminating and jointing of the cables, a plan should be prepared as per IS 1255, which should contain the following details of
the installation.
(i) Type of cables, cross-section area, rated voltage. Details of construction, cable number and drum number;
(ii) Year and month of laying;
(iii)Actual length between joint-to-joint or ends;
(iv) Location of cables and joints in relation to certain fixed reference points, for example, buildings, hydrant, boundary stones, etc;
(v) Name of the jointer who carried the jointing work;
(vi) Date of making joint;
(vii)Results of original electrical measurements and testing on cable installation.

5.0 Technical Terms and conditions for supply, laying& jointing & commissioning of cable:

(i) The cable laying works shall be carried out as per terms and condition of the cable laying works.
(ii) Jointing and end termination of the cable shall be carried out by experienced/ skilled cable jointer with valid work permit in Assam.
(iii)All the cable laying works shall be supervised by experienced supervisor having appropriate certificate of competency for carrying out 11KV works valid for Assam.
(iv) Before laying of the cable, cable shall be meggerd for Insulation resistance and continuity test to be carried out.
(v) After laying and jointing and end termination of the cable, cable shall be tested by applying 18KV DC for 15 Minutes.
(vi) The cable, straight through joints and end terminations shall be guaranteed for 12 months from the date of commissioning. If any failure of cable or joints or end terminations occurs during guarantee period, free of cost repair/ replacement will be carried out by bidder within short notice of 12hours.

6.0 General terms and conditions for supply, laying, jointing& commissioning of cable:

(i) The bidder shall visit the site for assessment of works for supply, storage, laying, jointing, testing and hand over the cable.
(ii) The bidder shall give 30 days earlier intimation for routine test when cable will be ready at manufacturer's works. The cable shall be inspected and routine tested at manufacturer's works. After dispatch clearance from Oils Engineer, cable will be dispatched to the site..
(iii)The cable drum shall be kept in custody of bidder before laying, jointing and handing over the cable and it is sole responsibility of bidder to keep supervision of the cable. The storage and security of cable is in the scope of the bidder..

(iv) The supply, laying, jointing, end termination, testing of cable shall be carried out within 3months after receipt of the cable at site.
(v) The payment of installation and commissioning will be made only after successfully carried out the jobs and handing over the cable to the Oil.
(vi) The bidder will be penalized as per terms and condition of company, if job is not completed as per schedule of supply and laying of cable.
(vii)Bidder shall confirm in the offer that:
(a)The cable laying, jointing, testing & commissioning will be carried out under supervision of experienced supervisor having appropriate certificate of competency for carrying out 11 kV works valid for operating in Assam.
(b) All cable jointing, end termination works shall be carried out by persons having experienced and valid workman permit for cable jointing for HT cable.
(c) The cable manufacturer shall have routine test facilities to carry out testing of 11kV (UE), 3x240Sqmm XLPE, Al cable as per IS 7098 (with latest amendments) at manufacturer's works.

7.0 Tools:

The party shall have one no.2.5kV/ 5 kV Digital Insulation Resistance Tester of reputed make like Fluke ,high voltage test set, multifunction meter and one set of non hydraulic heavy duty crimping tool kit of reputed make of size 16 sqmm to 400Sqmm including complete set of suitable dies.

Technical specifications for 1.1KV grade LT Cable:

1.0 Scope of work:

The above cable shall be supplied, laid and commissioned from transformers to LT panel incomers & substation LT panel MCCBs to LT overhead line feeders.

i. The scope of work includes supply, laying, termination, testing and commissioning of 1.1 kV, 3.5Cx240Sqmm, XLPE insulated, PVC sheathed, Al conductor cables.
ii. The scope also includes excavation of soil/strata/concrete of size 0.9mx.0.45 m for a length of for 3.5C×240sqmm cable including sand cushioning, placing of bricks, backfilling and covering the surface to original finish all as per standards and as directed by Oil's Engineer.
iii. The scope also covers termination and crimping of cables with sweating socket/ GI pipe/ clamp/ U Clip of standard practice with kits supplied by the bidder and approved by OIL. The cost of the items shall be included in the offer.
iv. The cable shall be laid through 4" GI pipes at road crossings, across trenches, drainages and wherever necessary and the cost of the same shall be included in the bid.
v. Cable route markers (FRP) and cable identification tags shall be provided along the route and length of the cable at a distance of 30mtrs and cost of

markers and tags shall be included in the bid. The details of FRP cable marker drawing is enclosed as **Annexure-V**

vi. Any other items that are not included but part of the execution shall be deemed to be included in the scope of and shall be included the cost of such items in their bid.

vii. The quantities indicated in the schedule of items are tentative and payment shall be made to the actual quantities of work done only.

viii.Earth continuity wire of single core, 120sqmm insulated wire for 240sqmm cable shall be laid throughout length of cables. The cost of continuity wire shall be included in offer of cable.

2.0. Installation, testing and commissioning of cable:

2.0.1 General:

(i) Cables with kinks, straightened kinks or any other apparent defects like defective armouring etc. shall not be installed.

(ii) Cables shall not be bent sharp to a small radius either while handing or in installation. The minimum safe bending radius for cables shall as per IS. The terminations, the bending radius of individual cores shall not be less than 15 times its overall diameter.

2.0.2 Route of cable:

(i) Cable shall run through Kacha/ pucca trench as shortest route possible.

(ii) While the shortest practicable route should be preferred, the cable route shall generally follow fixed developments such as roads, foot paths etc. with proper offsets so that future maintenance, identification etc. are rendered easy.

(iii) Cable route shall be planned away from drains and near the property, subject to any special local requirements that may have to be necessarily complied with.

(iv) As far as possible, the alignment of the cable route shall be decided after taking into consideration the present and likely future requirements of other services including cables en-route, possibility of widening of roads/lanes etc.

(v) Corrosive soils, ground surrounding sewage effluent etc. shall be avoided for the routes.

Proximity to communication cables:

Power and communication cables shall as far as possible cross each other at right angles. The horizontal and vertical clearances between them shall not be less than 60cm.

2.0.3 Methods of laying:

Laying direct in ground:

(a) The trenches shall be excavated in reasonably straight lines, wherever there is a change in the direction, a suitable curvature shall be adopted complying with the requirements of above.
(b) Where gradients and changes in depth are unavoidable, these shall be gradual.
(c) The excavation should be done by suitable means-manual or mechanical. The excavated soil shall be stacked firmly by the side of the trench such that it may not fall back into the trench.
(d) Adequate precautions should be taken not to damage any existing cable(s), pipes or any other such installations in the route during excavation. Wherever brick or any other protective covers or bare cables are encountered, further excavation shall not be carried out without the approval of the Engineer-in-Charge.
(e) Existing property, if any, exposed during trenching shall be temporarily supported adequately as directed by the Engineer-in-Charge. The trenching in such cases shall be done in short lengths, necessary pipes laid for passing cables therein and the trench refilled.
(f) The normal size of the trench will be 45 cm wide and depth shall be 900 cm and size of the pit is 120 cm. to 150 cm diameter with same depth that of the trench. The bottom of the trench must be levelled and properly dressed. Any change in the above mentioned size shall be instructed by the Engineer- in - Charge.

(g) 75mm thick sand bed shall be spread at the bottom of the trench pit. Then unrolling and laying of cable shall be done as per instruction and again shall be covered with another 75mm of sand over the cable. Sand bed should cover entire width of trench and pits. Supply of sand is in the scope of the bidder.
(h)Bricks shall be placed crosswise (irrespective of one or more cables laid in the trench pit) over the cable /cables as well as the entire pit as per instructions. There shall be at least ten bricks in every 1150mm long normal trench and covering the entire cable/cables (brick size 230mm x 115mm).The bricks should be placed close to each other without any gap. Broken bricks shall not be allowed to use. Supply of bricks is in the scope of the bidder.
(i) The trenches shall be then back-filled with excavated earth, free from stones or other sharp ended debris and shall be rammed and watered, if necessary in successive layers not exceeding 30cm depth.
(j) Where road beams or lawns have been cut out of necessity, or kerb stones displaced, the same shall be repaired and made good, except for turfing /asphalting, to the satisfaction of the Engineer-in-Charge and all the surplus earth or rock shall be removed to places as specified.
(k) There shall be nos. of road crossings in cable routes. During road crossing, 4# dia GI pipes shall be used for routing the cables. Spare pipes shall be provided for future extension .Spare pipes shall be sealed off at both

ends. Pipes shall be up to the edge of the road to permit smooth entry of cable without bending.
(l) 4# dia GI pipes shall be provided for individual cable entries to the sub-station buildings at both the ends of cables. The pipe for this purpose shall slope downwards from the building. The pipes at the building end shall be suitably sealed to avoid entry of water, after the cables are laid.
(m) The single core earthing cable of size& specification, approved by Enginneer, shall be laid along with the power cable

Testing of cable before laying:

Before laying of the cables shall be tested for continuity and insulation resistance.

Testing before sand cushioning:

The cables shall be tested for continuity of cores and insulation resistance and the cable length shall be measured, before closing the trench.

2.0.4 Route Markers:

FRP cable route markers shall be provided along the runs of cables at locations approved by the Engineer-in-Charge and generally at intervals 30mtrs. Markers shall also be provided to identify change in the direction of the cable route and at locations of underground joints. Details & drawing of FRP markers with inscription text & OIL logo is enclosed for estimation and reference. The cost of Cable route markers shall be included in the offer.

Inscription: The words #OIL-ELECT-UGC# shall be inscribed on the marker.

2.0.5 Cable identification tags:

Whenever cable is laid, GI tags inscribed with cable identification details as directed by Engineer-in-charge shall be permanently attached to all the cables at a distance of 30 mtrs. In case of cables laid directly in grounds the tags shall be attached before trenches are backfilled.

Termination & crimping of Cables:

The cable supplied by bidder is required to terminated and crimped. For termination and crimping of cable sweating Socket of below mentioned size is required. Cables are also required to be connected to over head lines. Therefore GI pipe, Clamp and U clip is required. The following quantities of above materials are as follows:

3.5C×240 sqmm = as per requirement - Heavy duty, alluminium sweating socket, Make: Dowell/ equivelent approved by OIL
4C×10sqmm = as per requirement - Heavy duty, copper sweating socket Make: Dowell/equivelent approved by OIL

100mm GI pipe= as per requirement
Clamp = as per requirement
U Clip- as per requirement

The cable supplied by bidder is required to be terminated at substation, overhead lines. Cable gland for cable will be supplied by party. For crimping of cables suitable size of heavy duty sweating socket of Al/ Copper shall be supplied by bidder. For crimping of cable, crimping tools is required. The cost of above items shall be included in the offer.

3.0 TESTING:

Testing before laying:

All cables, before laying shall be tested with 1.0KV megger. The cable cores shall be tested for continuity, absence of cross phasing, and insulation resistance from conductors to earth / armour and between conductors.

Testing before backfilling:

All cables shall be subjected to the above mentioned tests, before covering the cables by protective covers and back filling and also before taking up any jointing operation.

Marking on cable :

(i) Manufacture's name, voltage grade, size of cable, year of manufacture shall be embossed on the outer sheath of the cable at one mtr interval throughout the length of the cable.
(ii) Cable drum shall be marked with manufacture's name, voltage grade, size of cable, year of manufacturing, length of cable, ISI mark & OIL#s purchase order number with suitable paint in permanent manner.
(iii) Cable length shall be embossed in permanent manner with suitable paint at one meter interval.
(iv) Construction: Cable shall be so constructed that its outer side is completely round in shape.

1.0 Transportation, Storage and Handling of cable:

1.0.1: Transportation of cable:

The cable drums shall be supplied directly to the site. Proper care shall be taken during transportation so that cable drums do not get damaged during transportation. If cable or drum gets damaged during transportation, it is sole responsibility of the bidder to take care of such damages. In case, if it requires replacement of damaged cable, the bidder has to replace the damaged cable with new cable at free of cost.

1.0.2: Storage of cable:

(i) The cable drums shall be stored on a well drained, hard surface, so that the drums do not sink in the ground causing rot and damage to the cable drums. Paved surface is preferred, particularly for long term storage.
(ii) The drums shall always be stored on their flanges, and not on their flat sides.
(iii) Protection from rain and sun is preferable for long term storage of cables. There should also ventilation between cable drums.
(iv) Damaged battens of drums etc. should be replaced as may be necessary.
(v) The space for storage of cable shall be provided by Oil. Safety and Security of the cable will be in the scope of bidder not in Oil Scope.

1.0.2 Handling of cable:

(i) When the cable drums have to be moved over short distances, they should be rolled in the direction of the arrow marked on the drum.
(ii) For manual transportation over a distance, the drum should be mounted on cable drum wheels, strong enough to carry the weight of the drum and pulled by means of ropes. Alternatively, they may be mounted on a trailer or on a suitable mechanical transport.
(iii) For loading and unloading from vehicles, a crane or a suitable lifting tackle should be used. Small sized cable drums can also be rolled down carefully on a suitable ramp or rails, for unloading, provided no damage is likely to be caused to the cable or to the drum. For loading and unloading of cable drum, crane services shall be provided by OIL.

5.0 Technical Terms and conditions for supply, laying and commissioning of cable:

(i) The cable laying works shall be carried out as per terms and condition of the cable laying works.
(ii) Crimping and end termination of the cable shall be carried out by experienced/ skilled Technician with valid work permit in Assam.
(iii) All the cable laying works shall be supervised by experienced supervisor having certificate of competency for carrying out 1.1KV works valid for Assam.
(iv) Before laying of the cable, cable shall be meggerd for Insulation resistance and continuity test to be carried out.
(v) After laying and termination of the cable, cable shall be tested by applying 2.0 KV DC for 15 Minutes.
(vi) The cable crimping and terminations shall be guaranteed for 12 months from the date of commissioning. If any failure of cable or terminations occurs during guarantee period, free of cost repair/ replacement will be carried out by bidder within short notice of 12hours.

6.0 General terms and conditions for supply, laying & commissioning of cable:

(i) The bidder shall visit the site for assessment of works for supply, storage, laying, testing and hand over the cable.

(ii) The bidder shall give 30 days earlier intimation for routine test when cable will be ready at manufacturer's works. The cable shall be inspected and routine tested at manufacturer's works. After dispatch clearance from Oil's Engineer, cable will be dispatched to the site shall be carried out..
(iii)The cable drum shall be kept in custody of bidder before laying, jointing and handing over the cable and it is sole responsibility of bidder to keep supervision of the cable. The storage and security of cable is in the scope of the bidder.
(iv)The supply, laying, termination, testing of cable shall be carried out within 4 months after receipt of the cable at site.
(v)The payment of installation and commissioning will be made only after successfully carried out the jobs and handing over the cable to the Oil.
(vi) The bidder will be penalized as per terms and condition of company, if job is not completed as per schedule of supply and laying of cable.
(viii) Bidder shall confirm in the offer that:
(a) The cable laying , testing & commissioning will be carried out under supervision of experienced supervisor having
(b) appropriate certificate of competency for carrying out 1.1 kV works valid for operating in Assam.
(c) All cable laying and termination works shall be carried out by persons having experienced and valid workman permit for cable jointing for LT cable.
(d) The cable manufacturer shall have routine test facilities to carry out testing of 1.1 kV grade, 3.5Cx240Sqmm XLPE, Al cable as per IS 7098 (with latest amendments) at manufacturer's works.

7.0 Tools:
The party shall have one no.1.0kV digital Insulation resistance tester of reputed make like Fluke ,high voltage test set, multifunction meter and one set of non hydraulic heavy duty crimping tool kit of reputed make of size 10sqmm to 240Sqmm including complete set of suitable dies.

INSTALLATION of Earthing

All joints shall be riveted and sweated. Joints in the earth bar shall be bolted and the joints faces tinned. 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 of flange of GI jointed 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 steel bolts, nuts, washers etc. shall be cadmium plated, main earth bars shall be spaced sufficiently on the surface to which they are fixed such as walls or the side trenches to allow for ease of connections. The earthing shall suitably be protected from mechanical injury by galvanized pipe wherever it passes through wall and floor. The portion within ground shall be buried at least 75 cm deep. The earthing lead shall be securely bolted and soldered to plate or pipe as the case may be. In the case of plate earthing the lead shall be connected by means of a cable socket with two bolts and nuts. All washers shall be of the same materials as the plate or pipe. All iron bolts nuts and washers shall be used.

TESTING:

After installation, the tests as specified in IS 3043 shall be carried out and results recorded.

Earth pit Enclosure: For all earth electrodes earth pit enclosures are required. The size of an earth pit shall be brick wall enclosure of size - (90x90x90) cm. The earth electrode shall be 30cm above the soil level. 50mmx6mm GI strap shall be welded on top of earth electrode to connect 2nos. of earth lead wires. The cover of Enclosure shall be RCC/equivalent to strong FRP type with 2nos. lifting hooks suitable for brickwork enclosure.

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Technical & other Deviations:

The work shall be carried out as per technical Specifications for Electrical works relevant to CEA regulations 2010, IEC, IE rules, and as per directions of Engineer-in-charge.
Note: Any deviations from Technical Specifications for Electrical works as given in NIT shall require approval of competent authority. In case there is no deviation, no deviations should be mentioned below this note.

1.CONDITIONS:

1.1.This specification covers construction of building, design and manufacture, testing as may be necessary before dispatch, delivery at site, all preparatory work, assembly and installation, commissioning putting into operation of sub-station equipments consisting of HT panels, transformers, LT panels, HT and LT cabling etc. and final testing of sub-station equipments shall be carried out at OIL's substation site at Duliajan.
1.2. The construction of the building shall be carried first and the sub-station equipments will be unloaded, stored & installed in the newly constructed sub-station building in the above location.
1.3. The bidder should visit the site in his own interest and get familiarize with the site conditions before tendering.

2. TERMS OF PAYMENTS:

The following percentage of contract rates for the various items included in the contract shall be payable against the stage of work shown herein.

2.1. Payments for Civil works:

2.1.1. No advance payment is admissible

2.1.2. Pending completion of the whole work provisional progressive payments for the part of the work executed by the contractor shall be made on the basis of work completed and certified by the representative of OIL. Non compliance to clause ii/19.0 under "PARTICULAR SPCIFICATIONS & INSTRUCTIONS" of civil specifications an amount of Rs. 10,000.00 per month shall be deducted from RA bill.
2.1.3. On completion of foundation work up to plinth level- 15% On completion of structural work (RCC including concrete & reinforcement in columns, beams, slabs, chajja, projections etc -35%
2.1.4. On completion of Brick Work in super structure- 10%
2.1.5. On completion of flooring works including sand filling, trench, plinth protection work, surface drain. -15%
2.1.6. On completion of finishing work including fixing of doors, windows etc in all respect. -15%
2.1.7. After completion and handing over of all work -10%

2.2. Payment for Electrical works:

2.2.1. 70% payment shall be made against receipt of complete material as in work schedule of individual substation at the site in good condition on pro - rata basis after inspection of materials at supplier's works.
2.2.2. 20% after completion of installation, testing and commissioning for satisfaction of Engineer- In charge in all respects.
2.2.3. Balance 10% will be paid after running of one month period & complete handing over to the department along with the all relevant documents for beneficial use.

2.3. SECURITY DEPOSIT: Security Deposit shall be deducted from each running bill and the final bill to the extent of 7.5 % of contract value per year payable subject to a maximum amount of 5% of the tendered value. The earnest money deposited shall be adjusted against this security deposit. The security deposit shall be released on the expiry of guarantee period stipulated in the contract. Bank guarantee will not be accepted as security deposit.

3. Rates: The rates quoted by the tendered, shall be firm and inclusive of all taxes (including works contract tax, VAT, labour cess& service tax), duties levies, octroi etc. and all charges for packing, forwarding, insurance, freight and delivery, installation, testing, commissioning etc. at site including temporary construction of storage, risks, over head charges, general liabilities /obligations and clearance from CEA, However, the fee for the CEA inspections shall be borne by the department.

4. Completeness of Tender:

All sundry equipment, fittings, unit assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections, and all other items which are useful and necessary for efficient assembly and installation of equipment and components of the work shall be deemed to

have been included in the tender irrespective of the fact whether such items are specifically mentioned in the tender documents or not.

5. Despatch & Storage and Custody of Materials:

Successful bidder shall plan the construction of sub station buildings such that they are ready for storing respective equipments on their arrival at Duliajan. No separate storage accommodation shall be provided by the department. The despatch clearance for all the ordered equipments shall be given by OIL only after ensuring that respective sub station buildings are ready for unloading and storing them inside the sub station buildings on their arrival at Duliajan. Watch and ward of the stores and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the department.

6.Care of the Building site:

Care shall be taken by the contractor while handling and installing the various equipments and components of the work to avoid damage to the building site & environment. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of the installation from the site of work.

