ऑयल इंडिया लिमिटेड
(भारत सरकार का उद्यम)
Oil India Limited
(A Government of India Enterprise)

Contract & Purchase Department
(Rajasthan Field)
2A, District Shopping Centre, Saraswati Nagar,
Basni, Jodhpur-342005,Rajasthan, India.
Phone-0291-2729466, Fax: 0291-2727050
E-mails: bhavik_mody@oilindia.in;
erp_mm@oilindia.in

Sub: IFB No.CJI-5331-P21 FOR CONSTRUCTION OF OIL EXECUTIVE RESIDENTIAL COMPLEX – JODHPUR UNDER SINGLE STAGE TWO BID SYSTEM.

Dear Sirs,

1.0 OIL INDIA LIMITED (OIL), a "Navaratna" Category, Government of India Enterprise, is a premier OIL Company engaged in exploration, production and transportation of crude oil & natural gas with its Headquarters at Duliajan, Assam. Rajasthan Field of Oil India Limited (OIL), is engaged in exploration and production of Natural Gas from the Jaisalmer Basin and exploration of Heavy Oil in Bikaner-Nagaur basin of Western Rajasthan in India. OIL has also strategically diversified into Renewable Energy Business and O&M activities. The Field Office of OIL at Jodhpur is well connected by Road, Rail & Air.

2.0 In connection with its field office being located at Jodhpur, OIL invites Local Competitive Bids (LCB) from competent and experienced Contractors through OIL's e-procurement site for **construction of oil executive residential complex – Jodhpur** with the entire project expected to be completed within 24 months of award of contract**.** One complete set of Bid Document covering OIL's IFB for hiring of above services is uploaded in OIL's e-procurement portal. You are invited to submit your most competitive bid on or before the scheduled bid closing date and time through OIL's e-procurement portal. For your ready reference, few salient points of the IFB (covered in detail in the Bid Document) are highlighted below:

IFB No./ Tender No.	**CJI-5331-P21**
a. Type of IFB.	Single Stage Two Bid System
b. Bid Closing Date & Time.	**22.10.2020 at 11-00 hrs (IST)**
c. Bid(Technical) Opening Date & Time	**22.10.2020 at 15-00 hrs (IST)**
d. Priced Bid Opening Date & Time.	Will be intimated to the eligible Bidders nearer the time
e. Bid Submission Mode.	Bid to be uploaded on-line in OIL's E-Procurement portal
f. Bid Opening Place.	Office of the GM-C&P, Oil India Ltd., 2A, District Shopping Centre, Saraswati Nagar, Basni, Jodhpur-342005, Rajasthan, India.
g. Bid Validity.	120 days from bid Closing date.
h. Bid Security Amount	**INR 47,50,000/-**
i. Bid Security Validity	210 days from bid closing date.
j. Amount and Validity of Performance Security.	Performance security @10% of total contract value is applicable against this contract. Performance

	Security shall be in two sections: i) PBG valuing 2.5% of total contract value valid up to 90 days beyond defect liability period to be submitted by the contractor ii) Retention amount valuing 7.5% shall be retained from each running bill of the contractor Performance security shall be withheld by OIL as under: i) PBG shall be released within 30 days after expiry of the same ii) 75% of retention money shall be released along with PBG iii) Balance 25% of retention money, along with the retention money retained from the O&M bills shall be released at the end of O&M/AMC period
k. Duration of the Contract.	Twenty Four (24) months from the date of commencement of contract with early termination clause.
l. Quantum of Liquidated Damage for Default in Timely Mobilisation.	Refer clause No. 17.0 of General Conditions of Contract (Part-3, Section–I)
m. Bids to be addressed to.	GM-C&P, Oil India Ltd., 2A, District Shopping Centre, Saraswati Nagar, Basni, Jodhpur-342005, Rajasthan, India

3.0 **Pre-Bid Conference:** Not applicable.

4.0 **Integrity Pact:** The Integrity Pact must be uploaded in OIL's E-procurement portal along with the Technical Bid digitally signed by the same signatory who signed the Bid i.e. who is duly authorized to sign the Bid. If any Bidder refuses to sign Integrity Pact or declines to submit the Integrity Pact, their bid shall be rejected straightway. 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 signs the Bid.