7.Completion Period

The completion period shall be 24 months from the date of signing the contract agreement with the bidder. This period is for the entire work of planning, designing, approval of drawings etc., Construction of substation building, delivery at site including transportation, Installation equipments, testing, commissioning of equipment and handing over of the entire system to the satisfaction of the Engineer-in-charge. Offers indicating project completion period more than 24 months will be summarily rejected. Bidder should provide project bar chart along with the bid.

8. Guarantee:

8.1. All equipments shall be guaranteed for a period of 12 months by the LSTK contractor on behalf of OEM, from the date of taking over the installation by the department, against unsatisfactory performance and/or break down due to defective design, workmanship or material. The equipments or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer- in-Charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk and cost of the contractor. The decision of the Engineer-in-charge in this regards shall be final &

binding on the contractor. The bidder shall guarantee among other things, the following:
8.1.1. Quality, strength and performance of the materials used as per manufacturers standards.
8.1.2. Safe mechanical and electrical stress on all parts under all specified conditions of operation.

9. Power supply: A temporary maximum of three phase power supply of 5 KW shall be provided, at a single point, during execution of work for lighting & other purpose only, but not for welding. This power supply cannot be used for operating any Electrical welding set. For welding purpose, contractor has to arrange his own Diesel engine driven welding set. Further arrangements for tapping power connection from this point shall be made by the contractor. Electricity shall be provided on chargeable basis as per company rate applicable to the outside parties.
10.Water Supply: Water supply shall be made available by the contractor on their own for construction of substation building.

11.Acceptable makes of Various Equipments:

The Acceptable makes of various equipments/ components/accessories have been indicated in "Acceptable Makes" as specified in the tender document. The bidder shall work out the cost of the offer on this basis. Alternate makes are not acceptable.

12.Data Manual and Drawings to be furnished by the Tender:

12.1.With Tender: The bidder shall furnish along with the tender, detailed technical literature, pamphlets and performance data of the all offered items for appraisal and evaluation of the offer.
12.2.Dimensional drawings of the all offered equipments like HT panels, transformers, LT panel etc. in the sub-station building,

12.3.After award of work:

12.3.1.The successful bidder would be required to submit the following drawings within 30 days of award of work for approval before commencement of construction & installation
12.3.2.General arrangement and dimensional drawings of the equipments like HT panels, transformers, LT panel etc. in the sub-station building,
12.3.3.Details of foundations for the equipments and the weight of assembled equipments.
12.3.4.Cable layout between HT panel boards, transformers & LT panel etc. Any other drawings necessary for the job All civil Engg drawings
12.4.After completion While handing over the sub stations to OIL, The bidder shall hand over 3 sets of the operating and maintenance manual of all the equipments installed & used in the sub sations, their drawings, test certificates, guarantee certificates , operating spares as specified in the

tender, spare parts list and any other relevant documents regarding installation, adjustments operation and maintenance including preventive maintenance & trouble shooting together with all relevant data sheets, in a bound form.

13.Extent of Work:

13.1.The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning, as may be required by the department. The term complete installation shall not only mean major items of the plant and equipments covered by the specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender document in connection with this contract as this is a turnkey job.
13.2.The job is to Construct the Sub Station building as per approved civil drawing, Install HT panels, LT panels, Transformers as per approved drawing, Installation of Chemical earth electrodes, connect 2nos 750 KVA transformers to main LT panel. Similarly HT cable is to be laid inside the proposed sub-station in cable trench between HT panel board and 2Nos. transformers and do the end terminations using kits. No joint shall be permissible in between HT panel & transformer. The cable trenches are to be covered with FRP cable trays.
13.3.In addition to supply, installation, testing and commissioning of substation equipments, following works shall be deemed to be included within the scope of work to be executed by the bidder as this is a turnkey job.
13.3.1.All building works necessary for installation of equipments, foundation, making of opening in walls or in floors and restoring them to their original condition / finish and necessary grouting etc.as required
13.3.2.All supports for cables and MS channels for erection of panels & transformers etc. as are necessary.
13.3.3.Testing of PTs/ CTs for metering & protection purpose & relay calibration & setting.
13.3.4.Getting CEA inspection done & obtaining approval for energizing the installation. However, necessary fees for inspection shall be borne by the Department.

14. Exclusion and work to be done by other agencies:

The following shall be excluded from the scope of the work:

14.1.Major dismantling of any existing building work outside the substation fencing
14.2.Electricity supply in sub-station building for testing & commissioning purpose.

15.Inspection and Testing

15.1.All major equipments i.e. HT panel, transformers, LT panel etc. shall be offered for initial inspection at manufacturer's works. The contractor will intimate the date of testing of equipments at the manufacturer's works before dispatch. The successful bidder shall give advance notice of minimum four weeks regarding the dates proposed for such tests to the department's representative to facilitate his presence during testing. The Engineer-in-charge may witness such testing. The cost of the Engineer's visit to the factory will be borne by the department. Equipments will be inspected at the manufacturer's premises, before dispatch to the site by the contractor.
15.2.Copies of all documents of routine and type test certificates of the equipment, carried out at the manufacturers premises shall be furnished to the Engineer in-charge and consignee.
15.3.After completion of the work in all respects the contractor shall offer the installation for testing and operation.

16. Validity of bid:

The bid document shall be valid for acceptance for a period of 180 days from the date of opening.

17. COMPLIANCE WITH REGULATIONS AND INDIAN STANDARDS.

17.1.All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards, CEA regulation2010 & IEC other standards related to the works covered by this specification.
17.2.The entire Electrical jobs shall be carried out under the supervision of an Electrical supervisor having a valid Electrical supervisor's certificate of competency issued by Govt of Assam.

18.After completion of the installation, the same shall be offered for inspection by the representatives of the Central Electricity Authority. The contractor will extend all help including test facilities to the representatives of CEA. The observations/contraventions/non-compliance pointed out by CEA will be rectified/implemented by the contractor at his own cost. The final completion report will be given only after getting clearance from CEA.
19.Nothing in this specification shall be construed to relieve the successful tendered of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.
20.Successful bidder shall arrange for compliance with statutory provisions of safety regulations and departmental requirements of safety codes in respect of labour employed on the work by the bidder. Failure to provide such safety requirement would make the tender liable for penalty applicable as per company policy for each default. In addition, the department will be at liberty to make arrangement for the safety requirements at the cost of bidder and recover the cost thereof from him.

21. All the operating spare parts & tools mentioned in the NIT shall be included in the scope of supply of equipments

22.Indemnity:

The Successful bidder shall defend, indemnify and hold the Company, its officers, officials, employees and labours harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the sole negligence of the Company. The successful bidder shall be liable, in accordance with the Indian Law and Regulations for contractor related accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the equipments and ancillary equipments under the supervision of the successful bidder in so far as the latter in responsible. The Successful bidder shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful bidder on account of the above.

23.Erection Tools:

No tools and tackles required for testing, Installation and commissioning purposes would be made available by the department.

24.Coordination with other Agencies:

The Successful bidder shall co-ordinate with other agencies and exchanges freely all technical information so as to make the execution of this work/contract smooth. No remuneration should be claimed from the department for such technical cooperation. If any unreasonable hindrance is caused to other agencies and any completed portion of the work has to be dismantled and re-done for want of cooperation and coordination by the bidder during the course of work, such expenditure incurred will be recovered from the successful bidder if the restoration work to the original condition or specification of the dismantled portion of the work was not undertaken by the bidder himself.

25.The work will be carried out with least disturbance during shifting & shut down taken in consultation with the department.

26.Mobilization advance:

No mobilization advance shall be paid for this work.

27.Insurance and storage:

All consignments are to be duly insured up to the destination from point of despatch at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over duly installed, tested and commissioned. The equipments at site have to be stored securely by the party till handed

over to OIL. The necessary arrangement to prevent theft/pilferage has to be made by the party.

28.Verification of Correctness of Equipment at destination:

The contractor shall have to produce all the relevant records to certify that the genuine equipments from the manufacturers has been supplied and erected.

29.Painting:

This shall include cost of painting of the entire installation including the building as per the approved weather proof shades. The major equipments like HT panel, transformers, LT panel, bus duct, cable trays etc. shall be factory final finish painted. The agency shall be required to do only touching to the damages caused to the painting during transportation, handling & installation at site. However, hangers, supports etc. of & cable tray etc. shall be painted with required shade including painting with two coats of anticorrosive primer paint at site

30.Training:

The scope of works includes 'On the job technical training' of two persons of department at site. Nothing extra shall be payable on this account.

31.Interpreting Specifications:

In interpreting the specifications, the following order of decreasing importance shall be followed in case of contradictions:
(a) Schedule of quantities
(b) Technical specifications
(c) Drawing (if any)
(d) General specifications
(e) Relevant BIS or other international code in case BIS code is not available.

32.COMMENCEMENT OF WORK AND ISSUE OF WORK ORDER:

After signing the Contract, the contractor will have to obtain the labour license and the certificates relating to compliance with the statutory requirements as may be required for the specific contract. On fulfilling the statutory requirements, the concerned Contractor will collect the Work Order from the Indenting Department and will commence the work as per the terms mentioned in the Work Order.
The Work Order will generally contain the following information:
(a) Work Order number
(b) Contract number
(c) Name of the Contractor
(d) Date of commencement of work, date of completion of work
(e) Contract price

(f) Date after which LD will be levied
(g) Special instructions

33.SAFETY REQUIREMENTS: This section covers the requirements of items to be provided in the sub-station for Compliance with statutory regulations and Safety and operational needs.
33.1.Safety provisions shall be generally in conformity with CEA regulations 2010.In particular following items shall be provided:
33.2.Insulation mats conforming to IS: 15652:2006 shall be provided in front of main HT and LT switch boards as well as other control equipments As per CEA regulations 2010 Reg.No 19 (5).
33.3.Trilingual First Aid Charts (English, Hindi & Regional language), displaying methods of giving artificial respiration to a recipient of electrical shock shall be prominently provided at appropriate place.
33.4.Standard first aid boxes containing materials as prescribed by St. John Ambulance brigade or Indian Red Cross should be provided in each sub-station.
33.5.Danger Plates shall be provided on all HV and LV equipments. LV danger plate shall be 200 mm x 150 mm made of mild steel at least 2mmthick vitreous enameled white on both sides and with the descriptions in signal red colour on front side as required. Notice plates of other suitable materials such as stainless steel, brass or such other permanent nature material shall also be accepted with the description engraved is signal red colour.
33.6.Sufficient number of caution boards such as "Man on Line" 'Don't Switchon' etc. shall be available in the sub-station. OIL's approval for the text, design & layout of all the above shall be taken before commencement of installation
33.7.Portable CO2 conforming to IS: 2878:2004/ chemical conforming to IS:2171-1976 extinguishers, HCFC Blend A (P-IV) shall be installed in the sub-station at suitable places. Other extinguishers recommended for electric fires may also be used.
33.8.Fire buckets conforming to IS: 2546-1974 shall be installed with the suitable stand for storage of water and sand.
33.9.Substation locks: 65 MM, 7 LEVER locks & extra 20% spare locks with 3 master key (ie all the locks shall be openable with the same single key) has to be provided in each Sub stations for all doors.

34.GENERAL HSE POINTS:

34.1.It will be solely the Contractor's responsibility to fulfill all the legal formalities with respect to the Health, Safety and Environmental aspects of the entire job (namely; the person employed by him, the equipment, the environment, etc.) under the jurisdiction of the district / state where it is operating. . Ensure that all sub-contractors hired by him comply with the same requirement as the contractor himself and shall be liable for ensuring compliance all HSE laws by the sub or sub-sub contractors.
34.2.Every person deployed by the contractor in a mine must wear safety gadgets to be provided by the contractor. The Contractor shall provide

proper Personnel Protective Equipment as per the hazard identified and risk assessed for the job and conforming to statutory requirement and company PPE schedule. Safety appliances like protective footwear, Safety Helmet and Full Body harness has to be DGMS approved. Necessary supportive document shall have to be submitted as proof. If the Contractor fails to provide the safety items as mentioned above to the working personnel, the Contractor may apply to the Company (OIL) for providing the same. OIL will provide the safety items, if available. But in turn, OIL will recover the actual cost of the items by deducting from Contractor's Bill. . However, it will be the Contractor's sole responsibility to ensure that the persons engaged by him in the mines use the proper PPE while at work. All the safety gears mentioned above are to be provided to the working personnel before commencement of the work.

34.3.The Contractor shall prepare written Safe Operating Procedure (SOP) for the work to be carried out, including an assessment of risk, wherever possible and safe methods to deal with it/them. The SOP should clearly state the risk arising to men, machineries & material from the mining operation / operations to be done by the contractor and how it is to be managed.

34.4.The contractor shall provide a copy of the SOP to the person designated by the mine owner who shall be supervising the contractor's work.

34.5.Keep an up to date SOP and provide a copy of changes to a person designated by the Mine owner/Agent/Manager.

34.6.Contractor has to ensure that all work is carried out in accordance with the Statute and SOP and for the purpose he may deploy adequate qualified and competent personnel for the purpose of carrying out the job in a safe manner. For work of a specified scope/nature, he should develop and provide to the mine owner a site specific code of practice in line .

34.7.All persons deployed by the contractor for working in a mine must undergo Mines Vocational Training, initial medical examination, PME. They should be issued cards stating the name of the contractor and the work and its validity period, indicating status of MVT, IME& PME.

34.8.The Contractor shall submit to DGMS returns indicating# name of his firm, Registration number, Name and Address of person heading the firm, Nature of work, type of deployment of work persons, Number of work person deployed, how many work persons hold VT certificate, how many work persons undergone IME and type of medical coverage given to the work person.

34.9.The return shall be submitted quarterly (by 10th of April, July, October & January) for Contracts of more than one year. However, for contracts of less than one year, returns shall be submitted monthly.

34.10.It will be entirely the responsibility of the Contractor/his Supervisor/representative to ensure strict adherence to all HSE measures and statutory rules during operation in OIL's installations and safety of workers engaged by him. The crew members will not refuse to follow any instruction given by company's Installation Manager / Safety Officer / Engineer / Official / Supervisor/Junior Engineer for safe operation.

34.11.Any compensation arising out of the job carried out by the Contractor whether related to pollution, Safety or Health will be paid by the contractor only.
34.12.Any compensation arising due to accident of the Contractor's personnel while carrying out the job, will be payable by the contractor.
34.13.The contractor shall have to report all incidents including near miss to Installation Manager / departmental representative of the concerned department of OIL.
34.14.The contractor has to keep a register of the persons employed by him/her. The contractor's supervisor shall take and maintain attendance of his men every day for the work, punctually.
34.15.If the company arranges any safety class / training for the working personnel at site (company employee, contractor worker, etc) the contractor will not have any objection to any such training.
34.16.The health check up of contractor's personnel is to be done by the contractor in authorized Health Centers as per OIL's requirement & proof of such test(s) is to be submitted to OIL. The frequency of periodic medical examinations should be every five years for the employees below 45 years of age and every three years for employees of 45 years of age and above.
34.17.To arrange daily tool box meeting and regular site safety meetings and maintain records.
34.18.Records of daily attendance, accident report etc. are to be maintained in form B, E, J (as per Mines Rules 1955) by the contractor
34.19.A contractor employee must, while at work, take reasonable care for the health and safety of people who are at the employee's place of work and who may be affected by the employee's act or omissions at work.
34.20.A contractor employee must, while at work, cooperate with his or her employer or other persons so far as is necessary to enable compliance with any requirement under the act or the regulations that is imposed in the interest of health, safety and welfare of the employee or any other person.
34.21.Contractor's arrangements for health and safety management shall be consistent with those for the mine owner.
34.22.In case Contractor is found non-compliant of HSE laws as required company will have the right for directing the contractor to take action to comply with the requirements, and for further non-compliance, the contractor will be penalized prevailing relevant Acts/Rules/Regulations.
34.23.When there is a significant risk to health, environment or safety of a person or place arising because of a non-compliance of HSE Measures Company will have the right to direct the contractor to cease work until the non-compliance is corrected.
34.24.The contractor should prevent the frequent change of his contractual employees as far as practicable.
34.25.The contractor should frame a mutually agreed bridging document between OIL & the contractor with roles and responsibilities clearly defined.
34.26.For any HSE matters not specified in the contract document, the contractor will abide the relevant and prevailing Acts/rules/regulations/ pertaining to Health, Safety and Environment.

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<u>11 KV VACUUM CIRCUIT BREAKER SPARES (FOR EMERGENCY REPLACEMENT)</u> for all the substations

SL.No.	SPARE PARTS DESCRIPTION	QNTY.	UNIT	REMARKS
1	Spring Charging Motor Assembly of 11 KV VCB Type : Make :	1	No.	
2	Complete Mechanism Box Assembly of VCB Type : Make :	1	No.	
3	Closing Coil Voltage : Type : Make :	2	No.	
4	Shunt Trip Coil Voltage : Type : Make :	2	No.	
5	Closing Coil Assembly of VCB Make & Type :	1	No.	
6	Tripping Coil Assembly of VCB Make & Type :	1	No.	
7	Spring Charging Motor for VCB (Only Motor) Make & Type :	1	No.	
8	Spout Bushing (For 11 KV Panel) Make :	3	No.	
9	Trip Catch Assembly of VCB Make & Type :	1	No.	
10	Vacuum Interuptor of VCB Make & Type :	1	No.	

ANNEXURE- II

DATA SHEET of Vacuum Circuit Breaker :
(To be filled by the bidder)

A. 11KV VCB:

1. Name of manufacturer :
2. Manufacturer's
   Type No. :
   Model No. :
3. Panel type :
4. Degree of protection :
5. Fully Type tested : Yes/No.
6. Type tested at :
   (Specify lab/Institution where test was carried out)
7. Conforms to (Standards):
   a) IEC :
   b) BIS :
   c) Others :
8. Rated Insulation:
   a) Min. withstands voltage :
   b) Impulse voltage withstand (dry) :
9. General details of Panels
   a) Extensible : Yes/No.
   b) Compartmentalized : Yes/No
   c) No. of compartments :
   d) Names of the compartments (To be indicated)
      i)
      ii)
      iii)
      iv)
10. Material of internal partitions :
11. Thickness of Panel Sheet metal :
12. Busbars
   a) Busbar material:
   b) Busbar shape :
   c) Busbar size :
   d) Busbarinsulation :
   e) Busbar rating (Amps) :
   f) Busbar Spouts insulation material :
13. Busbar support insulation :
   Type & materials
14. Guaranteed maintenance free life of
   a) Panels :
   b) Circuit breaker:
15. Operational safety interlocks provided (To be indicated)
   a)
   b)
   c)
16. Earthing facilities provided for
   a) Bus-bars : Yes/No
   b) Circuit/Cable : Yes/No.

17. Circuit breaker cubicle with front plate/door pressure tested for internal arc faults. : Yes/No

18. Panel Wiring:

a) Voltage rating :
b) Insulation type &material :
c) Wire size :

19. ENVIRONMENTAL CONDITIONS

a) Maximum Ambient air temperature :
b) Minimum Ambient air temperature :
c) Maximum humidity at site (at 40 ° C) :
d) Surrounding atmospheric condition :

20. Confirmed insulation provided is suitable for above environmental conditions: Yes/No

B. VACUUM CIRCUIT BREAKER

(Information to be given IS: 13118: 1991 Clause 9.012)

1) Rated Values and Characteristics

a) Number of Poles :
b) Class : Indoor/Outdoor
Temperature :
Ice coating :
c) Rated voltage :
d) Rated insulation level :
e) Rated frequency :
f) Rated normal current :
g) Rated line charging : breaking current
h) Rated cable charging : breaking current
i) Rated small inductive : breaking current
j) Rated Short Circuit : breaking current
k) First pole to clear factor :
l) Rated Transient Recovery voltage : for terminal faults
m) Rated characteristics for short : line faults
n) Rated Short Circuit making current:
o) Rated Operating sequence :
p) Rated duration of short circuit :
q) Rated out of phase breaking current :
r) Rated opening time :
s) Rated break time. :
t) Rated closing time :
u) Frequency of operation :

2. Characteristics of the operating mechanism of CB and associated equipment in particular:

a) Method of operation :
b) Number and type of spares : auxiliary switches.
c) Rated supply voltage power and rated supply frequency :
d) Panel, Light space heater :
e) Closing devices - Normal voltage :

Min. voltage :
Max. voltage :
f) Shunt trip coil - Normal voltage :
Min. voltage :
Max. voltage :
g) Series trip coil- Normal voltage :
Min. voltage :
Max. voltage :
h) Indication supply :

3. Bushings - Material :

C. CURRENT TRANSFORMERS OF SWITCHGEAR PANEL:

1. Feeder panel DC/EF (Protection) CT's
i) Make :
ii) Type :
iii) Class :
iv) Ratio :
v) Burden (VA) :

2. Panel Metering CT's
i) Make :
ii) Type
iii) Class :
iv) Ratio :
v) Burden (VA) :

3: Panel Protection CT's
i) Make :
ii) Type :
iii) Class :
iv) Ratio :
v) No. of cores (Secondary):
vi) Burden (VA) :

D. VOLTAGE TRANSFORMERS OF SWITCHGEAR PANEL:

1. Incoming Panel VT :

i) Make :
ii) Type :
iii) No. of phases :
iv) Ratio :
v) Class :
vi) Burden (VA) :
vii) Location/Mounted on :
viii) Fixed/Withdrawal:
ix) Primary side protection:
x) Secondary side protection:

E. CONTROL CABLES:

a) Make :
b) Voltage Grade :
c) Insulation :
d) Conductor Material :
e) Size (Sq. mm. per core):

F. Multifunction meter:

a) Make :
b) Class :
c) Ratio :

H. SELECTOR SWITCHES:

a) Make :
b) Type :

I. CONTROL SWITCHES:
a) Make :
b) Type :

J.PROTECTIVE RELAY
a) Type of Relay :
b) Make of Relay :
c) Model :

Annexure-III

Acceptable Make with Specification:

A. For 415V,AC equipment:

Digital Multifunction meter, Current Transformer, LED, HRC fuses, Trip- neutral-close selector switch, Air Circuit Breaker, MCCB and MCCB with RCCB with CBCT are as follows:

1. Digital Multifunction Meter:

Make:
i. Schneider Power logic PM200 series, HPL -Socomec (Diris A41), Siemens PAC3200.

2. Digital Ammeter with inbuilt selector switch:

Make:
i. Schneider electric, HPL, LT, Siemens.

3. Current Transformer:

Make:
i. Kappa, Precise Electrical, Pragati Electrical, Siemens, L&T, Schneider electric

4. LED:

Make:
i. Binay, Tecnic, L&T, Siemens

5. HRC Fuses:

Make:
i. GE, Siemens, L&T, Schneider, Cooper Bussman

6. Trip-Neutal-Close Selector Switch:

Make:
i. Kaycee, Salzar, Schneider, L&T, Siemens

7. Air Circuit Breaker: Fault level 50 kA and above & up to 500V, AC. Draw-out type, electrical and manual operated having master-pact with O/C, S/C and Earth fault protection. Spring charging shall be motorized and manual also with 230V AC supply.

Make:
i. Schneider Electric (Merlin Gerin) of NW series with micro logic P/7.0H.
ii. Siemens India-WL Series with electronic trip unit ETU 45B/76B release.
iii. GE India- Entelli guard SL. ACB with electronic trip unit (GT-N)/(GT-H)

iv. ABB india- Emax series with electronic trip unit having PR 332/ PR 333 or PR122/ PR 123 release.
v. Legrand- model DMX3-N with electronic relase- micro processor based protection unit catalogue no. 028802, MP4 LSIg.
vi. L&T Air Ciruit Breaker, Type U- Power omega with matrix protection and control unit MTX4.5

8. MCCB: 415 volt, fault level 36kA and above with O/C, S/C and Earth fault protection (for distribution application with 4 sets of spreaders for cable connection)/ 25 kA for 100/160 Amps MCCB.
Make:

i. Schneider Electric (Merlin Gerin): model compact NSX with electronic trip unit with micro logic- 5.0/6.0/7.0A.
ii. ABB - Tmax Series, model-TP5 electronic release PR 332/PR 333 or PR 122/ PR 123 PLSIG.
iii. Siemens India Ltd: Sentron VL MCCB, model VL standard with electronic release and microprocessor based ETU.
iv. Legrand: Model- DPX with electronic release.
v. GE India: Record Plus, FG with electronic trip unit SMR2.

9. Earth leakage relay with CBCT,

Make:
i. Legrand
a. Adjustable sensitivity: 0.03 to 30 A.
b. Adjustable trip: 0, 0.15 to 5 seconds.
c. Auxiliary power supply voltage 230V, AC, 50 Hz
d. CBCT, Size 35mm dia (inner).

ii. Schneider Electric (Merlin Gerin): Vigirex Earth Leakage Relay:
a. RH 99, sensitivity 0.03 to 30A,
b.time delay 0 to 4.5 Second, supply voltage, 230V AC,
c. CBCT size: 35mm dia(inner)

iii. GE: .Type, RD6:
a. sensitivity 0.2 to 5A,
b.time delay 0.5 to 5 Second, and auxiliary power supply 110 to 400 V AC.
c. CBCT size: 35mm dia(Inner)

iv. Prokdv's: Digital earth leakage relay:

a. Model No. MPEL-01: sensitivity 300mA to 12 A, time delay 0 to 5 Sec, auxiliary power supply 85 to 275V AC/DC.
b. Model No.MPEL-02, sensitivity 30mA to 3.0A, time delay 0 to 5 Sec, auxiliary power supply 85 to 275V AC/DC, , CBCT Size: 35mm diameter (inner).

v. General Industrial and Control, Model-17G715GF2- marketing by L&T CBCT size: 35mm diameter (Inner)

10. Stainless steel single compression cable gland:

11: sweating socket:

Make
i. Dowell
ii. 3M

12. 28 watt T5 tube light fitting/ 400watt integral type metal halide fittings:

Make
i. Phillips/ GE/ Crompton greaves/ Bajaj/Havells

13. Modular switches/ socket:

Make:
i. Legrand/ Crab tree/L&T

14. 1.1 KV grade XLPE/PVC cable :

Make:
i. Polycab/ Nicco/ Crystal/ RPG/NECAB/Prestige

15. Auxiliary contactor:

Make:
i. Siemens/ ABB/ Schneider electric/

16. MCB:

Make:
i. Siemens/ ABB/ Schneider electric

B. 11KV, AC HT equipment:

1. HT Current transformer-

Make:
i. Kappa/Precise Electricals/ Intrans Electro Components Pvt Ltd/Pragati Electricals/Same as the maker of the VCB.

2. Voltage transformer -

Make:
i. Kappa/Precise Electricals/Intrans Electro Components Pvt Ltd/Pragati Electricals/Same as the maker of the VCB.

3. Make of battery:

Make:
i. Exide/Rocket/Amco/Amaraja(Plante type)

4. Make battery charger:

Make:
i. Exide/Ratan Shaw/ HBL/Emerson

5. Directional type Numerical protection relay:

Make:
Siemens(Type Siprotec 7SJ80 & 7SD80)/SEL(Type SEL-751&SEL-311)/Areva T&D India Ltd(Schneider Group,type Micom-P14D & P-542)/Merlin-GErin (Schneider Group,typeSepam Series S-84)/EASUN

6. Non directional type Numerical protection relay

Make:
Siemens(Type Siprotec 7SD80)/SEL(Type SEL-751)/Areva T&D India Ltd(Schneider Group,type Micom-p14N)/Merlin-GErin(Schneider Group, type Sepam Series S-84)/ EASUN

7. 11KV,Vaccuam circuit breaker make:

Make:
Siemens/ ABB/ Schneider/ Crompton greaves

8. 11KV Interrupter :

Make:
Siemens/ ABB/ Schneider/ Crompton greaves

9. 11KV XLPE cable:

Make:
Nicco/ Crystal/ Polycab/ RPG

10. Cable termination kit:

Make:
Raychem RPG/ Xicon

Dry type Transformer :

Make:
Voltamp/ ABB/Raychem RPG/PETE

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ANNEXURE-IV

TECHNICAL DATA SHEET FOR TRANSFORMER

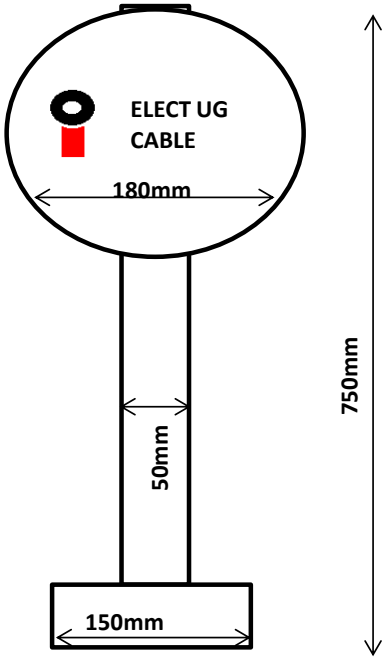
(To be filled in by the Bidder)

Sr. No.	T ECHNICAL PARTICULARS	SPECIFICATIONS
1	Type of Transformer	Cast Resin Dry Type
2	Service	
3	KVA Rating (continuously rated)	
4	Duty	
5	Rated Voltage	
	(a) HV (Volts)	
	(b) LV(VOLTS)	
6	Rated Frequency	
7	No. of Phases	
8	Type of Cooling	
9	Winding Connection	
10	Tappings	
	(a) Range	
	(b) No. of steps	
	(c) In steps of	
	(d) Tapping provided on HV side	
11	Tap changer type	
12	Vector Group	
13	Reference ambient temperature	
14	Temperature rise winding	
15	Class of Insulation	
16	% Impedance	
1 7	Physical Dimensions	
	(a) Length (in mm)	
	(b) Width (in mm)	
	(c) Height (in mm)	
18	Approximate weight	
	(a) Core and Windings (Kgs)	
	(b) Total Weight (Kgs)	
19	Iron losses at normal voltage ratio	
20	Copper losses at normal voltage ratio at full load	
21	Efficiency at unity power factor	
	(a) Full load	
	(b) 75% load	
	(c) 50% load	
22	Regulation	
	(a)at unity power	
	(b) at 0.8 power factor	
23	Reference standards	
24	Method of Earthing	
25	Fittings and Accessories	
	(a) Off circuit tap links	

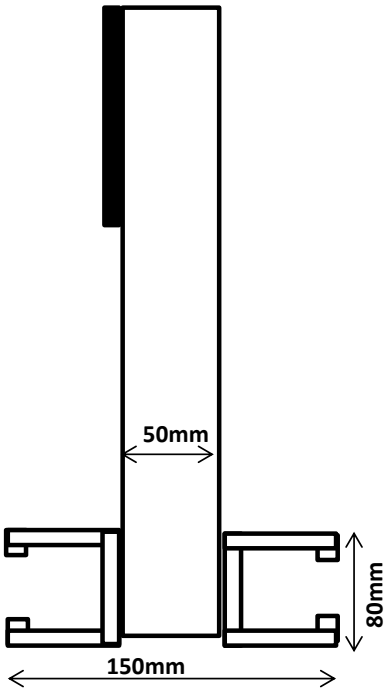
	(b) Earthing terminals	
	(c) Rating and Diagram Plate	
	(d) Lifting Lugs for Complete Transformer	
	(e) Cover Lifting Lugs	
	(f) Bidirectional Rollers	
	(g) Digital Temperature Scanner	
26	Transformer Type Tested	

Sketch for Cable Route Marker

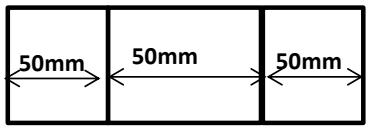
Annexure-V



Front View



SideView



TopView

Item description: Marker shall consist of the following components:

a) Round FRP board, minimum dia 180 mm, minimum thickness 5 mm, with the warning letters "ELECT U/G CABLE" and OIL logo embossed on the same;

b) Square FRP tube, minimum 750 mm long, square cross section, minimum 50 x 50 mm size with minimum 5 mm wall thickness. One end of the tube shall be fixed to the FRP board bearing the warning with SS fasteners and sealed rivets and the other end shall be fitted with two angle pieces, minimum 50x50x5 mm size, minimum 150 mm long. Angles shall also be fixed to the tube with SS fasteners and sealed rivets. Top and bottom open ends of the tube shall be sealed with FRP material to prevent entry of water.

Material: FRP Components should be manufactured through automatic pultrusion process and assembled with SS-304 fasteners and aluminum rivets. FRP material shall be Resin System, Fire Retardant, Corrosion Resistant & UV Stabilized for longevity of the material. Glass Fibre Content shall be within 55% to 60%.

Material shall be manufactured as per the following standards:

a. Unsaturated Polyester Resin Systems for low pressure Fibre Reinforced Plastics- Specification: Tested as per IS 6746-1994

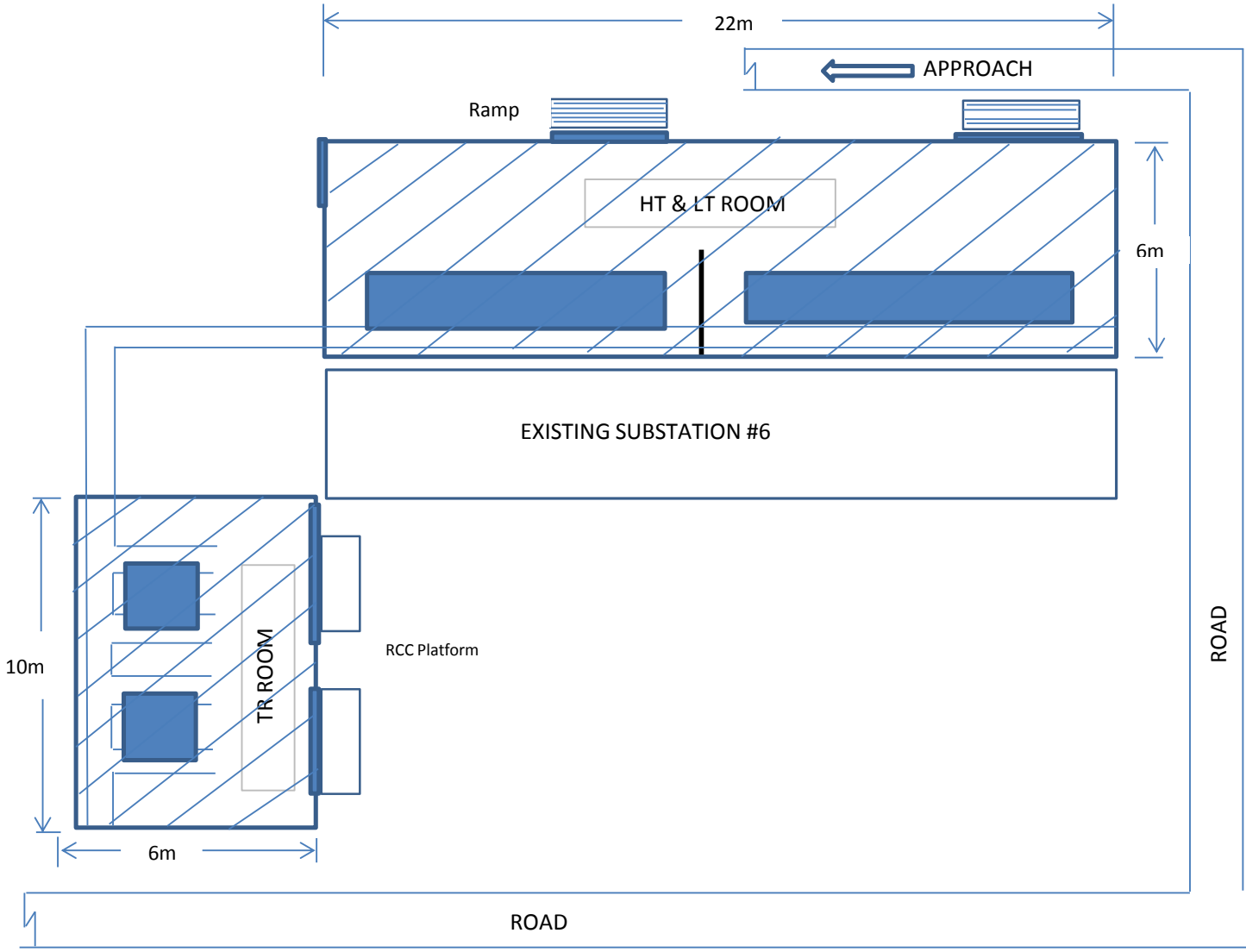
b. Flame Retardant properties/ Low flammability as per IS 6746 Appendix K/UL 94

c. Impact Strength as per ASTM-D-256 IZod, minimum 25 ft - lbs

d. Tensile Strength (break point) as per ASTM-D-638, minimum 30,000 psi

e. Flexural Strength (break point) as per ASTM-D-790, minimum 30,000 psi

LAYOUT OF SUBSTATION # 6



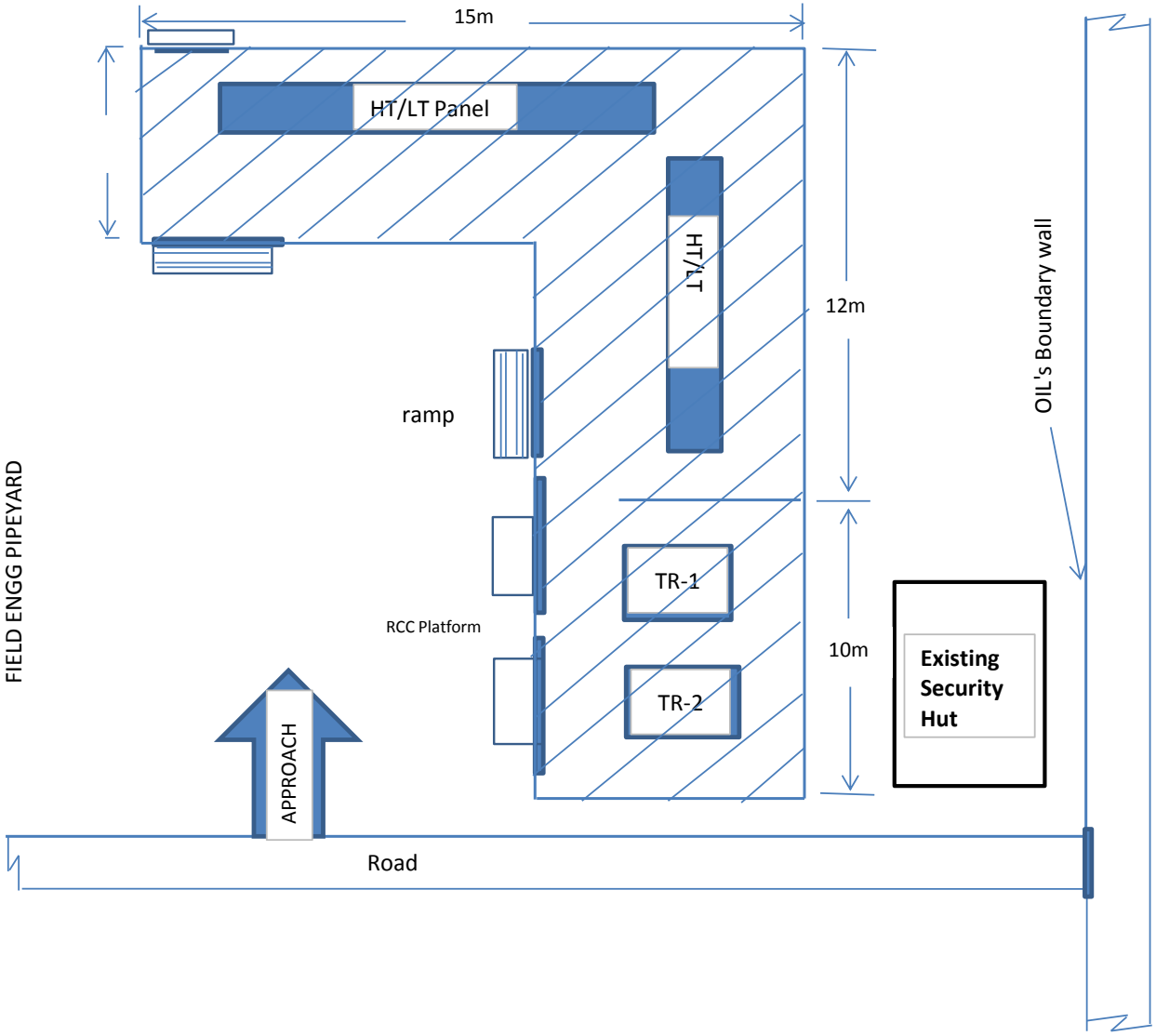
NOTE:

The size of RCC substation building is as per Panel size provided that there should be sufficient clearance as per safety norms from building wall & ceiling.

1. Floor to Ceiling height: 3.8 m (min.)
2. Floor level: As per NIT Spec
3. Cable Trench: As per NIT spec
4. Cable trench cover: FRP as per NIT spec.
5. Door: As per NIT spec
6. Ventilator:As per NIT spec
7. Ramp: As per NIT spec
8. RCC platform: as per NIT spec
9. Substation area development as per NIT spec.