5.0 **GUIDELINES FOR PARTICIPATING IN OIL'S E-PROCUREMENT:**

5.1 To participate in OIL's E-procurement tender, bidders should have a legally valid digital certificate **of Class 3 with Organizations Name** and **Encryption certificate** 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). **Digital Signature Certificates having "Organization Name" field as "Personal" are not acceptable**.

5.2 Bidders without having E-tender Login ID and Password should complete their online registration at least seven (7) days prior to the scheduled bid closing date and time of the tender. For online registration, Bidder may visit the OIL's E-tender sitehttps://etender.srm.oilindia.in/irj/portal

5.3 Necessary Login ID & Password will be issued by OIL only after submitting the complete online registration by the Bidder. In the event of late registration/incomplete registration by Bidder, OIL INDIA LIMITED shall not be responsible for late allotment of

User ID & Password and request for bid closing date extension on that plea shall not be entertained by Company.

5.4 MSE Units (manufacturers/Service Providers only and not their dealers/distributors) who are already registered with District Industry Centers or Khadi & Village Industries Commission or Khadi & Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts & Handloom or any other body specified by Ministry of MSME are exempted from payment of Bid Security (EMD) irrespective of monetary limit mentioned in their registration, provided they are registered for the item they intend to quote/participate.

5.5 Bids without EMD shall be rejected, if the technical offer does not include a valid copy of relevant MSE Certificate issued by appropriate authority specifying the item as per tender. Therefore, it is in the interest of such MSE Vendors to furnish a copy of complete certificate to the concerned tender handling officer of OIL at least seven (7) days prior to the scheduled Bid Closing Date of the tender; seeking clarification/confirmation as to whether their registered item is eligible for EMD exemption or not. Late communication in this regards and request for bid closing date extension on that plea shall not be entertained by Company.

5.6 Parties shall be eligible for accessing the tender in E-portal after OIL enables them in the E-portal on receipt of request for the same.

5.7 Parties, who do not have a User ID, can click on **Guest login button** in the OIL's E-portal to view the available open tenders. The detailed guidelines are available in OIL's e-procurement site (Help Documentation). For any clarification in this regard, Bidders may contact Mr. P. Barman, Manager (ERP-MM) at erp_mm@oilindia.in, Ph.: 03742804903/7192/7171/7178.

6.0 **QUERIES/CLARIFICATIONS ON THE TENDER:**

6.1 The prospective Bidders shall submit their queries/clarifications against the tender through E-mail addressed to General Manager (C&P), OIL INDIA LTD., Rajasthan Project, 2A, District Shopping Centre, Saraswati Nagar, Jodhpur-342005, Rajasthan, India and such queries must reach OIL's Rajasthan Project office at Jodhpur latest by 10.05.2020 up to 17:30 Hrs (IST). OIL shall provide clarifications on the date of pre-bid conference to only those queries received within this date. Replies will also be uploaded in OIL's e-tender portal. Queries / Clarifications against the tender received beyond 10.05.2020 will not be entertained and replied. OIL will not be responsible for non-receipt or late receipt of any Bidder's query in OIL's office.

7.0 **IMPORTANT NOTES:**

7.1 Bidders shall take note of the following important points while participating in OIL's e-procurement tender:

i) The bid along with all supporting documents must be submitted through OIL's E-procurement site only except the following documents which shall be submitted manually by the Bidder in two copies in a sealed envelope super-scribed with OIL's IFB No., Bid Closing date and marked as "Original Bid Security" and addressed to GM (C&P), OIL INDIA LTD., Rajasthan Field, 2A, Saraswati Nagar, Jodhpur-342005, Rajasthan (India):

a) Original Bid Security
b) Printed catalogue and Literature, if called for in the tender.
c) Power of Attorney for signing the bid.
d) Any other document required to be submitted in original as per tender requirement.