Safety Clearance:
1. Panel Backside to wall: 1.25m
2. Panel Side to wall: 1m (min.)
3. Panel to Panel : 1.25 (min.)
4. Transformer to transformer: 1.25m (min)
5. Transformer to Wall: 1.25m (min)

LAYOUT OF SWITCH ROOM #2



NOTE:
The size of RCC substation building is as per Panel size provided that there should be sufficient clearance as per safety norms from building wall & ceiling.

1. Floor to Ceiling height: 3.8 m (min.)
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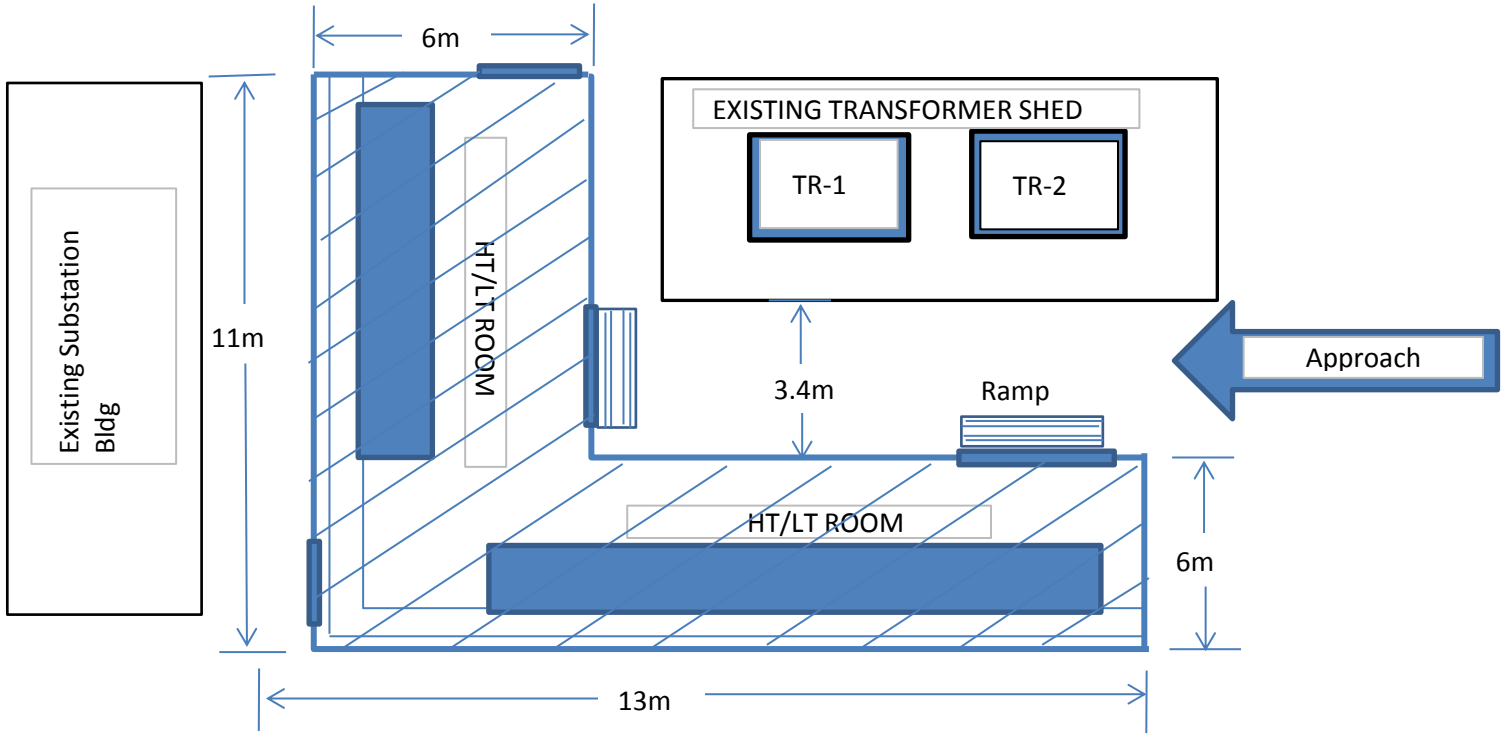
5. Door: As per NIT spec
6. Ventilator:As per NIT spec
7. Ramp: As per NIT spec
8. RCC platform: as per NIT spec
9. Substation area development as per NIT spec.

Safety Clearance:
1. Panel Backside to wall: 1.25m
2. Panel Side to wall: 1m (min.)
3. Panel to Panel : 1.25 (min.)
4. Transformer to transformer: 1.25m (min)
5. Transformer to Wall: 1.25m (min)

LAYOUT OF SUBSTATION # G



NOTE:

The size of RCC substation building is as per Panel size provided that there should be sufficient clearance as per safety norms from building wall & ceiling.

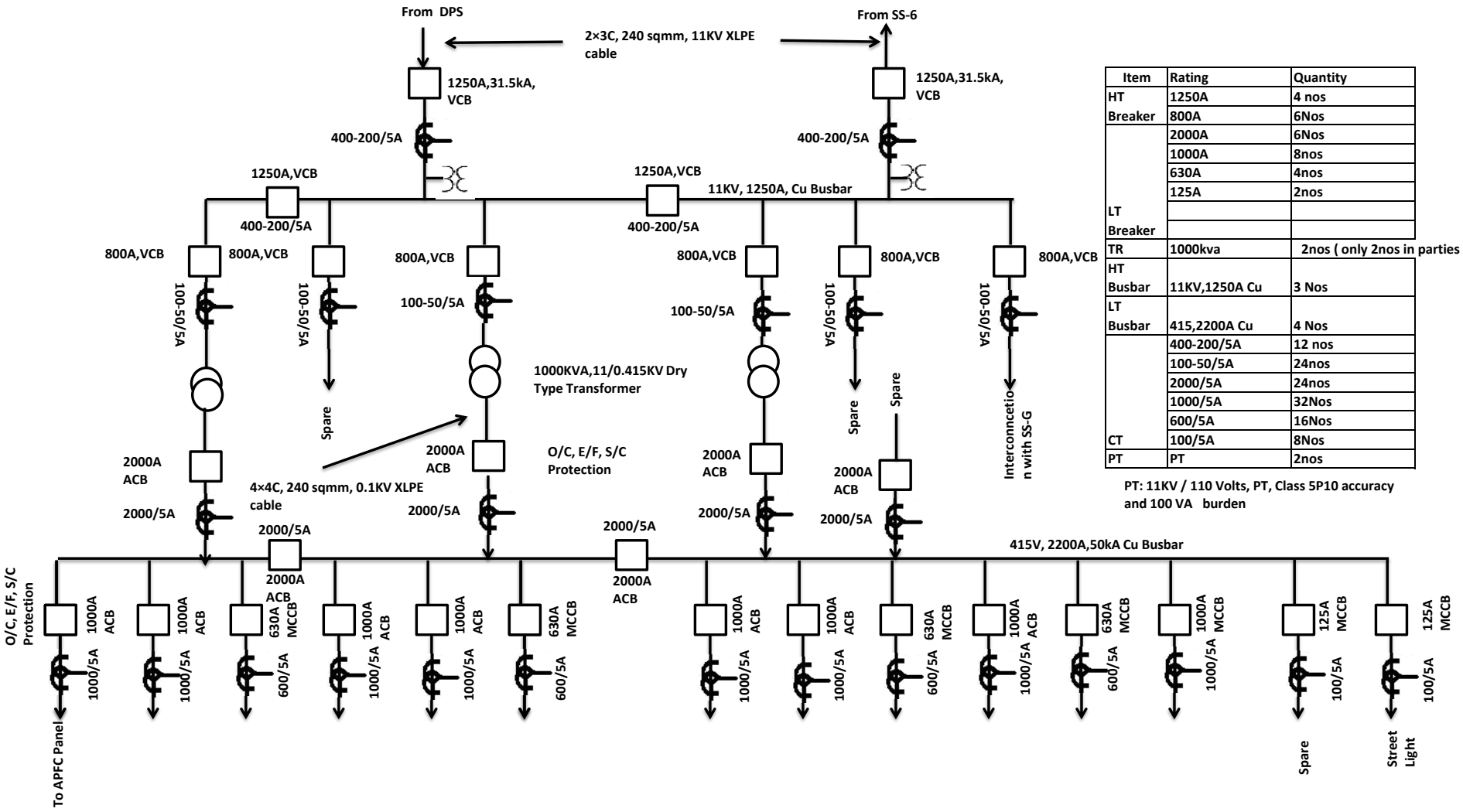
1. Floor to Ceiling height: 3.8 m (min.)
2. Floor level: As per NIT Spec
3. Cable Trench: As per NIT spec
4. Cable trench cover: FRP as per NIT spec
5. Door: As per NIT spec
6. Ventilator:As per NIT spec
7. Ramp: As per NIT spec
8. RCC platform: as per NIT spec
9. Substation area development as per NIT spec.

NOTE:

Safety Clearance:

1. Panel Backside to wall: 1.25m
2. Panel Side to wall: 1m (min.)
3. Panel to Panel : 1.25 (min.)
4. Transformer to transformer: 1.25m (min)
5. Transformer to Wall: 1.25m (min)

11KV/415 V SUBSTATION-6



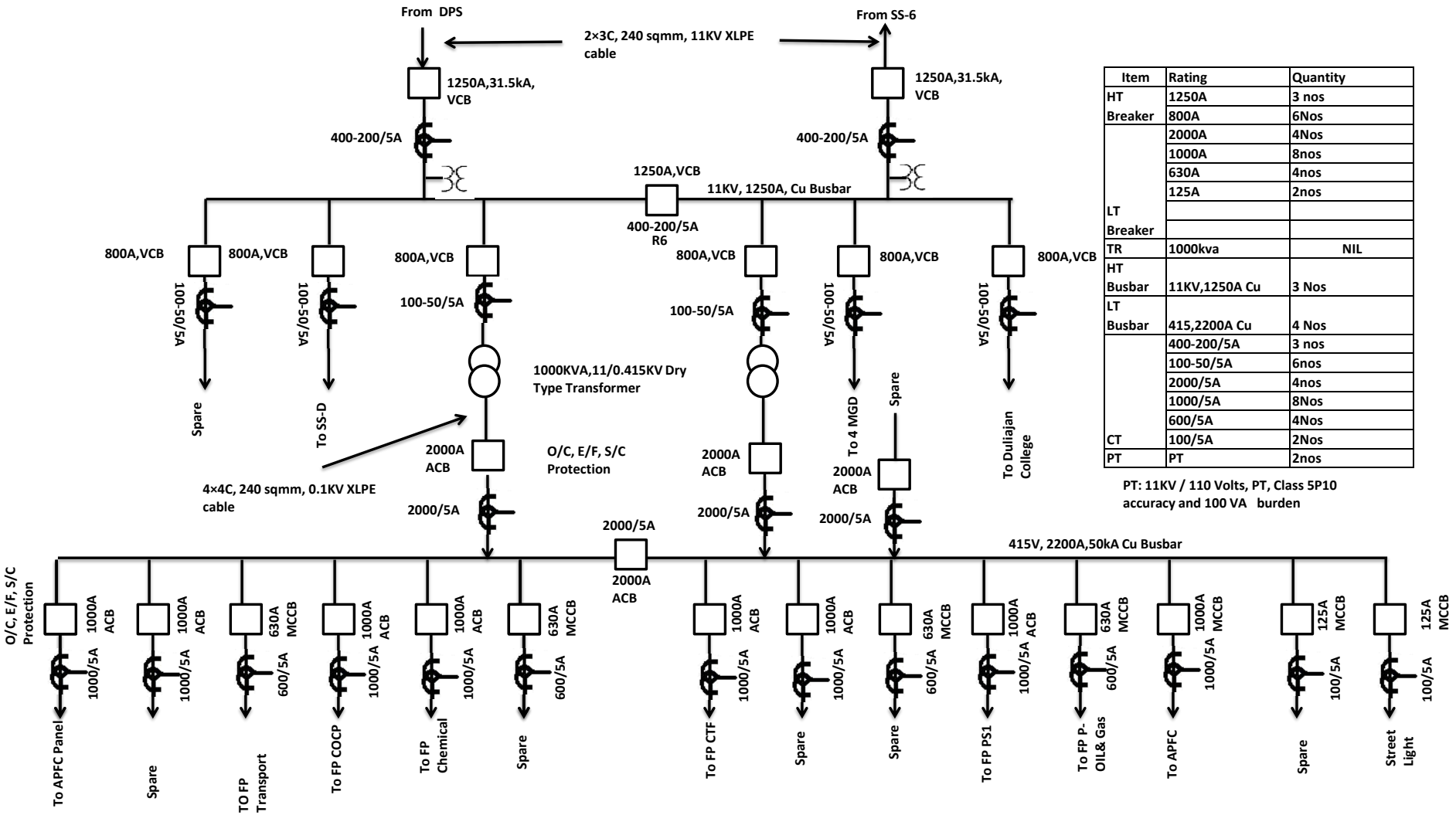
Item	Rating	Quantity
HT Breaker	1250A	4 nos
	800A	6Nos
	2000A	6Nos
	1000A	8nos
	630A	4nos
	125A	2nos
LT Breaker		
TR	1000kva	2nos (only 2nos in parties scope
HT Busbar	11KV,1250A Cu	3 Nos
LT Busbar	415,2200A Cu	4 Nos
	400-200/5A	12 nos
	100-50/5A	24nos
	2000/5A	24nos
	1000/5A	32Nos
	600/5A	16Nos
CT	100/5A	8Nos
PT	PT	2nos

PT: 11KV / 110 Volts, PT, Class 5P10 accuracy and 100 VA burden

Note: Single line diagram is indicative diagram, party has to furnish the single line diagram along with bid considering SOQ

11KV/415 V SUBSTATION-6	
Drawn by	S.Kakati
checked by	M.Tangu

11KV/415 V SUBSTATION-G



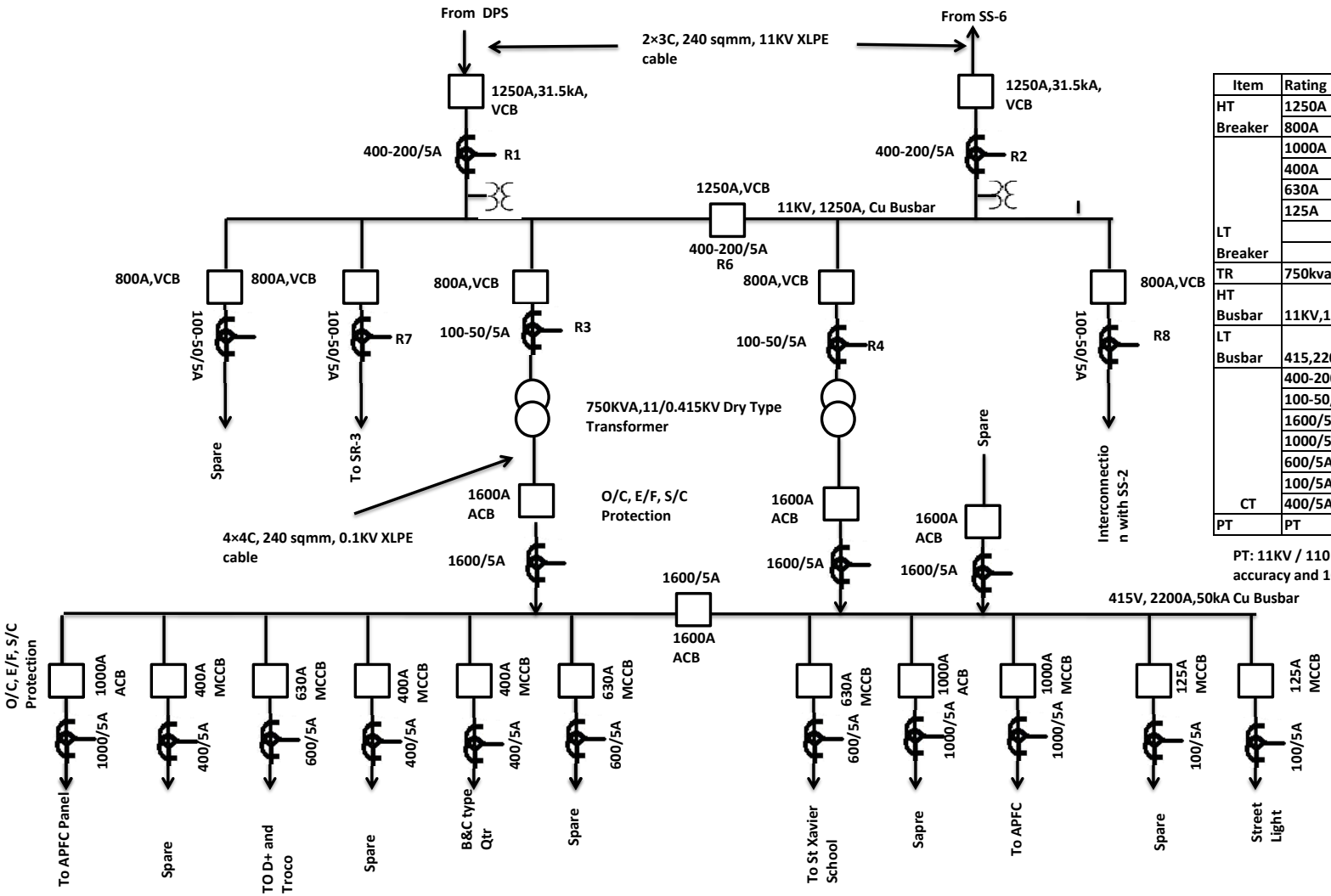
Item	Rating	Quantity
HT Breaker	1250A	3 nos
	800A	6Nos
	2000A	4Nos
	1000A	8nos
	630A	4nos
	125A	2nos
LT Breaker		
TR	1000kva	NIL
HT Busbar	11KV,1250A Cu	3 Nos
LT Busbar	415,2200A Cu	4 Nos
	400-200/5A	3 nos
	100-50/5A	6nos
	2000/5A	4nos
	1000/5A	8Nos
	600/5A	4Nos
CT	100/5A	2Nos
PT	PT	2nos

PT: 11KV / 110 Volts, PT, Class 5P10 accuracy and 100 VA burden

Note: Single line diagram is indicative diagram, party has to furnish the single line diagram along with bid considering SOQ

11KV/415 V SUBSTATION-G	
Drawn by	S.Kakati
checked by	M.Tangu

11KV/415 V Swicth Room-2



Item	Rating	Quantity
HT Breaker	1250A	3 nos
	800A	5Nos
	1000A	3Nos
	400A	3nos
	630A	3nos
	125A	2nos
LT Breaker		
TR	750kva	2nos
HT Busbar	11KV,1250A Cu	3 Nos
LT Busbar	415,2200A Cu	4 Nos
CT	400-200/5A	12 nos
	100-50/5A	20nos
	1600/5A	16nos
	1000/5A	12Nos
	600/5A	12Nos
	100/5A	8Nos
	400/5A	12nos
PT	PT	2 nos

PT: 11KV / 110 Volts, PT, Class 5P10 accuracy and 100 VA burden

Note: Single line diagram is indicative diagram, party has to furnish the single line diagram along with bid considering SOQ

11KV/415 V Swicth Room-2	
Drawn by	S.Kakati
checked by	M.Tangu

OIL INDIA LIMITED
(A Govt. of India Enterprise)
Duliajan, Assam

Design, construction of substation building including supply and commissioning of Electrical equipments of 3 nos 11KV/415V substation at Duliajan on LSTK basis

Part-II Schedule of Work, Unit and Quantity-SOQ(Please do not quote any rate here)

Line Item	Description of Services	UOM	QUANTITY
	SUB STATION - 6		
10	Construction of Substation-6	AU	1
20	Supply of Electrical Equipments of Substation-6	AU	1
30	Installation & Commissioning of Substation-6	AU	1
	SUB STATION -G		
40	Construction of Substation-G	AU	1
50	Supply of Electrical Equipments of Substation-G	AU	1
60	Installation & Commissioning of Substation-G	AU	1
	SWITCH ROOM-2		
70	Construction of Switch Room-2	AU	1
80	Supply of Electrical Equipments of Switch Room-2	AU	1
90	Installation & Commissioning of Switch Room-2	AU	1
	Sub Total - ₹ (Sub Station -6+ Substation-G + Switch Room-2)		
	BUY BACK - ₹ (Old equipments of Sub Station - 6 and Substation-G)	LUMSUM	1
	GRAND TOTAL		

Note:

1.0 Rates to be quoted exclusive of Service Tax. Service Tax if applicable shall be, to the Company's account. However, Service Tax portion payable directly by the Service provider (if applicable) shall be reimbursed to the Contractor on the basis of the documentary evidence.

2.0 Bidder must include all liabilities including statutory liabilities in their quoted rates except Service Tax. Service Tax will be paid as applicable on the Service part.

3.0 Bidders are requested to go through the detail scope of the Job as noted in the SCC of the Bid document and as per the details provided in the Annexure- I (SOQ) against each Substation before quoting in the Price Bid. Civil layout drawing & Electrical SLD of each substation are also attached

4.0 To ascertain the inter-se ranking, comparison of the responsive bids shall be made on the basis of the Grand total amount quoted. The Grand total is obtained by deducting the Buy back figure from the Sub total figure as above.

******** End of SOQ*******

Annexure-I

SCHEDULE OF WORK :

Prices should be net inclusive of all taxes, duties & without any conditions:

SL No	Sub Header	**11KV Electrical substation No.- 6**	QTY	Unit
Sub Head-I (Equipments-HT Panel Board, Transformers & H.T. Cable, LT panel)				
1		Supplying, installation, testing & commissioning of indoor type floor mounted metal clad, 11KV, VCB panel with 10 No. VCBs, totally enclosed & fully interlocked, horizontal draw-out, horizontal isolation type breaker as per IS 13118, as amended up to date and additional specifications, single break, trip free mechanism, electrically charged and auto/manually closing breaker suitable for use on 11 KV, 3 Phase, 50Hz A.C. supply with short circuit fault level of 31.5KA or above, complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated copper bus bars of 1250.Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4 NO+4NC and equipped with following switchgears and accessories for incomer connections suitable for 2x 3x 240 sq. mm. XLPE 11KV cable (cable entry from bottom side) end termination with heat shrinkable jointing material etc. as required, having capacities as mentioned below	1	set
	A	(a) Incoming feeders – 2 Nos. 1250.Amp., 12KV, VCB, 31.5KA or above, 3 Sec		
		(b) 2 Nos. – 11KV / 110 Volts, PT, Class 5P10 accuracy and 100 VA burden with additional winding on secondary side of PT for directional earth fault protection. 1 No. Digital multifunction meter with RS 485 port in each incomer with in-built selector switch showing at glance voltage, current, frequency, power factor, KW, KWH and max demand, harmonic components, flush type, size 96x96mm. 3Nos. LED showing R, Y, & B voltage and 16 amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of PT, LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit		

		and also numerical relay etc. on each incomers feeders.		
		(c) 2Nos. – 1No. Microprocessor based directional, numerical relay with O/L, E/F and S/C protection for each incomer.		
		(d) 2 No. – Cast resin of dual core dual ratio 3 CTs, 400-200/5-5 A of 15VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection.		
	B	(a) Outgoing feeders –6Nos, 800A, 12KV, VCB, 31.5KA or above, 3 Sec		
		(b) 6Nos. – 1 No. Digital multifunction meter with RS 485 port in each outgoing feeder with in-built selector switch showing at glance voltage, current, frequency, power factor, KW,KWH and max demand, harmonic components, flush type, size 96x96mm, 3Nos. LED showing R, Y, & B voltage and 16 amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit and numerical relay etc. on each outgoing feeders.		
		(c) 6 No. –.1No. Microprocessor based non directional, numerical relay with O/L, E/F and S/C protection for each incomer.		
		(d) 6Nos. Cast resin of dual core dual ratio 3 CTs 100/ 50/5/5 A of 15VA burden and accuracy Class-1.0 for metering and class 5P10 for protection.		
	C	(a)Bus coupler -2No, 1250A, 12KV, VCB. 31.5KA or above, 3 Sec		
		(b) 3Nos. LED showing R, Y, & B voltage and 16 Amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit and numerical relay etc. on bus coupler feeder.		
		(c) 2 No. – Cast resin of dual core dual ratio 3 CTs, 400/200/5/5 A of 15VA, burden and accuracy Class – 0.5 for metering and class 5P10 for protection.		
		(d) 2 No. – 1No. Microprocessor based non directional, numerical relay with O/L, E/F and S/C protection for bus-coupler feeder with synchronising check facility.		
	d	Bus-bar- 3Nos. 1250A copper bus-bar		
		3Nos. 1250Amps, copper bus-bar is required. Bus bar shall be		

		rectangular in cross section and made from electrolytic grade electro tinned copper having 99.99% conductivity. Bus-bar current rating-1250Amp and fault rating- 31.5KA above. Heat shrinkable 3mm sleeve insulation of 11KV voltage grade should be provided on bus-bar, its risers & connections and shall be marked in different colour codes for identification of three different phases(R, Y, B). Bus-bar arrangement should be such that in future similar cubicles can be connected with this cubicle. Cast epoxy insulators supports for bus-bar & cable termination links designed to withstand full short circuit current at specified fault level for 3 seconds shall be provided.		
	e	Supply, installation, testing and commissioning of earthing trucks suitable for 11kV, 31.5 kA or above, 1250A/800A switchgear are as follows: (i)The separate earthing trucks shall be provided for bus-bar side earthing and feeder earthing purposes. (ii) The bus bar earthing trucks shall enter only into the incomer panels and feeder earthing trucks shall enter only into outgoing panels. Suitable mechanical interlock shall be provided for the same. (iii) The earthing trucks shall have built in provision, such that it shall not be possible to earth the live circuit on feeder or bus bar side. (iv) The earthing truck shall be of permissive advance contact type construction by virtue of which the' live-ness' on the feeder or the bus bar side shall be sensed by providing suitable 1 phase voltage transformer, preferably on the Y phase. The advance contact type arrangement shall be such that while insertion of the earthing truck into the respective cubical, shall facilitate the sensing of the voltage by the 1 phase, VT prior to earthing. (v) The further racking for final earth position shall be blocked by suitable solenoid interlock with audio visual alarm to avoid the earthing	1	set

		of the live bus bar or feeder side. (vi) The isolating contact fitted on the earthing truck and the current carrying part shall be suitable for 31.5 kA or above current carrying capacity for 3 sec. – 1 set		
2		Supplying, installation, testing & commissioning of sealed maintenance free (SMF) lead acid battery with charger required for supply of continuous 24 Volt DC output voltage for closing/ tripping/indication circuit of 10 nos. 12KV, VCB panel board. Battery with charger consists of 12 Nos. 2.0 Volts basic cell in modular design, maintenance free batteries of 200 AH each and charging unit of 20amps rating of rectifier with input voltage 200 to 250V AC, 50HZ, and output rated DC voltage, 24Volt, 20amps. Incomer of battery charger shall be40Amps double pole MCCB along with an digital Ammeter & Voltmeter required for showing output voltage and current with suitable rating of FRLS insulated copper conductor cable wiring. The above arrangement is to be fixed in self stackable MS trays with insulated shoe. The battery charger shall have float and boost charger facility from 2.23 to 2.25 VPC and 2.3 to 2.32 V PC respectively. -1no. This includes supply and laying of 3 core, 16sqmm , armoured, PVC insulated, PVC sheathed, aluminium conductor, 1.1KV grade cable to laid in pucca trench from LT panel to Battery charger panel – as per requirement	1	set
3		Supplying, Installation, testing and commissioning of 2nos. of cast resin dry type, 1000KVA, 11KV/415V, 3 Phase, 50Hz, Dyn11, indoor ANAN type, copper wound transformer with OFF load tap changing arrangement on HV side in steps of +/- 2.5% & -7.5%, having cable end boxes on HV side suitable for 1x 3x240.Sqmm XLPE, copper cable of 11KV grade on HT side and 4nos of 4core 240sqmm XLPE, 1.1KV, Al/CU cable on LV side complete with all accessories. Neutral of transformer shall be earthed with 2nos. minimum earth electrodes and transformer shall be mounted on suitable size of channel which is to be fixed by grouting 4nos. of bolts. The winding material should be high	1	set

		conductivity electrolytic grade copper. The insulation should be Cast Resin type, Class-F. Conductor should have thermally upgraded paper (Nomex) insulation reinforced with fibreglass. The coil assembly is to be impregnated & cast under vacuum with epoxy resin for achieving non-hygroscopic, acid & alkali resistant insulation. The complete winding should have smooth cylindrical finish after impregnation to ensure high mechanical strength. The thickness of resin should be uniform. The insulation should be self- extinguishing type. Winding temperature scanner connected with three nos. RTDs, one each for each LV winding, should be provided in a metallic enclosure that is mounted on the main enclosure. The scanner should provide indication, alarm & trip contacts. Winding temperature indicator should show maximum temperature attained. The RTDs should be properly wired up to the scanner terminals. Suitable hole with gland is required for control cable connecting scanner alarm/ trip contacts to HT Breaker.		
4		Supplying, installation, testing & commissioning of cubicle type LT panel suitable for 415V, 3 Phase, 4 Wire 50 Hz Ac supply system fabricated in compartmentalized design from CRCA sheet steel of 2mm thick for frame work with angle iron/ channel and covers, 3mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, TPN copper bus bars of hight conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 50KA for 1 Sec., bottom base channel of MS section not less than 100mmx 50mm x 5mm thick, fabrication shall be done in transportable sections, entire panel shall have a common GI earth bar of size 40mm x 5mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of copper bus bars and control wiring with2.5 sq. mm. PVC insulated copper conductor FRLS cable, cable alleys, cable gland plates. The incoming feeders with following switch gears :-	1	set
Incoming		4Nos **(**3Nos. Incomer + 1No**.** spare), 2000Amps each four pole horizontal draw-out type air circuit breaker of fault breaking capacity 50KA (Ics= Icu upto 433V manually operated, motorised / manual spring charge fitted with interlocked door, automatic safety shutters,		

		mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact, conforming to IS-1397- 2 1993 as amended up-to-date complete with following accessories for each complete with following accessories for each ACB. Each incomer shall consists of 4nos. cast resin type current transformer of 1600/ 5A with suitable rating of brought terminal for connecting 6nos. single core 240sqmm, copper conductor, 1.1KV grade, XLPE cable.		
	A	Independent manual/ motorised spring charging and closing mechanism- 1No. for each breaker		
	B	Microprocessor release (EMI & EMC certified) for over current, earth fault & short circuit protection- 1 set.		
	C	Digital multifunction meter , size 96 mmx96mm, flush pattern type showing at glance voltage , current, power factor, frequency, KW, KWH, harmonic components with inbuilt selector switch & back up HRC fuses/MCBs-1set for each incomer		
	E	3 Nos. Phase indication LED lamps with 2Amp back up HRC fuse, breaker 'ON', OFF, Trip indicating light with 2A HRC fuse, test terminal block set, fuses, circuits as pre-standard practice, and auxiliary contacts for positive interlocking of the breakers as required.		
	F	Shunt trip coil 220V A.C		
II) Bus Couplers :		2Nos, 2000 Amps horizontal four pole draw out type, air circuit breakers of fault breaking capacity 50 KA or above (Ics=Icu upto 433V)manually operated, with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact conforming to IS-13947- 2-1993 as amended up to date complete with following accessories for each ACB-		
	A	Independent manual and motorised spring charging and closing mechanism- I No.		
	B	Breaker 'ON, OFF, Trip' indicating light, 3nos. LED for phase indication with back up 2A HRC fuse test terminal block, fuses, circuits contactors for positive electrical interlocking of Breakers, etc. as required.- 1 set.		
III) Bus Bars :		TPN copper bus bars of minimum of 2200.Amps capacity with heat shrinkable coloured sleeves of 3mm thick and bus-bar support shall be DMC/SMC and bus bar cross section, size supports & their spacing etc. for withstanding fault level of 50KA or above for 1 Sec.		
IV) Interlocking		Electrical through advance contacts in MCCB/ ACB's (incomers & Bus couplers) and mechanical castle key interlocking should be provided to		

		ensure that only one supply is available at a time on each section of bus and to eliminate any possible of accidentally approaching two supplies at one bus section.		
Outgoing		(a) 8Nos, 1000Amp, 4 Pole ACB each, four pole horizontal draw-out type air circuit breaker of fault breaking capacity 50KA or above (Ics= Icu upto 433V) manually operated, motorised / manual spring charge fitted with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact, conforming to IS-1397- 2 1993 as amended up-to-date complete with following accessories for each complete with following accessories for each ACB. Each incomer shall consists of 4nos. cast resin type current transformer of 1000/ 5A with suitable rating of brought terminal for connecting 3nos. single core 240sqmm, copper conductor, 1.1KV grade, XLPE cable. Each breaker shall have microprocessor type release for o/c, s/c and earth fault protection		
	1	(B) CT's ratio -1000/5Amps,4Nos. for each breaker		
		(C) Digital multi function meter , size -96x96 mm with inbuilt selector switch and protective fuses for each breaker		
	2	(a) 4 Nos., 630.Amp, 4 Pole MCCB (Ics = Icu_ up to 433V) with fault level of 36KA with electronic type release for O/C, S/C and E/F protection. (b) 2nos., 125Amps, 4pole MCCB with fault level of 25KA with O/C, S/C & E/F protection with electronic timer and contactor , HRC fuses for street lighting feeders		
		(c) CT's of ratio-(a) 600/5Amps (b) 100/5Amps set (1 set of 4 Nos.)		
		(d) 3phase digital ammeter size - 96mmx96mm, with inbuilt selector switch for each MCCB		
TOTAL				
SUB HEAD-II CABLING				
1		Supplying and laying of Unearthed (UE), armoured, conductor XLPE power cable of 11KV grade confirming to IS 7098 (Part II) amended up to date as per the following size in kacha trench with 0.75cm width and 1.2mtrs depth with sand cushioning of 12cm in 2 layers and covered with first class bricks placed on width wise throughout the cable trench.		
		(a) 3x240Sqmm, Aluminium conductor cable -1000mtrs, required for interconnection of 11KV, G substation and from	1000	mtrs

	power house to substation 6. -1000mtrs		
	(b)Supply and laying of 1x 240Sqmm, (UE), 11KV, copper conductor, armoured cable will be laid in pucca trench inside the substation where trench shall be filled with sand. This cable shall be used from HT side transformer to HT panel - 60mtrs.	60	mtrs
2	Supply and laying 4core., 240sqmm, XLPE insulated, armoured, aluminium conductor, power cable of grade 1.1KV shall be laid by Excavation, sand cushioning & protective covering and refilling the trench 0.45mtrx 0.75mtr. This cable shall be used from 5nos. of outgoing feeders from substation to feeder pillars and interconnection of LT panel/ overhead lines as per requirement. -1000mtrs	1000	mtrs
3	Supply and laying 4core, 240sqmm. XLPE insulated, armoured, copper conductor, power cable of grade exceeding 1.1 KV. This cable shall be laid in pucca trench of inside the substation where sand shall be filled in the trench. This cable shall be used for connection of LT side of transformer to LT panel – 240mtrs.	240	mtrs
6	Laying of 1 No. Additional XLPE power cable of 1.1 KV grade of size exceeding 240Sqmm direct in ground in the same trench in one tier horizontal formation I/c excavation, sand cushioning & protective Covering and refilling the trench etc. as required.	As required	
8	Excavation of the trench in hard rock not exceeding 200Mtrs in length and 1.0 mtr depth and 1mtr width mtr getting out the excavated soil and disposal of excavated soil as directed within a reach of 100.mtrs.	100	mtrs
9	Supplying and making end termination with brass compression gland and Al. lugs for following size of PVC insulated and PVC sheathed/XLPE Al. Conductor cable of 1.1 KV grade as required.	As required	
10	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories I/c lugs suitable for following sizes of 3core XLPE AI. Conductor, armoured cable of 11KV grade as required for 240sqmm -9nos.	9	nos
11	Supplying and making indore cable end termination with heat shrinkable jointing kit complete with all accessories I/c ferrules suitable for the following size of 3 Core XLPE Al. Conductor, armoured cable of 11 KV grade as required.	7 nos	

12	Supplying of Sand and filling in the existing substation trench/Open masonry duct as required. 25 cubic mtsr	As required	
Electrification of substation Building	The wiring of substation building is required to be carried out by PVC insulated, PVC sheathed, armoured , copper conductor, fire retardant , low smoke, 1.1 KV grade cable for different sizes with all accessories as given below: (1) 3core, 2.5sqmm cable 250 mtrs (12 light points + 4 ex fan points + 2 extra point wiring) (2) 3core, 4sqmm cable -100mtrs (4 nos. 10/15 amps socket points wiring) (3) 4core, 4sqmm cable -25mtrs (3phase , 2nos 15 amp socket points wiring for relay testing) (4) 3core, 2.5sqmm cable -25 mtrs (2nos. emergency light points for 24DC power supply) (5) Supply and laying in pucca trench, 4core 16sqmm, PVC insulated , PVC sheathed, armoured, aluminium conductor, 1.1 KV grade cable from LT panel to 4pole,125 amps MCCB -25mtrs	1	set
	Supply and fixing of electrical fixture for electrification: (1)1x 28 watt T5 light fittings with electronic choke with accessories and wiring -12 nos. (2) 4pole,125amps MCCB with O/C, S/C & E/F protection with spreader -1no (3) 3phase 6 way MCB DB with 63 Amps RCBO as isolator and 10amps, 15Amps MCB, - 1set (4) Metallic/PVC frame ,3blade 300mm , 60watt Exhaust fan with shutter (5)3 Phase, Metallic socket box with 15Amps MCB with accessories - 2Nos. (6) 3Pin, single phase, 10/15 amps metallic socket box with all accessories- 4nos. (7) 2Nos. 6watt , 24 V DC LED light fitting (8) 20Nos, 5amps Modular switches with Fixing plate with accessories. (9) 400watt, 4nos. , Integral type, Metal halide light fitting, IP55, with all accessories including bracket with T type lamps for fixing on four wall of substation building for area illumination.	1	set

TOTAL			
Sub Head – III : Earthing			
1	Supply and burying a heavy duty, Chemical electrode with suitable chemical for soil treatment GI pipe, 3mtrs x 80mm, as an earth electrode, with accessories and providing masonry enclosure size 600mmx 600mm x600mm with RCC cover plate having 2nos. metallic hooks for lifting cover and funnel type arrangement for watering pipe etc. complete as required – Minimum no.-10Nos.. The no. of earth electrodes may be more. The value of earth resistance to be maintained for each substation when connected all the earth electrodes together as per IEC	1	set
2	Extra chemical for filling soil earthing electrode as required.	As required	
3	Supplying and laying 100 mm dia GI pipe medium class ISI marked round from earth electrode to building entry as required.	As required	
4	Providing and fixing earth bus of 50mm x 5mm G.I strip on surface for connection etc. As required-50mtrs	50	mtrs
5	Providing and laying of single core 120sqmm, PVC insulated, aluminium conductor for connection from GI pipe from earth electrode and bus-bar as required. 200mtrs	200	mtrs
6	Providing and laying of single core 120sqmm, PVC insulated, aluminium conductor as earth wire to be used along with power cable as continuity conductor – 2000mtrs	2000	mtrs
TOTAL			
Sub Head – IV : Safety Equipment			
1	Providing & fixing danger plates made of mild steel at least 2mm thick & vitreous enamelled white on both sides & with inscriptions in signal red colour on front side as read in triangular languages		
	a. High Voltage- size 250mm x 200mm -10nos	10	nos
	b. Medium Voltage – size 200mm x 150mm -10nos	10	nos
2	Providing and fixing carbon dioxide (CO_2) type fire extinguishers confirming to IS 2878-1976 and cylinders fully charged of following capacity. (a) 4.5KG- 2nos.	2	nos
3	Supply and fixing of foam fire extinguishers, Portable type 9 lit capacities hanged on wall with bracket complete as required. -2nos	2	nos

4	Supply and fixing safety instruction chart in word duly framed with 5mm thick glass as required. (approx. Front area 1.20 sq. mt.) -2nos	2	nos
5	Providing of set of 4 Nos. 9.5 Litre capacity GI bucket painted in post office red colour with prior coat of red oxide paint and written with white paint 'FIRE' and mounted on MS angle iron frame with bracket of appropriate size & capacity I/c filling sand etc.	1	set
6	Providing First Aid Box as approved by St. John Ambulance Brigade/Indian Red Cross conforming to IS 2217-1963. -1no	1	nos
7	Supply & fixing shock treatment chart duly mounted on a wooden frame with 5mm thick glass as reqd. (approximate front area 1.20sq. metre) -2nos	2	nos
8	Providing of insulating mate mat 1 mtr. Wide and 3mm thick to withstand 15KV dielectric strength as per IS 15652/2006 - 8mtrs	8	nos
9	Providing of insulating mat 1 mtr. Wide and 2mm thick to withstand 3.3 KV dielectric strength as per IS 15652/2006 -8mtrs	8	nos
Furniture for substation	Supply of Godrej makes furniture for substation. It consists of 1no. steel table, Model T101 & 3 nos. steel chairs,, model CH 7B -1set & 1 no Steel almirah with 4 adjustable shelf, Mode Storewell,	1	set
TOTAL			
Sub head-VII. Civil part for substation building and area development of substation:			
1	Construct a RCC building, for electrical substation, including supply of all materials except cement. The size of RCC substation building is as per Panel size provided that there should be sufficient clearance as per safety norms from building wall Height 3.8mtrs. The cable trench for LT panel, HT panel for 2nos. of transformers along with foundation of 2nos.of transformers is also part of the substation building. The construction work shall be carried out by the bidder as per approved drawing and technical specification given in civil part. -1No	1	No.
2	For area development of substation building is as per technical specification given in civil part-1	1	No.
Total			

For Buy back of Electrical equipment like Transformer, HT panel, LT panel, Bidder has to quote against the items are given below: The total amount quoted for buy back of equipment shall be deducted from total amount quoted for schedule of works and shall be treated as total amount for schedule of work.