The above documents including the Original bid security, must be received at OIL's GM- (C&P)'s office at Jodhpur on or before 11.00 Hrs (IST) on the Bid Closing date failing which the bid shall be rejected. A scanned copy of the Bid Security shall also be uploaded by the Bidder along with their Technical Bid in OIL's E-procurement site.

ii) Bid should be submitted on-line in OIL's E-procurement site before 11.00 AM (IST) (Server Time) of the bid closing date as mentioned and will be opened on the same day at 3.00 PM (IST) at the office of the GM (C&P) in presence of the authorized representatives of the Bidders.

iii) If the digital signature used for signing is not of "Class -3" with Organizations name, the bid will be rejected.

iv) The tender is invited under SINGLE STAGE-TWO BID SYSTEM. The Bidders shall submit both the "TECHNICAL" and "PRICED" bids through electronic form in the OIL's e-Procurement portal within the Bid Closing Date and Time stipulated in the e-Tender. The Technical Bid should be submitted as per Scope of Work & Technical Specifications along with all technical documents related to the tender and uploaded under **"Technical Attachment" Tab only**. **Bidders to note that no price details should be uploaded in "Technical Attachment" Tab Page. Details of prices as per Price Bid format/Priced bid can be uploaded as Attachment just below the "Tendering Text" in the attachment option under "Notes & Attachments" tab. A screen shot in this regard is given in the "Instruction to Bidder for Submission" file for guidance. Offer not complying with above submission procedure will be rejected as per Bid Evaluation Criteria mentioned in Part-2, (III)-Commercial Criteria.**

Regarding new bid submission procedure (effective from 12.04.2017 onwards), please refer **new vendor manual** available in OIL's E-tender Site:

8.0 OIL now looks forward to your active participation in the IFB.

Thanking you,

Yours faithfully,
OIL INDIA LIMITED

(Bhavik Mody)
Manager (C&P)
For GM (C&P)
For Executive Director (RF)

PART - 1

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.

A. BID DOCUMENTS

2.0 The services required, bidding procedures and contract terms are prescribed in the Bid Document. This Bid Document includes the following:

(a) A Forwarding Letter highlighting the following points:

(i) Company's IFB No. & Type and Tender Fee
(ii) Bid closing date and time
(iii) Bid opening date and time
(iv) Bid submission Mode
(v) Bid opening place
(vi) Bid validity, Mobilisation time & Duration of contract
(vii) The amount of Bid Security with validity
(viii) The amount of Performance Guarantee with validity
(ix) Quantum of liquidated damages for default in timely completion of contract

(b) Instructions to Bidders, (Part-1)
(c) Bid Evaluation Criteria, (Part-2)
(d) General Conditions of Contract, (Part-3, Section-I)
(e) Scope of Work/ Special Conditions of Contract for Civil works (Part-3, Section-II)
(f) Scope of Work/ Special Conditions of Contract for Electrical works & BMS (Part-3, Section-III)
(g) Price Bid Format, (Proforma-B)
(h) Bid Form, (Proforma-C)
(i) Statement of Compliance, (Proforma-D)
(j) Bid Security Form, (Proforma-E)
(k) Performance Security Form, (Proforma-F)
(l) Agreement Form, (Proforma-G)
(m) Proforma of Letter of Authority, (Proforma-H)
(n) Authorisation for Attending Bid Opening, (Proforma-I)
(o) Integrity Pact, (Annexure-A1)
(p) Format for Certificate of Annual turnover & Net Worth (Annexure – VI)
(q) General HSE Points (Appendix-A)
(r) Procedure for obtaining labour license (Appendix-B)
(s) Provisions for Purchase Preference Policy (linked with Local Content) (PP-LC) (Annexure-X)
(t) Undertaking towards submission of authentic information/documents as per Format vide Annexure-XI.
(u) Certificate for Restriction of Procurement (Proforma-A)

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

2.2 Bidders shall be deemed, prior to submitting their bids, to have satisfied themselves about the weather conditions, working culture in the area, socio-political

environment, safety & security aspects, law & order situation and law of the land, and obtain for themselves all necessary information as to the risks, contingencies and all other circumstances, which may influence or affect the various obligations under the Contract.

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 In case of e-Tender, Bidder must submit the bid using Organizational Class-3 Digital Signature issued by the Competent Authority in favour of the bidder. Bid submitted using Digital Signature other than the Digital Signature of the bidder shall be summarily rejected.

3.3 Unsolicited bids will not be considered and will be rejected straightway.

4.0 AMENDMENT OF BID 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 Bid Documents through issuance of an Addendum.

4.2 The Addendum will be uploaded in OIL's E-Tender Portal in the "Technical RFx Response" 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 are to check from time to time the E-Tender portal ["Technical RFx Response" under the tab "Amendments to Tender Documents"] for any amendments to the bid documents before submission of their bids. No separate intimation shall be sent to the Bidders.**

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 official and notarised English translated version, which shall govern for the purpose of bid interpretation.