1	3.3KV/415 V, AC 400KVA Delta/ star, vector group-Dy11, transformer, type –oil cooled, copper winding with all accessories, make – Crompton Parkinson, year of manufacture-1962, weight of transformer-2800KG,	1	No
2	415 V, AC, LT switch board comprises of the following: (a) Incomer 500A, CFS-1Nos (b) 300Amp Fuse switches units 1 no. (c) 150Amp Fuse switches units 3 nos (d) 60Amp Fuse switches units 1 nos	1	set
	Total of buy back = Total (i) + (ii)		

Gross schedule of works = Total of schedule of works – Total of buyback of items

Annexure-I

SCHEDULE OF WORK :

Prices should be net inclusive of all taxes, duties & without any conditions :

SL No	Sub Header	**11KV Electrical substation No.- G**	QTY	UNIT
Sub Head-I (Equipments-HT Panel Board, Transformers & H.T. Cable, LT panel)				
1		Supplying, installation, testing & commissioning of indoor type floor mounted metal clad, 11KV, VCB panel with 9 No. VCBs, totally enclosed & fully interlocked, horizontal draw-out, horizontal isolation type breaker as per IS 13118, as amended up to date and additional specifications, single break, trip free mechanism, electrically charged and auto/manually closing breaker suitable for use on 11 KV, 3 Phase, 50Hz A.C. supply with short circuit fault level of 31.5KA or above, complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated copper bus bars of 1250.Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4 NO+4NC and equipped with following switchgears and accessories for incomer connections suitable for 2x 3x 240 sq. mm. XLPE 11KV cable (cable entry from bottom side) end termination with heat shrinkable jointing material etc. as required, having capacities as mentioned below,	1	set
	A	(a) Incoming feeders – 2 Nos. 1250.Amp., 12KV, VCB, 31.5KA or above, 3 Sec		
		(b) 2 Nos. – 11KV / 110 Volts, PT, Class 5P10 accuracy and 100 VA burden with additional winding on secondary of PT for directional earth fault protection. 1 No. Digital multifunction meter with RS 485 port in each incomer with in-built selector switch showing at glance voltage, current, frequency, power factor, KW, KWH and max demand, harmonic components, flush type, size 96x96mm. 3Nos. LED showing R, Y, & B voltage and 16 amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of PT, LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit and also numerical relay etc. on each incomers feeders.		

		(c) 2Nos. – 1No. Microprocessor based directional, numerical relay with O/L, E/F and S/C protection for each incomer.		
		(d) 2 No. – Cast resin of dual core dual ratio 3 CTs, 400/200/5/5 A of 15VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection.		
	B	(a) Outgoing feeders –6Nos, 800A, 12KV, VCB, 31.5KA or above, 3 Sec		
		(b) 6Nos. – 1 No. Digital multifunction meter with RS 485 port in each outgoing feeder with in-built selector switch showing at glance voltage, current, frequency, power factor, KW,KWH and max demand, harmonic components, flush type, size 96x96mm, 3Nos. LED showing R, Y, & B voltage and 16 amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit and numerical relay etc. on each outgoing feeders.		
		(c) 6 No. –.1No. Microprocessor based non directional, numerical relay with O/L, E/F and S/C protection for each incomer.		
		(d) 6Nos. Cast resin of dual core dual ratio 3 CTs 100/ 50/5/5 A of 15VA burden and accuracy Class-1.0 for metering and class 5P10 for protection.		
	C	(a)Bus coupler -1No, 1250A, 12KV, VCB. 31.5KA or above, 3 Sec		
		(b) 3Nos. LED showing R, Y, & B voltage and 16 Amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit and numerical relay etc. on bus coupler feeder.		
		(c) 1 No. – Cast resin of dual core dual ratio 3 CTs, 400/200/5/5 A of 15VA, burden and accuracy Class – 0.5 for metering and class 5P10 for protection.		
		(d) 1 No. – 1No. Microprocessor based non directional, numerical relay with O/L, E/F and S/C protection for bus-coupler feeder with synchronising check facility.		
	d	Bus-bar- 3Nos. 1250A copper bus-bar		
		3Nos. 1250Amps, copper bus-bar is required. Bus bar shall be rectangular in cross section and made from electrolytic grade electro		

		tinned copper having 99.99% conductivity. Bus-bar current rating-1250Amp and fault rating- 31.5KA or above. Heat shrinkable 3mm sleeve insulation of 11KV voltage grade should be provided on bus-bar, its risers & connections and shall be marked in different colour codes for identification of three different phases(R, Y, B). Bus-bar arrangement should be such that in future similar cubicles can be connected with this cubicle. Cast epoxy insulators supports for bus-bar & cable termination links designed to withstand full short circuit current at specified fault level for 3 seconds shall be provided.		
	e	Supply, installation, testing and commissioning of earthing trucks suitable for 11kV, 31.5 kA, 1250A/800A switchgear are as follows: (i)The separate earthing trucks shall be provided for bus-bar side earthing and feeder earthing purposes. (ii) The bus bar earthing trucks shall enter only into the incomer panels and feeder earthing trucks shall enter only into outgoing panels. Suitable mechanical interlock shall be provided for the same. (iii) The earthing trucks shall have built in provision, such that it shall not be possible to earth the live circuit on feeder or bus bar side. (iv) The earthing truck shall be of permissive advance contact type construction by virtue of which the' live-ness' on the feeder or the bus bar side shall be sensed by providing suitable 1 phase voltage transformer, preferably on the Y phase. The advance contact type arrangement shall be such that while insertion of the earthing truck into the respective cubical, shall facilitate the sensing of the voltage by the 1 phase, VT prior to earthing. (v) The further racking for final earth position shall be blocked by suitable solenoid interlock with audio visual alarm to avoid the earthing of the live bus bar or feeder side.	1	set

		(vi) The isolating contact fitted on the earthing truck and the current carrying part shall be suitable for 31.5 kA or above current carrying capacity for 3 sec. – 1 set		
2		Supplying, installation, testing & commissioning of sealed maintenance free (SMF) lead acid battery with charger required for supply of continuous 24 Volt DC output voltage for closing/ tripping/indication circuit of 9 nos. 12KV, VCB panel board. Battery with charger consists of 12 Nos. 2.0 Volts basic cell in modular design, maintenance free batteries of 200 AH each and charging unit of 20amps rating of rectifier with input voltage 200 to 250V AC, 50HZ, and output rated DC voltage, 24Volt, 20amps. Incomer of battery charger shall be40Amps double pole MCCB along with an digital Ammeter & Voltmeter required for showing output voltage and current with suitable rating of FRLS insulated copper conductor cable wiring. The above arrangement is to be fixed in self stackable MS trays with insulated shoe. The battery charger shall have float and boost charger facility from 2.23 to 2.25 VPC and 2.3 to 2.32 V PC respectively. -1no. This includes supply and laying of 3 core, 16sqmm , armoured, PVC insulated, PVC sheathed, aluminium conductor, 1.1KV grade cable to laid in pucca trench from LT panel to Battery charger panel – as per requirement	1	set
3		Supplying, installation, testing & commissioning of cubicle type LT panel suitable for 415V, 3 Phase, 4 Wire 50 Hz Ac supply system fabricated in compartmentalized design from CRCA sheet steel of 2mm thick for frame work with angle iron/ channel and covers, 3mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, TPN copper bus bars of hight conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 50KA for 1 Sec., bottom base channel of MS section not less than 100mmx 50mm x 5mm thick, fabrication shall be done in transportable sections, entire panel shall have a common GI earth bar of size 40mm x 5mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of copper bus bars and control	1	set

		wiring with2.5 sq. mm. PVC insulated copper conductor FRLS cable, cable alleys, cable gland plates. The incomer feeder with following switch gears :-		
Incoming		3Nos **(**2Nos. Incomer + 1No**.** spare), 2000 Amps each four pole horizontal draw-out type air circuit breaker of fault breaking capacity 50KA (Ics= Icu upto 433V manually operated, motorised / manual spring charge fitted with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact, conforming to IS-1397- 2 1993 as amended up-to-date complete with following accessories for each complete with following accessories for each ACB. Each incomer shall consists of 4nos. cast resin type current transformer of 1600/ 5A with suitable rating of brought terminal for connecting 6nos. single core 240sqmm, copper conductor, 1.1KV grade, XLPE cable.		
	A	Independent manual/ motorised spring charging and closing mechanism- 1No. for each breaker		
	B	Microprocessor release (EMI & EMC certified) for over current, earth fault & short circuit protection- 1 set.		
	C	Digital multifunction meter , size 96 mmx96mm, flush pattern type showing at glance voltage , current, power factor, frequency, KW, KWH, harmonic components with inbuilt selector switch & back up HRC fuses/MCBs-1set		
	E	3 Nos. Phase indication LED lamps with 2Amp back up HRC fuse, breaker 'ON', OFF, Trip indicating light with 2A HRC fuse, test terminal block set, fuses, circuits as pre-standard practice, and auxiliary contacts for positive interlocking of the breakers as required.		
	F	Shunt trip coil 220V A.C		
II) Bus Couplers :		1.No,2000 Amps horizontal four pole draw out type, air circuit breakers of fault breaking capacity 50 KA (Ics=Icu upto 433V)manually operated, with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact conforming to IS-13947- 2-1993 as amended up to date complete with following accessories for each ACB-		
	A	Independent manual and motorised spring charging and closing mechanism- I No.		
	B	Breaker 'ON, OFF, Trip' indicating light, 3nos. LED for phase indication with back up 2A HRC fuse test terminal block, fuses, circuits contactors		

		for positive electrical interlocking of Breakers, etc. as required.- 1 set.		
III) Bus Bars :		TPN copper bus bars of minimum of 2200.Amps capacity with heat shrinkable coloured sleeves of 3mm thick and bus-bar support shall be DMC/SMC and bus bar cross section, size supports & their spacing etc. for withstanding fault level of 50KA for 1 Sec.		
IV) Interlocking		Electrical through advance contacts in MCCB/ ACB's (incomers & Bus couplers) and mechanical castle key interlocking should be provided to ensure that only one supply is available at a time on each section of bus and to eliminate any possible of accidentally approaching two supplies at one bus section.		
Outgoing		(a) 8Nos, 1000Amp, 4 Pole ACB each, four pole horizontal draw-out type air circuit breaker of fault breaking capacity 50KA (Ics= Icu upto 433V) manually operated, motorised / manual spring charge fitted with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact, conforming to IS-1397- 2 1993 as amended up-to-date complete with following accessories for each complete with following accessories for each ACB. Each incomer shall consists of 4nos. cast resin type current transformer of 1000/ 5A with suitable rating of brought terminal for connecting 3nos. single core 240sqmm, copper conductor, 1.1KV grade, XLPE cable. Each breaker shall have microprocessor type release for o/c, s/c and earth fault protection		
	1	(B) CT's ratio …1000/5Amps,4Nos. for each breaker		
		(C) Digital multi function meter , size -96x96 mm with inbuilt selector switch and protective fuses for each breaker		
	2	(a) 4 Nos., 630.Amp, 4 Pole MCCB (Ics = Icu_ up to 433V) with fault level of 36KA with electronic type release for O/C, S/C and E/F protection. (b) 2nos., 125Amps, 4pole MCCB with fault level of 25KA with O/C, S/C & E/F protection with electronic timer and contactor , HRC fuses for street lighting feeders		
		(c) CT's of ratio-(a) 600/5Amps (b) 100/5Amps set (1 set of 4 Nos.)		
		(d) 3phase digital ammeter size - 96mmx96mm, with inbuilt selector switch for each MCCB		
TOTAL				
SUB HEAD-II CABLING				
1		Supplying and laying of Unearthed 11KV (UE), armoured, conductor		

	XLPE power cable confirming to IS 7098 (Part II) amended up to date as per the following size in kaccha trench with 0.75cm width and 1.2mtrs depth with sand cushioning of 12cm in 2 layers and covered with first class bricks placed on width wise throughout the cable trench.		
	(a) 3x240Sqmm, aluminium conductor cable -1500mtrs, (2x 750mtrs) required from power house to incoming feeder.	1500	mtrs
	(b)Supply and laying of 1x 240Sqmm, (UE), 11KV, copper conductor, armoured cable will be laid in pucca trench inside the substation where trench shall be filled with sand. This cable shall be used from HT side transformer to HT panel - 60mtrs.	60	mtrs
2	Supply and laying 4core., 240sqmm, XLPE insulated, armoured, aluminium conductor, power cable of grade 1.1KV shall be laid by excavation, sand cushioning & protective covering and refilling the trench 0.45mtrx 0.75mtr. This cable shall be used from 5nos. of outgoing feeders from substation to overhead lines -1000mtrs	1000	mtrs
3	Supply and laying 4core, 240sqmm. XLPE insulated, armoured, copper conductor, power cable of grade exceeding 1.1 KV. This cable shall be laid in pucca trench of inside the substation where sand shall be filled in the trench. This cable shall be used for connection of LT side of transformer to LT panel – 240mtrs.	240	mtrs
6	Laying of 1 No. Additional XLPE power cable of 1.1 KV grade of size exceeding 240Sqmm direct in ground in the same trench in one tier horizontal formation I/c excavation, sand cushioning & protective Covering and refilling the trench etc. as required.	As required	
7	Excavation of the trench in hard rock not exceeding 200Mtrs in length and 1.0 mtr depth and 1mtr width mtrs getting out the excavated soil and disposal of excavated soil as directed within a reach of 100.mtrs.	200	mtrs
8	Supplying and making end termination with brass compression gland and Al. lugs for following size of PVC insulated and PVC sheathed/XLPE Al. Conductor cable of 1.1 KV grade as required.	As required	
9	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories I/c lugs suitable for following sizes of 3core XLPE AI. Conductor, armoured cable of 11KV grade as required for 240sqmm -8nos.	8	nos

10	Supplying and making straight through joint termination with heat shrinkable jointing kit complete with all accessories suitable for the following size of 3 Core XLPE Al. Conductor, armoured cable of 11 KV grade as required. 240Sq.m -2nos.	2	nos
11	Supplying of Sand and filling in the existing substation trench/Open masonry duct as required.	As required	
Electrification of substation Building	The wiring of substation building is required to be carried out by PVC insulated, PVC sheathed, armoured , copper conductor, fire retardant , low smoke, 1.1 KV grade cable for different sizes with all accessories as given below: (1) 3core, 2.5sqmm cable 250 mtrs (12 light points + 4 ex fan points + 2 extra point wiring) (2) 3core, 4sqmm cable -100mtrs (4 nos. 10/15 amps socket points wiring) (3) 4core, 4sqmm cable -25mtrs (3phase , 2nos 15 amp socket points wiring for relay testing) (4) 3core, 2.5sqmm cable -25 mtrs (2nos. emergency light points for 24DC power supply) (5) Supply and laying in pucca trench, 4core 16sqmm, PVC insulated , PVC sheathed, armoured, aluminium conductor, 1.1 KV grade cable from LT panel to 4pole,125 amps MCCB -25mtrs	1	set
	Supply and fixing of electrical fixture for electrification: (1)1x 28 watt T5 light fittings with electronic choke with accessories and wiring -12 nos. (2) 4pole,125amps MCCB with O/C, S/C & E/F protection with spreader -1no (3) 3phase 6 way MCB DB with 63 Amps RCBO as isolator and 10amps, 15Amps MCB, - 1set (4) Metallic/PVC frame ,3blade 300mm , 60watt Exhaust fan with shutter (5)3 Phase, Metallic socket box with 15Amps MCB with accessories - 2Nos. (6) 3Pin, single phase, 10/15 amps metallic socket box with all accessories- 4nos. (7) 2Nos. 6watt , 24 V DC LED light fitting (8) 20Nos, 5amps Modular switches with Fixing plate with	1	set

	accessories. (9) 400watt, 4nos. , Integral type, Metal halide light fitting, IP55, with all accessories including bracket with T type lamps for fixing on four wall of substation building for area illumination.		
TOTAL			
Sub Head – III : Earthing			
1	Supply and burying a heavy duty, Chemical electrode with suitable chemical for soil treatment GI pipe, 3mtrs x 80mm, as an earth electrode, with accessories and providing masonry enclosure size 600mmx 600mm x600mm with RCC cover plate having 2nos. metallic hooks for lifting cover and funnel type arrangement for watering pipe etc. complete as required – Minimum no.-10Nos.. The no. of earth electrodes may be more. The value of earth resistance to be maintained for each substation when connected all the earth electrodes together as per IEC.	1	set
2	Extra chemical for filling soil earthing electrode as required.	As required	
3	Supplying and laying 100 mm dia GI pipe medium class ISI marked round from earth electrode to building entry as required.	As required	
4	Providing and fixing earth bus of 50mm x 5mm G.I strip on surface for connection etc. As required-50mtrs	50	mtrs
5	Providing and laying of single core 120sqmm, PVC insulated, aluminium conductor for connection from GI pipe from earth electrode and bus-bar as required. 200mtrs	200	mtrs
6	Providing and laying of single core 120sqmm, PVC insulated, aluminium conductor as earth wire to be used along with power cable as continuity conductor – 2500mtrs	2500	mtrs
TOTAL			
Sub Head – IV : Safety Equipment			
1	Providing & fixing danger plates made of mild steel at least 2mm thick & vitreous enamelled white on both sides & with inscriptions in signal red colour on front side as read in triangular languages		
	a. High Voltage- size 250mm x 200mm -10nos	10	nos
	b. Medium Voltage – size 200mm x 150mm -10nos	10	nos
2	Providing and fixing carbon dioxide (CO_2) type fire extinguishers confirming to IS 2878-1976 and cylinders fully charged of following	2	nos

	capacity. (a) 4.5KG- 2nos.		
3	Supply and fixing of foam fire extinguishers, Portable type 9 lit capacities hanged on wall with bracket complete as required. -2nos	2	nos
4	Supply and fixing safety instruction chart in word duly framed with 5mm thick glass as required. (approx. Front area 1.20 sq. mt.) -2nos	2	nos
5	Providing of set of 4 Nos. 9.5 Litre capacity GI bucket painted in post office red colour with prior coat of red oxide paint and written with white paint 'FIRE' and mounted on MS angle iron frame with bracket of appropriate size & capacity I/c filling sand etc.	1	set
6	Providing First Aid Box as approved by St. John Ambulance Brigade/Indian Red Cross conforming to IS 2217-1963. -1no	1	nos
7	Supply & fixing shock treatment chart duly mounted on a wooden frame with 5mm thick glass as reqd. (approximate front area 1.20sq. metre) -2nos	2	nos
8	Providing of insulating mate mat 1 mtr. Wide and 3mm thick to withstand 15KV dielectric strength as per IS 15652/2006 - 8mtrs	8	nos
9	Providing of insulating mat 1 mtr. Wide and 2mm thick to withstand 3.3 KV dielectric strength as per IS 15652/2006 -8mtrs	8	nos
Furniture for substation	Supply of Godrej makes furniture for substation. It consists of 1no. steel table, Model T101 & 3 nos. steel chairs,, model CH 7B -1set & 1 no Steel almirah with 4 adjustable shelf, Mode Storewell,	1	set
TOTAL			
Sub head-VII. Civil part for substation building and area development of substation:			
1	Construct a RCC building, for electrical substation, including supply of all materials except cement. The size of RCC substation building is as per Panel size provided that there should be sufficient clearance as per safety norms from building wall Height 3.8mtrs. The cable trench for LT panel, HT panel. The construction work shall be carried out by the bidder as per approved drawing and technical specification given in civil part. -1No.	1	No.
2	For area development of substation building is as per technical specification given in civil part-1	1	No.
Total			

For Buy back of Electrical equipment like Transformer, HT panel, LT panel, Bidder has to quote against the items are given below: The total amount quoted for buy back of equipment shall be deducted from total amount quoted for schedule of works and shall be treated as total amount for schedule of work.