5.2 **BIDDER'S/AGENT'S NAME & ADDRESS**:

Bidders should indicate in their bids their detailed postal address including the Fax/Telephone /Cell Phone Nos. and E-mail address. Similar information should also be provided in respect of their authorised Agents in India, if any.

5.3 **DOCUMENTS COMPRISING THE BID**:

Bids are invited under Single Stage Two Bid System. The bid to be uploaded by the Bidder in OIL's E-Tender portal shall comprise of the following components:

(A) TECHNICAL BID

(i) Complete technical details of the services & equipment specifications with catalogue, etc.
(ii) Documentary evidence established in accordance with Clause 10.0 hereunder.
(iii) Bid Security (scanned) in accordance with Clause 11.0 hereunder. Original Bid Security should be sent as per Clause No. 11.11 hereunder.
(iv) Copy of Bid-Form **without** indicating prices in Proforma-C
(v) Statement of Compliance as per Proforma–D
(vi) Copy of Priced Bid **without** indicating prices (Proforma-B)

(vii) Integrity Pact digitally signed by OIL's competent personnel as Annexure-A1, attached with the bid document to be digitally signed by the Bidder.
(viii) Undertaking towards submission of authentic information/documents as per Format vide Annexure-XI.

(B) PRICED BID

(i) Bidder shall quote their prices in the following Proforma available in OIL's E-procurement portal in the **"Notes & Attachments" Tab**:

(1) Price-Bid Format as per Proforma-B
(2) Bid Form as per Proforma-C

(ii) The Priced Bid shall contain the prices and any other commercial information pertaining to the service offered. Currency of quote shall be INR only.

(iii) For convenience of the qualified Bidders and to improve transparency, the rates/costs quoted by bidders against OIL's e-tenders shall be available for online viewing by such Bidders whose price bids are opened by Company. A Bidder can view item-wise rates/costs of all other such peer bidders against the tender immediately after price bid opening, if the e-tender is floated by Company with PRICE CONDITION. In case the Price-Bid is invited by Company through attachment form under "Notes & Attachment" (i.e. NO PRICE Condition), Bidder must upload their detailed Price-Bid as per the prescribed format under "Notes & Attachment", in addition to filling up the "Total Bid Value" Tab taking into account the cost of all individual line items and other applicable charges like freight, tax, duties, levies etc. Under NO PRICE condition (i.e. Price Bid in attachment form), the "Total Bid Value" as calculated & quoted by the Bidders shall only be shared amongst the eligible bidders and Company will not assume any responsibility whatsoever towards calculation errors/omissions therein, if any. Notwithstanding to sharing the "Total Bid Value" or the same is whether filled up by the Bidder or not, Company will evaluate the cost details to ascertain the inter-se-ranking of bidders strictly as per the uploaded attachment and Bid Evaluation Criteria only. Online view of prices as above shall be available to the Bidders only up to seven (07) days from the date of Price-Bid opening of the e-tender.

6.0 BID FORM: The Bidder shall complete the Bid Form and the appropriate Price Schedule furnished in their Bid.

7.0 BID PRICE:

7.1 Prices must be quoted by the Bidders online as per the price bid format available in OIL's E- Tender Portal in "Notes & Attachment" Tab. Unit prices must be quoted by the Bidders, both in words and in figures.

7.2 Prices quoted by the successful Bidder must remain firm during its performance of the Contract and is not subject to variation on any account.

7.3 All duties and taxes including Corporate Income Tax, Personal Tax, Octroi/Entry Tax, other Cess/levies etc. except Goods and Service Tax (GST) payable by the successful Bidder under the Contract for which this Bid Document is being issued, shall be included in the rates, prices and total Bid Price submitted by the Bidder, and the evaluation and comparison of bids shall be made accordingly. For example, personal taxes and/or any corporate taxes arising out of the profits on the contract as per rules of the country shall be borne by the Bidder.

8.0 CURRENCY OF BID AND PAYMENT: A Bidder is expected to submit their bid in Indian Rupees. Currency once quoted will not be allowed to be changed.

9.0 DOCUMENTS ESTABLISHING BIDDER'S ELIGIBILITY AND QUALIFICATIONS:

9.1 These are listed in **BID EVALUATION CRITERIA (BEC), PART-2** of the Bid document.

10.0 BID SECURITY:

10.1 The Bid Security is required to protect the Company against the risk of Bidder's conduct, which would warrant forfeiture of the Bid Security, pursuant to sub-clause 10.8.

10.2 All the bids must be accompanied by Bid Security in Original for the amount as mentioned in the "Forwarding Letter" or an equivalent amount in other freely convertible currency and shall be in DD/FDR (account OIL INDIA LIMITED)/NEFT/RTGS/Electronic fund transfer to designated account of OIL/online payment through OIL's e-portal/Bank Guarantee (BG) in OIL's prescribed format as enclosed with the NIT vide Proforma-E from any schedule Indian Bank or Any Branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank in case of domestic bidder.

10.3 Bank Guarantee issued by a Scheduled Bank on India at the request of some other Non-Schedule Bank of India shall not be acceptable.

10.4 The Bank Guarantee shall be valid for the time as asked for in the Bid Document. Bank Guarantees issued by Banks in India should be on non-judicial stamp paper of requisite value, as per Indian Stamp Act, purchased in the name of the Banker.

10.5 Any bid not secured in accordance with sub-clause 10.2 above shall be rejected by the Company as non-responsive.

10.6 The bidders shall extend the validity of the Bid Security suitably, if and when specifically advised by OIL, at the bidder's cost.

10.7 Unsuccessful Bidder's Bid Security will be discharged and/or returned within 30 days after finalization of the Tender.

10.8 Successful Bidder's Bid Security will be discharged and/or returned upon Bidder's furnishing the Performance Security and signing of the contract. Successful bidder will however ensure validity of the Bid Security till such time the Performance Security in conformity with Clause 27.0 below is furnished.

10.9 Bid Security shall not accrue any interest during its period of validity or extended validity.

10.10 The Bid Security may be forfeited:

a) If the bidder withdraws the bid within its original/extended validity.
b) If the bidder modifies/revises their bid suo-moto.
c) If the bidder does not accept the order/contract.
d) If the bidder does not furnish Performance Security Deposit within the stipulated time as per tender/order/contract.
e) If it is established that the bidder has submitted fraudulent documents or has indulged into corrupt and fraudulent practice, the bid security shall be forfeited after due process in addition to other action against the bidder.

10.11 In case any bidder withdraws their bid during the period of bid validity, Bid Security will be forfeited and the party shall be debarred for a period of 2 (two)

years or as deemed fit as per the prevailing Banning Policy of the Company (OIL).

10.12 The scanned copy of the original Bid Security submitted in the form of Bank Guarantee must be uploaded by bidder along with the Technical bid in the "Technical Attachment" tab of OIL's E-portal. The original Bid Security shall be submitted by bidder to the office of GM-C&P, Oil India Ltd., Rajasthan Field, OIL House, 2A, District Shopping Centre, Saraswatinagar, Basni, Jodhpur-342005, India in a sealed envelope which must reach GM-C&P's office on or before the scheduled Bid Closing date and time.

10.13 A bid shall be rejected straightway if Original Bid Security is not received within the stipulated date & time mentioned in the Tender and/or if the Bid Security validity is shorter than the validity indicated in Tender and/or if the Bid Security amount is lesser than the amount indicated in the Tender.

10.14 The Bank Guarantee issuing bank branch must ensure the following:

The Bank Guarantee issued by the bank must be routed through SFMS platform as per the following details:
"MT 760 / MT 760 COV for issuance of bank guarantee.
"MT 760 / MT 767 COV for amendment of bank guarantee.