1	11KV/400 V, AC 2000KVA Delta/ star, vector group-Dy11, transformer, type –oil cooled, copper winding with all accessories, make – Crompton Parkinson, year of manufacture-1962, weight of transformer-2800KG,	2	No
2	400A, 3.3KV, AC Oil circuit breaker, vertical isolation type with Electromechanical relay- CDG/CDD, with cooper bus-bar of no. of panel-3no.	1	set
3	400A, 11KV, AC Oil circuit breaker, vertical isolation type with Electromechanical relay- CDG/CDD, with cooper bus-bar of no. of panel-6no.	1	set
	Total of buy back = Total (i) + (ii) + (iii)		

Gross total schedule of works = Total of schedule of works – Total of buyback of items

Annexure-I

SCHEDULE OF WORK :

Prices should be net inclusive of all taxes, duties & without any conditions :

SL No	Sub Header	**11KV Electrical substation No.- Switch room 2**	QTY	UNIT
Sub Head-I (Equipments-HT Panel Board, Transformers & H.T. Cable, LT panel)				
1		Supplying, installation, testing & commissioning of indoor type floor mounted metal clad, 11KV, VCB panel with 8 No. VCBs, totally enclosed & fully interlocked, horizontal draw-out, horizontal isolation type breaker as per IS 13118, as amended up to date and additional specifications, single break, trip free mechanism, electrically and auto/manually closing breaker suitable for use on 11 KV, 3 Phase, 50Hz A.C. supply with short circuit fault level of 31.5KA or above, complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated copper bus bars of 1250.Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4 NO+4NC and equipped with following switchgears and accessories for incomer connections suitable for 2x 3x 240 sq. mm. XLPE 11KV cable (cable entry from bottom side) end termination with heat shrinkable jointing material etc. as required, having capacities as mentioned below,	1	set
	A	(a) Incoming feeders – 2 Nos. 1250.Amp., 12KV, VCB, 31.5KA or above, 3 Sec		
		(b) 2 Nos. – 11KV / 110 Volts, PT, Class 5P10 accuracy and 100 VA burden with additional winding on secondary of PT for directional earth fault protection. 1 No. Digital multifunction meter with RS 485 port in each incomer with in-built selector switch showing at glance voltage, current, frequency, power factor, KW, KWH and max demand, harmonic components, flush type, size 96x96mm. 3Nos. LED showing R, Y, & B voltage and 16 amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of PT, LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit and also numerical relay etc. on each incomers feeders.		
		(c) 2Nos. – 1No. Microprocessor based directional, numerical relay with O/L, E/F and S/C protection for each incomer. (d) 2Nos.- 1no. Microprocessor based line differential relay for protection of 3x 240sqmm, 11KV, XLPE cable with optical fibre cable for data communication on each incomer.		
		(e) 2 No. – Cast resin of dual core dual ratio 3 CTs, 400/200/5/5 A of 15VA burden		

		and accuracy Class – 0.5 for metering and class 5P10 for protection.		
	B	(a) Outgoing feeders –5Nos, 800A, 12KV, VCB, 31.5KA or above, 3 Sec		
		(b) 5Nos. – 1 No. Digital multifunction meter with RS 485 port in each outgoing feeder with in-built selector switch showing at glance voltage, current, frequency, power factor, KW,KWH and max demand, harmonic components, flush type, size 96x96mm, 3Nos. LED showing R, Y, & B voltage and 16 amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit and numerical relay etc. on each outgoing feeders.		
		(c) 5 No. –.1No. Microprocessor based non directional, numerical relay with O/L, E/F and S/C protection for each incomer.		
		(d) 5Nos. Cast resin of dual core dual ratio 3 CTs 100/ 50/5/5 A of 15VA burden and accuracy Class-1.0 for metering and class 5P10 for protection.		
	C	(a)Bus coupler -1No, 1250A, 12KV, VCB. 31.5KA or above, 3 Sec		
		(b) 3Nos. LED showing R, Y, & B voltage and 16 Amp TNC switch for ON / OFF/ Close VCB required. Suitable nos. and appropriate rating of HRC fuses/ MCB required for protection of LED, multifunction meter and auxiliary power supply, control circuit for closing, tripping and indication circuit and numerical relay etc. on bus coupler feeder.		
		(c) 1 No. – Cast resin of dual core dual ratio 3 CTs, 400/200/5/5 A of 15VA, burden and accuracy Class – 0.5 for metering and class 5P10 for protection.		
		(d) 1 No. – 1No. Microprocessor based non directional, numerical relay with O/L, E/F and S/C protection for bus-coupler feeder with synchronising check facility.		
	d	Bus-bar- 3Nos. 1250A copper bus-bar		
		3Nos. 1250Amps, copper bus-bar is required. Bus bar shall be rectangular in cross section and made from electrolytic grade electro tinned copper having 99.99% conductivity. Bus-bar current rating- minimum 1250Amp and fault rating- 31.5KA or above. Heat shrinkable 3mm sleeve insulation of 11KV voltage grade should be provided on bus-bar, its risers & connections and shall be marked in different colour codes for identification of three different phases(R, Y, B). Bus-bar arrangement should be such that in future similar cubicles can be connected with this cubicle. Cast epoxy insulators supports for bus-bar & cable termination links designed to withstand full short circuit current at specified fault level for 3 seconds shall be provided.		

	e	Supply, installation, testing and commissioning of earthing trucks suitable for 11kV, 31.5 kA or above, 1250A/800A switchgear are as follows: (i)The separate earthing trucks shall be provided for bus-bar side earthing and feeder earthing purposes. (ii) The bus bar earthing trucks shall enter only into the incomer panels and feeder earthing trucks shall enter only into outgoing panels. Suitable mechanical interlock shall be provided for the same. (iii) The earthing trucks shall have built in provision, such that it shall not be possible to earth the live circuit on feeder or bus bar side. (iv) The earthing truck shall be of permissive advance contact type construction by virtue of which the' live-ness' on the feeder or the bus bar side shall be sensed by providing suitable 1 phase voltage transformer, preferably on the Y phase. The advance contact type arrangement shall be such that while insertion of the earthing truck into the respective cubical, shall facilitate the sensing of the voltage by the 1 phase, VT prior to earthing. (v) The further racking for final earth position shall be blocked by suitable solenoid interlock with audio visual alarm to avoid the earthing of the live bus bar or feeder side. (vi) The isolating contact fitted on the earthing truck and the current carrying part shall be suitable for 31.5 kA or above current carrying capacity for 3 sec. – 1 set	1	set
2		Supplying, installation, testing & commissioning of sealed maintenance free (SMF) lead acid battery with charger required for supply of continuous 24 Volt DC output voltage for closing/ tripping/indication circuit of 8 nos. 12KV, VCB panel board. Battery with charger consists of 12 Nos. 2.0 Volts basic cell in modular design, maintenance free batteries of 200 AH each and charging unit of 20amps rating of rectifier with input voltage 200 to 250V AC, 50HZ, and output rated DC voltage, 24Volt, 20amps. Incomer of battery charger shall be 40Amps double pole MCCB along with an digital Ammeter	1	set

		& Voltmeter required for showing output voltage and current with suitable rating of FRLS insulated copper conductor cable wiring. The above arrangement is to be fixed in self stackable MS trays with insulated shoe. The battery charger shall have float and boost charger facility from 2.23 to 2.25 VPC and 2.3 to 2.32 V PC respectively. -1no. This includes supply and laying of 3 core, 16sqmm , armoured, PVC insulated, PVC sheathed, aluminium conductor, 1.1KV grade cable to laid in pucca trench from LT panel to Battery charger panel as per requirement		
3		Supplying, Installation, testing and commissioning of 1no. of cast resin dry type, 750.KVA, 11/0433 KV, 3 Phase, 50Hz, Dyn11, indoor copper wound transformer with OFF load tap changing arrangement on HV side in steps of +/- 2.5% & -7.5%, having cable end boxes on HV side suitable for 1x 3x240.Sqmm XLPE, copper cable of 11KV grade on HT side and 4nos of 4core 240sqmm XLPE, 1.1KV, cable on LV side complete with all accessories. Neutral of transformer shall be earthed with 2nos. minimum earth electrodes and transformer shall be mounted on suitable size of channel which is to be fixed by grouting 4nos. of bolts. The winding material should be high conductivity electrolytic grade copper. The insulation should be Cast Resin type, Class-F. Conductor should have thermally upgraded paper (Nomex) insulation reinforced with fibreglass. The coil assembly is to be impregnated & cast under vacuum with epoxy resin for achieving non-hygroscopic, acid & alkali resistant insulation. The complete winding should have smooth cylindrical finish after impregnation to ensure high mechanical strength. The thickness of resin should be uniform. The insulation should be self- extinguishing type. Winding temperature scanner connected with three nos. RTDs, one each for each LV winding, should be provided in a metallic enclosure that is mounted on the main enclosure. The scanner should provide indication, alarm & trip contacts. Winding temperature indicator should show maximum temperature attained. The RTDs should be properly wired up to the scanner terminals. Suitable hole with gland is required for control cable connecting scanner alarm/ trip contacts to HT Breaker.	2	nos
4		Supplying, installation, testing & commissioning of cubicle type LT panel suitable for 415V, 3 Phase, 4 Wire 50 Hz Ac supply system fabricated in compartmentalized design from CRCA sheet steel of 2mm thick for frame work with angle iron/ channel and covers, 3mm thick for gland, plates i/c cleaning & finishing complete with 7 tank or more process for powder coating in approved shade, TPN copper bus bars of hight conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 50KA for 1 Sec., bottom base channel of MS section not less than 100mmx 50mm x 5mm	1	set

		thick, fabrication shall be done in transportable sections, entire panel shall have a common GI earth bar of size 40mm x 5mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of copper bus bars and control wiring with2.5 sq. mm. PVC insulated copper conductor FRLS cable, cable alleys, cable gland plates. The incomer with following switch gears :-		
Incoming		3Nos **(**2Nos. Incomer + 1No**.** spare), 1600 Amps each four pole horizontal draw-out type air circuit breaker of fault breaking capacity 50KA (Ics= Icu upto 433V manually operated, motorised / manual spring charge fitted with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact, conforming to IS-1397- 2 1993 as amended up-to-date complete with following accessories for each complete with following accessories for each ACB. Each incomer shall consists of 4nos. cast resin type current transformer of 1600/ 5A with suitable rating of brought terminal for connecting 6nos. single core 240sqmm, copper conductor, 1.1KV grade, XLPE cable.		
	A	Independent manual/ motorised spring charging and closing mechanism- 1No. for each breaker		
	B	Microprocessor release (EMI & EMC certified) for over current, earth fault & short circuit protection- 1 set.		
	C	Digital multifunction meter , size 96 mmx96mm, flush pattern type showing at glance voltage , current, power factor, frequency, KW, KWH, harmonic components with inbuilt selector switch & back up HRC fuses/MCBs-1set		
	E	3 Nos. Phase indication LED lamps with 2Amp back up HRC fuse, breaker 'ON', OFF, Trip indicating light with 2A HRC fuse, test terminal block set, fuses, circuits as pre-standard practice, and auxiliary contacts for positive interlocking of the breakers as required.		
	F	Shunt trip coil 220V A.C		
II) Bus Couplers :		1.No,1600 Amps horizontal four pole draw out type, air circuit breakers of fault breaking capacity 50 KA (Ics=Icu upto 433V)manually operated, with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact conforming to IS-13947- 2-1993 as amended up to date complete with following accessories for each ACB-		
	A	Independent manual and motorised spring charging and closing mechanism- I No.		
	B	Breaker 'ON, OFF, Trip' indicating light, 3nos. LED for phase indication with back up 2A HRC fuse test terminal block, fuses, circuits contactors for positive electrical interlocking of Breakers, etc. as required.- 1 set.		
III) Bus Bars :		TPN copper bus bars of minimum of 2200.Amps capacity with heat shrinkable coloured sleeves of 3mm thick and bus-bar support shall be DMC/SMC and bus bar cross		

		section, size supports & their spacing etc. for withstanding fault level of 50KA or above for 1 Sec.		
IV) Interlocking		Electrical through advance contacts in MCCB/ ACB's (incomers & Bus couplers) and mechanical castle key interlocking should be provided to ensure that only one supply is available at a time on each section of bus and to eliminate any possible of accidentally approaching two supplies at one bus section.		
Outgoing		(a) 3Nos, 1000Amp, 4 Pole ACB each, four pole horizontal draw-out type air circuit breaker of fault breaking capacity 50KA (Ics= Icu upto 433V) manually operated, motorised / manual spring charge fitted with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact, conforming to IS-1397- 2 1993 as amended up-to-date complete with following accessories for each complete with following accessories for each ACB. Each incomer shall consists of 4nos. cast resin type current transformer of 1000/ 5A with suitable rating of brought terminal for connecting 3nos. single core 240sqmm, copper conductor, 1.1KV grade, XLPE cable. Each breaker shall have microprocessor type release for o/c, s/c and earth fault protection		
	1	(B) CT's ratio …1000/5Amps,4Nos. for each breaker		
		(C) Digital multi function meter , size -96x96 mm with inbuilt selector switch and protective fuses for each breaker		
	2	(a) 3 Nos., 630.Amp, 4 Pole MCCB (Ics = Icu_ up to 433V) with fault level of 36KA with electronic type release for O/C, S/C and E/F protection. (b) 3Nos., 400Amp, 4Pole MCCB(Ics= Icu up to 433V) with fault level of 36KA with electronic type release for O/C , S/C & E/F protection (c) 2nos., 125Amps, 4pole MCCB with fault level of 25KA with O/C, S/C & E/F protection with electronic timer and contactor , HRC fuses for street lighting feeders		
		(d) CT's of ratio-(a) 600/5Amps, (b) 400/5Amps, & (d) 100/5Amps set (1 set of 4 Nos.)		
		(e) 3phase digital ammeter size - 96mmx96mm, with inbuilt selector switch for each MCCB		
TOTAL				
SUB HEAD-II CABLING				
1		Supplying and laying of Unearthed,11KV (UE), armoured, XLPE power cable of 11KV grade confirming to IS 7098 (Part II) amended up to date as per the following size in kaccha trench with 0.75cm width and 1.2mtrs depth with sand cushioning of 12cm in 2 layers and covered with first class bricks placed on width wise throughout the cable trench.		

	(a)11KV (UE), 3x240Sqmm, Aluminium conductor cable as above -4600mtrs (2x 2300mtrs) required from power house to incoming underground feeders.	4600	mtrs
	(b)Supply and laying of 1x 240Sqmm, (UE), 11KV, copper conductor, armoured cable will be laid in pucca trench inside the substation where trench shall be filled with sand. This cable shall be used from HT side transformer to HT panel -120mtrs.	120	mtrs
2	Supply and laying 4core., 240sqmm, XLPE insulated, armoured, aluminium conductor, power cable of grade 1.1KV shall be laid by excavation, sand cushioning & protective covering and refilling the trench 0.45mtrx 0.75mtr. This cable shall be used from 5nos. of outgoing feeders from substation to overhead lines -1000mtrs	1000	mtrs
3	Supply and laying 4core, 240sqmm. XLPE insulated, armoured, copper conductor, power cable of grade exceeding 1.1 KV. This cable shall be laid in pucca trench of inside the substation where sand shall be filled in the trench. This cable shall be used for connection of LT side of transformer to LT panel – 240mtrs.	240	mtrs
6	Laying of 1 No. Additional XLPE power cable of 1.1 KV grade of size exceeding 240Sqmm direct in ground in the same trench in one tier horizontal formation I/c excavation, sand cushioning & protective Covering and refilling the trench etc. as required.	As required	
8	Excavation of the trench in hard rock not exceeding 200Mtrs in length and 1.0 mtr depth and 1mtr width mtr getting out the excavated soil and disposal of excavated soil as directed within a reach of 100.mtrs.	200	mtrs
9	Supplying and making end termination with brass compression gland and Al. lugs for following size of PVC insulated and PVC sheathed/XLPE Al. Conductor cable of 1.1 KV grade as required.	As required	
10	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories I/c lugs suitable for following sizes of 3core XLPE Al. Conductor, armoured cable of 11KV grade as required for 240sqmm -6nos.	6	nos
11	Supplying and making straight through joint termination with heat shrinkable jointing kit complete with all accessories suitable for the following size of 3 Core XLPE Al. Conductor, armoured cable of 11 KV grade as required. 240Sq.m -8nos.	8	nos
12	Supplying of Sand and filling in the existing substation trench/Open masonry duct as required.	As required	
Electrification of substation Building	The wiring of substation building is required to be carried out by PVC insulated, PVC sheathed, armoured , copper conductor, fire retardant , low smoke, 1.1 KV grade cable for different sizes with all accessories as given below:	1 set	

	(1) 3core, 2.5sqmm cable 250 mtrs (12 light points + 4 ex fan points + 2 extra point wiring) (2) 3core, 4sqmm cable -100mtrs (4 nos. 10/15 amps socket points wiring) (3) 4core, 4sqmm cable -25mtrs (3phase , 2nos 15 amp socket points wiring for relay testing) (4) 3core, 2.5sqmm cable -25 mtrs (2nos. emergency light points for 24DC power supply) (5) Supply and laying in pucca trench, 4core 16sqmm, PVC insulated , PVC sheathed, armoured, aluminium conductor, 1.1 KV grade cable from LT panel to 4pole,125 amps MCCB -25mtrs		
	Supply and fixing of electrical fixture for electrification: (1)1x 28 watt T5 light fittings with electronic choke with accessories and wiring -12 nos. (2) 4pole,125amps MCCB with O/C, S/C & E/F protection with spreader -1no (3) 3phase 6 way MCB DB with 63 Amps RCBO as isolator and 10amps, 15Amps MCB, - 1set (4) Metallic/PVC frame ,3blade 300mm , 60watt Exhaust fan with shutter (5)3 Phase, Metallic socket box with 15Amps MCB with accessories - 2Nos. (6) 3Pin, single phase, 10/15 amps metallic socket box with all accessories- 4nos. (7) 2Nos. 6watt , 24 V DC LED light fitting (8) 20Nos, 5amps Modular switches with Fixing plate with accessories. (9) 400watt, 4nos. , Integral type, Metal halide light fitting, IP55, with all accessories including bracket with T type lamps for fixing on four wall of substation building for area illumination.	1 set	
TOTAL			
Sub Head – III : Earthing			
1	Supply and burying a heavy duty, Chemical electrode with suitable chemical for soil treatment GI pipe, 3mtrs x 80mm, as an earth electrode, with accessories and providing masonry enclosure size 600mmx 600mm x600mm with RCC cover plate having 2nos. metallic hooks for lifting cover and funnel type arrangement for watering pipe etc. complete as required – Minimum no.-10Nos.. The no. of earth electrodes may be more. The value of earth resistance to be maintained for each substation when connected all the earth electrodes together as per IEC.	1	set
2	Extra chemical for filling soil earthing electrode as required.	As required	
3	Supplying and laying 100 mm dia GI pipe medium class ISI marked round from earth electrode to building entry as required.	As required	

4	Providing and fixing earth bus of 50mm x 5mm G.I strip on surface for connection etc. As required-50mtrs	50	mtrs
5	Providing and laying of single core 120sqmm, PVC insulated, aluminium conductor for connection from GI pipe from earth electrode and bus-bar as required. 200mtrs	200	mtrs
6	Providing and laying of single core 120sqmm, PVC insulated, aluminium conductor as earth wire to be used along with power cable as continuity conductor – 2000mtrs	2000	mtrs
TOTAL			
Sub Head – IV : Safety Equipment			
1	Providing & fixing danger plates made of mild steel at least 2mm thick & vitreous enamelled white on both sides & with inscriptions in signal red colour on front side as read in triangular languages		
	a. High Voltage- size 250mm x 200mm -10nos	10	nos
	b. Medium Voltage – size 200mm x 150mm -10nos	10	nos
2	Providing and fixing carbon dioxide (CO_2) type fire extinguishers confirming to IS 2878-1976 and cylinders fully charged of following capacity. (a) 4.5KG- 2nos.	2	nos
3	Supply and fixing of foam fire extinguishers, Portable type 9 lit capacities hanged on wall with bracket complete as required. -2nos	2	nos
4	Supply and fixing safety instruction chart in word duly framed with 5mm thick glass as required. (approx. Front area 1.20 sq. mt.) -2nos	2	nos
5	Providing of set of 4 Nos. 9.5 Litre capacity GI bucket painted in post office red colour with prior coat of red oxide paint and written with white paint 'FIRE' and mounted on MS angle iron frame with bracket of appropriate size & capacity I/c filling sand etc.	1	set
6	Providing First Aid Box as approved by St. John Ambulance Brigade/Indian Red Cross conforming to IS 2217-1963. -1no	1	nos
7	Supply & fixing shock treatment chart duly mounted on a wooden frame with 5mm thick glass as reqd. (approximate front area 1.20sq. metre) -2nos	2	nos
8	Providing of insulating mate mat 1 mtr. Wide and 3mm thick to withstand 15KV dielectric strength as per IS 15652/2006 - 8mtrs	8	nos
9	Providing of insulating mat 1 mtr. Wide and 2mm thick to withstand 3.3 KV dielectric strength as per IS 15652/2006 -8mtrs	8	nos
Furniture for	Supply of Godrej makes furniture for substation. It consists of 1no. steel table, Model	1	set

substation	T101 & 3 nos. steel chairs,, model CH 7B -1set & 1 no Steel almirah with 4 adjustable shelf, Mode Storewell,			
TOTAL				
Sub head-VII. Civil part for substation building and area development of substation:				
1	Construct a RCC building, for electrical substation, including supply of all materials except cement. The size of RCC substation building is as per Panel size provided that there should be sufficient clearance as per safety norms from building wall Height 3.8mtrs. The cable trench for LT panel, HT panel for 2nos. of transformers along with foundation of 2nos.of transformers is also part of the substation building. The construction work shall be carried out by the bidder as per approved drawing and technical specification given in civil part. -1No	1	No.	
2	For area development of substation building is as per technical specification given in civil part-1	1	No.	
Total				
	Total of buy back = Total (i) + (ii) + (iii)			

Gross schedule of works = Total of schedule of works

OIL INDIA LIMITED
(A GOVT. OF INDIA ENTERPRISE)
CONTRACTS DEPARTMENT, DULIAJAN

Schedule of company's Plants, Materials and Equipments :SCPME: PART-IV

Not Applicable

TO,
HEAD-CONTRACT
OIL INDIA LIMITED
DULIAJAN-786602

SUB: SAFETY MEASURES

Description of work/service:

Design, construction of substation building including supply and commissioning of Electrical equipments of 3 nos 11KV/415V substation at Duliajan on LSTK basis

Sir,

We hereby confirm that we have fully understood the safety measures to be adopted during execution of the above contract and that the same have been explained to us by the concerned authorities. We also give the following assurances.

a) Only experienced and competent persons shall be engaged by us for carrying out work under the said contract.

b) The names of the authorized persons who would be supervising the jobs on day to day basis from our end are the following:

i) _____

ii) _____

iii) _____

The above personnel are fully familiar with the nature of jobs assigned and safety precautions required.

c) Due notice would be given for any change of personnel under item(b) above.

d) We hereby accept the responsibility for the safety of all the personnel engaged by us and for the safety of the Company's personnel and property involved during the course of our working under this contract. Any violation pointed out by the Company's engineers would be rectified forthwith or the work suspended till such time the rectification is completed by us and all expenditure towards this would be on our account.

e) All losses caused due to inadequate safety measures or lack of supervision on our part would be fully compensated by us and the Company will not be responsible for any lapses on our part in this regard.

(Seal)

Yours Faithfully

Date_____

M/s_____

FOR & ON BEHALF OF BIDDER

INTEGRITY PACT

Between

Oil India Limited (OIL) hereinafter referred to as "The Principal"

And

(Name of the bidder).....hereinafter referred to as "The Bidder/Contractor"

PREAMBLE:

The Principal intends to award, under laid down organizational procedures, contract/s for

Design, construction of substation building including supply and commissioning of Electrical equipments of 3 nos 11KV/415V substation at Duliajan on LSTK basis
. **(IFB No. CDI 6441P15)**

The Principal values full compliance with all relevant laws and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder/s and Contractor/s.

In order to achieve these goals, the Principal cooperates with the renowned international Non-Governmental Organisation "Transparency International" (TI). Following TI's national and international experience, the Principal will appoint an external independent Monitor who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 - Commitments of the Principal

(A) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for him/herself or third person, any material or immaterial benefit which he/she is not legally entitled to.

2. The Principal will, during the tender process treat all Bidders with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidders the same information and will not provide to any Bidder confidential/additional information through which the Bidder could obtain an advantage in relation to the tender process or the contract execution.

3. The Principal will exclude from the process all known prejudiced persons.

(B) If the Principal obtains information on the conduct of any of its employees

which is a criminal offence under the relevant Anti-Corruption Laws of India, or if there be a Page 2 of 6 substantive suspicions in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder/Contractor

(A) The Bidder/Contractor commits itself 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.

1. The Bidder/Contractor will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or immaterial benefit which h e/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.

2. The Bidder/Contractor will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, Subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.

3. The Bidder/Contractor will not commit any offence under the relevant Anticorruption Laws of India; further the Bidder/Contractor will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

4. The Bidder/Contractor will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

(B) The Bidder/Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 - Disqualification from tender process and exclusion from future Contracts

If the Bidder, before contract award has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or risibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

1. If the Bidder/Contractor has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is entitled also to exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressions within the company hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.

2. The Bidder accepts and undertakes to respect and uphold the Principal's Absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.

3. If the Bidder/Contractor can prove that he has restored/recouped the Damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely.

4. A transgression is considered to have occurred if in light of available evidence no reasonable doubt is possible.

Section 4 - Compensation for Damages

1. If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from the Bidder liquidated damages equivalent to 3 % of the value of the offer or the amount equivalent to Earnest Money Deposit/Bid Security, whichever is higher.

2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

3. The bidder agrees and undertakes to pay the said amounts without protest or demur subject only to condition that if the Bidder/Contractor can prove and establish that the exclusion of the Bidder from the tender process or the termination of the contract after the contract award has caused no damage or less damage than the amount or the liquidated damages, the Bidder/Contractor shall compensate the Principal only to the extent of the damage in the amount proved.

Section 5 - Previous transgression

1. The Bidder declares that no previous transgression occurred in the last 3 years with any other Company in any country conforming to the TI approach or with any other Public Sector Enterprise in India that could justify his exclusion from

the tender process.

2. If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders/Contractor/Subcontractors

1. The Bidder/Contractor undertakes to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.

2. The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Subcontractors.

3. The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 - Criminal charges against violating Bidders/Contractors/ Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor, which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 - External Independent Monitor/Monitors (Three in number depending on the size of the contract) (To be decided by the Chairperson of the Principal)

1. The Principal appoints competent and credible external independent Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

2. The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Chairperson of the Board of the Principal.

3. The Contractor accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder/Contractor/Subcontractor with confidentiality.

4. The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such

meetings.

5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or heal the violation, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

6. The Monitor will submit a written report to the Chairperson of the Board of the Principal within 8 to 10 weeks from the date of reference or intimation to him by the 'Principal' and, should the occasion arise, submit proposals for correcting problematic situations.

7. If the Monitor has reported to the Chairperson of the Board a substantiated suspicion of an offence under relevant Anti-Corruption Laws of India, and the Chairperson has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8. The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made/ lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by Chairperson of the Principal.

Section 10 - Other provisions

1. This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. New Delhi.

2. Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

3. If the Contractor is a partnership or a consortium, this agreement must be, signed by all partners or consortium members.

4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intensions.

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For the Principal For the Bidder/Contractor

Place: Duliajan. Witness 1: .....

Date: Witness 2: .....

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PROFORMA - I
BID FORM

To
THE HEAD (CONTRACTS)
OIL INDIA LIMITED
(A Govt. of India Enterprise)
P.O. DULIAJAN
DIST. DIBRUGARH
ASSAM # 786 602

Sub: IFB No. : **CDI6441P15**

Dear Sir,

Having examined the General and Special Conditions of Contract and the Terms of Reference including all attachments thereto, the receipt of which is hereby duly acknowledged, we the undersigned offer to perform the services in conformity with the said conditions of Contract and Terms of Reference for the sum of ____(Price not to be indicated)___ stated below or such other sums as may be ascertained in accordance with the Price Bid Form attached herewith and made part of this Bid:

We undertake, if our Bid is accepted, to commence the work within (_____) days calculated from the date of issue of Company's LOA.

We agree to abide by this Bid for a period of 180 days from the date fixed for Bid opening and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof in your notification of award shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Bid you may receive.

Dated this _____ day of _____ 2015.

Signature and seal of the Bidder: _____

(In the capacity of) : _____

Name of Bidder : _____

****

PROFORMA – II

LETTER OF AUTHORITY

To,
THE HEAD (CONTRACTS)
OIL INDIA LIMITED
(A Govt. of India Enterprise)
P.O. DULIAJAN
DIST. DIBRUGARH
ASSAM # 786 602

Sir,

Sub: IFB No. **CDI6441P15**

1.0 We _____ confirm that Mr. _____ (Name and address) as authorized to represent us to Bid, negotiate and conclude the agreement on our behalf with you against Invitation No.:_____ for hiring of *Design, construction of substation building including supply and commissioning of Electrical equipments of 3 nos 11KV/415V substation at Duliajan on LSTK basis*

We confirm that we shall be bound by all and whatsoever our said representative shall commit.

Yours Faithfully,

Signature: _____
Name : _____
Designation: _____
For & on behalf of : _____

Note: This letter of authority shall be printed on letter head of the Bidder and shall be signed by a competent person to bind the Bidder.

PROFORMA - III

STATEMENT OF NON-COMPLIANCE

(Only exceptions/deviations to be rendered)

1.0 The Bidder shall furnish detailed statement of **exceptions/deviations,** if any, to the tender stipulations, terms and conditions in respect of each Section of Bid Document in the following format:

Section No.	Clause No. (Page No.)	Non-Compliance	Remarks

Authorised Person's Signature: _____
Name: _____

Designation:_____

Seal of the Bidder:

NOTE: OIL INDIA LIMITED expects the bidders to fully accept the terms and conditions of the bid document. However, should the bidders still envisage some exceptions/deviations to the terms and conditions of the bid document, the same should be indicated as per above format and submit along with their bids. If the "**Statement of Compliance**" in the above Proforma is left blank (or not submitted along with the technical bid), then it would be construed that the bidder has not taken any exception/deviation to the tender requirements.

****

ANNEXURE- I

[TO BE FILLED-UP / SUBMITTED BY THE VENDOR ON ITS LETTER HEAD FOR E-REMITTANCE]

Name:

FULL Address:

Phone Number :
Mobile Number :
E-mail address:
Fax Number :
Bank Account Number (in which the Bidder wants remittance against invoices):
Bank Name :
Branch :
Address of the Bank:

Bank Code :
IFSC/RTGS Code of the Bank:
NEFT Code of the Bank :
PAN Number :
Service Tax Registration Number:

_____

Signature of Vendor with Official Seal

Note: This declaration shall be printed on letter head of the Bidder and shall be signed by a competent person.

****

ANNEXURE- II

FORM OF BID SECURITY (BANK GUARANTEE FORMAT) or Any other format acceptable to Oil India Ltd.

To:
M/s. OIL INDIA LIMITED,
For Head(Contracts),
Duliajan, Assam, India, Pin - 786 602.

WHEREAS, (Name of Bidder) _____ (hereinafter called "the Bidder") has submitted their offer Dated _____ for the provision of certain services (hereinafter called "the Bid") against OIL INDIA LIMITED, Duliajan, Assam, India (hereinafter called the Company)'s Tender No**. CDI 6441P15**
KNOW ALL MEN BY these presents that we (Name of Bank) _____ of (Name of Country) _____ having our registered office at _____ (hereinafter called "Bank") are bound unto the Company in the sum of (*_____) for which payment well and truly to be made to Company, the Bank binds itself, its successors and assignees by these presents.

SEALED with the common seal of the said Bank this ___ day of _____ 2014.

THE CONDITIONS of these obligations are:

(1) If the Bidder withdraws their Bid during the period of Bid validity specified by the Bidder; or

(2) If the Bidder, having been notified of acceptance of their Bid by the Company during the period of Bid validity:

   (a) Fails or refuses to execute the form of agreement in accordance with the Instructions to Bidders; or
   (b) Fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

We undertake to pay to Company up to the above amount upon receipt of its first written demand (by way of letter), without Company having to substantiate its demand provided that in its demand Company will note that the amount claimed by it is due to it owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including the date (**--/--/--) and any demand in respect thereof should reach the Bank not later than the above date.

Notwithstanding anything contained hereinabove:

(i) Our liability under the guarantee shall not exceed _____
(ii) This Bank Guarantee shall be valid only up to __/__/___
(iii) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if we receive a written claim or demand on or before ___/___/____

SIGNATURE AND SEAL OF THE GUARANTORS _____
Name of Bank & Address _____
Witness _____
Address _____
_____
(Signature, Name and Address)
Date: _____
Place: _____

* The Bidder should insert the amount of the guarantee in words and figures.
** Date of expiry of Bank Guarantee should be minimum 30 days after the end of the validity period of the Bid i.e minimum 210 days validity.

****

ANNEXURE- A

FORM OF CONSORTIUM AGREEMENT
(ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE TO BE PURCHASED IN THE NAME OF CONSORTIUM)

PROFORMA OF CONSORTIUM AGREEMENT BETWEEN…… AND ……FOR BID SPECIFICATION NO. …….. OF …….
THIS Consortium Agreement executed on this…..day of ……Two thousand and……between M/s. …….. a company incorporated under the laws of ……..and having its Registered Office at ……(hereinafter called the "Lead Partner" which expression shall include its successors, executors and permitted assigns), M/s. ……a company incorporated under the laws of ……and having its Registered Office at ……. (herein after called the "Partner" which expression shall include its successors, executors and permitted assigns) and M/s. …….. a company incorporated under the laws of ……..……..and having its Registered Office at…….. (herein after called the "Partner" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract (in case of award) against the Specification.:…….. for Construction of Sub-station building and supply, erection & commissioning of 11 KV substation. ……of the Electrical Department, Oil India Limited having its Registered Office , Oil India Limited, Duliajan(hereinafter called the “Owner”).

WHEREAS the Owner invited bids as per the above mentioned Specification for the construction of substation building & supply erection & commissioning of 11KV substation commissioning stipulated in the bidding documents under subject ……..

AND WHEREAS Qualification Requirement of the Bidder, , forming part of the bidding documents, stipulates that a Consortium of maximum three firms/companies as partners, meeting the requirement of Section Part-II as applicable may Bid, provided the Consortium fulfils all other requirements and in such a case, the Bid shall be Signed by all the partners so as to legally bind all the Partners of the Consortium, who will be jointly and severally liable to perform the Contract and all obligations hereunder. The above clause further states that the Consortium agreement shall be attached to the bid and the contract performance guarantee will be as per the format enclosed with the bidding document without any restriction or liability for either party.

AND WHEREAS the bid has been submitted to the Owner vide Proposal No.....dated.....by Lead Partner based on the Consortium Agreement between all the Partners under these presents and the bid, in accordance with the Qualification Requirements of the Bidders, has been signed by all the partners.

NOW THIS INDENTURE WITNESSETH AS UNDER:
In consideration of the above promises and agreements all the Partners to this Consortium do hereby now agree as follows:

1. In consideration of the award of the Contract by the Owner to the Consortium partners, we, the Partners to the Consortium agreement do hereby agree that M/s……..shall act as “Lead Partner” and further declare and confirm that we shall jointly and severally be bound unto the Owner for the successful performance of the Contract and shall be fully responsible for the construction of substation building & supply , erection & commissioning of 11KV substation performance of the equipment in accordance with the Contract.
2. In case of any breach of the said Contract by the “Lead Partner” or other Partner(s) of the Consortium agreement, the Partner(s) do hereby agree to be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.
3. Further, if the Owner suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performance guaranteed as

per the specification in terms of the Contract, the Partner(s) of these presents undertake to promptly make good such loss or damages caused to the Owner, on its demand without any demur. It shall not be necessary or obligatory for the Owner to proceed against Lead Partner to these presents before proceeding against or dealing with the other Partner(s).

4. The financial liability of the Partners of this Consortium agreement to the Owner with respect to any of the claims arising out of the performance or non-performance of the obligations set forth in the said Consortium agreement, read in conjunction with the relevant conditions of the Contract shall, however, not be limited in any way so as to restrict or limit the liabilities of any of the Partners of the Consortium agreement.
5. It is expressly understood and agreed between the Partners to this Consortium agreement that the responsibilities and obligations of each of the Partners shall be incorporated suitably by the Partners to this agreement. It is further agreed by the Partners that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities of the Partners under this Contract.
6. This Consortium agreement shall be construed and interpreted in accordance with the laws of India and the courts of Assam shall have the exclusive jurisdiction in all matters arising there under.
7. In case of an award of a Contract, We, the Partners to the Consortium agreement do hereby agree that we shall be jointly and severally responsible for furnishing a contract performance security / Guarantee from a bank in favour of the Owner in the form acceptable to Owner for value of -- of the Contract Price in the currency/currencies of the Contract.
8. It is further agreed that the Consortium agreement shall be irrevocable and shall form an integral part of the Contract, and shall continue to be enforceable till the Owner discharges the same. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHERE OF, the Partners to the Consortium agreement have through their authorized representatives executed these presents and affixed Common Seals of their Companies / Firms on the day, month and year first mentioned above.

1. Common Seal of.....
has been affixed in my/our presence
representative)pursuant to the Board of Director's
resolution dated.....

For Lead Partner
(Signature of authorized

Signature….....
Name.....
Designation.....

Name….....….....
Designation
Common Seal of the company

2. Common Seal of.....
has been affixed in my/our presence
representative)pursuant to the Board of Director's
resolution dated.....

For Lead Partner
(Signature of authorized

Signature….....
Name.....
Designation.....

Name….....….....
Designation
Common Seal of the company

WITNESSES:

1. …….....……. (Signature)

Name .....
(Official address)

1. ……..... (Signature

Name .....
(Official address)

ANNEXURE- B

FORM OF POWER OF ATTORNEY FOR CONSORTIUM

(On Non-judicial Stamp Paper of Appropriate value to be Purchased in the Name of consortium)

KNOW ALL MEN BY THESE PRESENTS THAT WE, the Partners; whose details are given Here under have formed a consortium under the laws of Indian Partnership Act, 1932 and having our Registered Office(s)/Head Office(s) at..... (herein after called the consortium which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting through M/s …….. .....being the Partner-in-charge do hereby constitute, nominate and appoint Mr…..…….. of M/s. ….....a Company incorporated under the laws of..... and having its Registered/Head Office at ..... as our duly constituted lawful Attorney (hereinafter called "Attorney" or " Authorized Representative" or" Partner in-charge") to exercise all or any of the powers for and on behalf of the Consortium in regard to Specification. ..... for ..... ……. of the Electrical Department, M/S Oil India Ltd, Duliajan (hereinafter called the "Owner") and the bids for which have been invited by the Owner, to undertake the following acts:

i) To submit proposal and participate in the aforesaid Bid Specification of the Owner on behalf of the "Consortium".

ii) To negotiate with the Owner the terms and conditions for award of the Contract pursuant to the aforesaid Bid and to sign the Contract with the Owner for and on behalf of the "Consortium".

iii) To do any other act or submit any document related to the above.

iv) To receive, accept and execute the Contract for and on behalf of the "Consortium".

It is clearly understood that the Partner-in-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more Partner(s) fail to perform their respective portion of the Contract(s), the same shall be deemed to be a default by all the Partners. It is expressly understood that this Power of Attorney shall remain valid, binding and irrevocable till completion of the Defect Liability Period in terms of the Contract. The Consortium hereby agrees and undertakes to ratify and confirm all the whatsoever, the said Attorney/Authorized Representative/Partner-in-charge quotes in the bid, negotiates and signs the Contract with the Owner and/or proposes to act on behalf of the Consortium by virtue of this Power of Attorney and the same shall be binding on the Consortium; as if done by itself.

IN WITNESS THEREOF the Partners, Constituting the Consortium as aforesaid, have executed these presents on this .....day of ....., 200… under the Common Seal(s) of their Companies.

For and on behalf of the Partners of Consortium:

……

The Common Seal of the above
Partners of the Consortium

The Common Seal has been affixed there unto in the presence of:

WITNESS

1 Signature.....
Name .....
Designation .....
Occupation .....

2. Signature.....
Name .....
Designation .....
Occupation .....

ANNEXURE-C

FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT/FACILITIES

BANK CERTIFICATE:

This is to certify that M/s. ..... (Full Name & Address) .....……..., who are submitting their bid to the Head- Contracts Dept. of M/S Oil India ltd, ……against their tender specification vide ref. No. ..... &date .....is our Customer for the past ..... years.

Their financial transactions with our Bank have been satisfactory. They enjoy the following fund based and non fund based limits including for guarantees, L/C and other credit facilities with us against which the extent of utilization as on date is also indicated below:

SL. NO.	TYPE OF FACILITY	SANCTIONED LIMIT AS ON DATE	UTILISATION AS ON DATE .....

This letter is issued at the request of M/s.....

Sd/-
Name of Bank .....
Name of Authorized Signatory .....
Designation .....
Phone No. .....
Address .....

SEAL OF THE BANK