[Tender Number should reflect in the SFMS text under "MT 760 / MT 760 COV]

The above message/intimation shall be sent through SFMS by the BG issuing bank branch to Axis Bank, Jodhpur Branch, IFS Code - UTIB0000057; Swift Code: AXISINBB057. Branch Address - AXIS Bank Ltd, Prince Tower, Near Jaljog Circle, Residency Road, Jodhpur - 342003".:

10.15 The following is the Bank details of OIL, Rajasthan Field for obtaining Bank Guarantee:

Bank Details of Beneficiary(OIL, Rajasthan Field)	
a) Bank Name	CORPORATION BANK
b) Branch Name	JODHPUR BRANCH (0492)
c) Branch Address	No. 76, LK TOWER, CHOPASANI ROAD, JODHPUR-342003, RAJASTHAN
d) Banker Account No.	049200201000626
e) Type of Account	CURRENT ACCOUNT
f) IFSC Code	CORP0000492
g) MICR Code	342017002
h) SWIFT Code	N/A
i) Contact No.	0291-2649128, 2625504
j) Contact Person Name	MR. P. RAMNATH DIWAKAR
k) Fax No.	-
l) Email Id	cb492@corpbank.co.in

10.16 Bid Security amount through NEFT or RTGS mode may be deposited on or before bid closing date and time to either of the following designated OIL's bank accounts:

Bank Details of Beneficiary: Oil India Limited, Rajasthan Field		
a	Bank Name	Corporation Bank
b	Branch Name	Jodhpur
c	Branch Address	Dist- Jodhpur
d	Bank Account No.	**510101005227878**
e	Type of Account	Current Account
f	IFSC Code	**CORP0000492**

Note: If the bid security is submitted through NEFT or RTGS mode, details such as **UTR No., Tender No., Bidder's name & Deposited Amount etc. must be uploaded with the** Unpriced Techno-Commercial Bid documents.

11.0 **EXEMPTION FROM SUBMISSION OF BID SECURITY:**

11.1 Central Govt. offices and Central Public Sector undertakings are exempted from submitting Bid Security.

11.2 Micro or Small Enterprises (MSE) bidders are exempted from submitting Bid Security. Categorization and various Criteria applicable to MSE bidders shall be guided by the Gazette Notification No. CG-DL-E-26062020-220191 dated 26.06.2020 issued by MINISTRY OF MICRO, SMALL AND MEDIUM ENTERPRISES. The existing enterprises registered under EM- Part-II or UAM till 30th June'2020 shall continue to be valid only for a period up to the 31st day of March, 2021.

11.3 The bidder claiming as MSE status (MSE-General, MSE-SC/ST, MSE - Woman) against this tender has to submit the following documents for availing the benefits applicable to MSEs:

i. Udyam Registration Number (URN) with Udyam Registration Certificate(URC)

OR

ii. Proof of registration with District Industry Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or Udyog Adhar registration or registration with any other body specified by Ministry of MSME

11.4 In case bidding MSE is owned by Schedule Caste or Schedule Tribe entrepreneur or Woman Entrepreneur, valid documentary evidence issued by the agency who has registered the bidder as MSE owned by SC/ST entrepreneur/ Woman Entrepreneurs should also be enclosed.

12.0 PERIOD OF VALIDITY OF BIDS:

12.1 Bids shall remain **valid for 120** days from the date of closing of bid prescribed by the Company. **Bids of shorter validity will be rejected as being non-responsive.** If nothing is mentioned by the Bidder in their bid about the bid validity, it will be presumed that the bid is valid for 120 days from Bid Closing Date.

12.2 In exceptional circumstances, the Company 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 through Fax or e-mail. The Bid Security provided under Para 11.0 above shall also be suitably extended. 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.

13.0 SIGNING OF BID:

13.1 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 with Organizations Name [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. Digital Signature Certificates having "Organization Name" field other than Bidder's Name are not acceptable. However, aforesaid Digital Signature Certificates having Bidder's Name in the "Organization Name" field are acceptable. Bidder must also have Encryption Certificate along with Digital Signature Certificate (DSC) of Class III [Organization].

The bid including all uploaded documents shall be digitally signed by duly authorized representative of the Bidder holding a Power of Attorney to bind the Bidder to the contract.
If any modifications are made to a document after attaching digital signature, the digital signature shall again be attached to such documents before uploading the same. The Power of Attorney shall be submitted by Bidder as mentioned in Para 15.1 below.

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 its proper usage by their employees.

13.2 The original and all copies of the bid shall be typed or written in indelible inks. Since bids are to be submitted ONLINE with digital signature, manual signature is NOT relevant. The letter of authorisation (as per **Proforma-H**) shall be indicated by written Power of Attorney accompanying the Bid.

13.3 Any physical documents submitted by Bidders shall contain no interlineations, white fluid erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such correction shall be initialled by the person or persons who has/have digitally signed the Bid.

13.4 Any Bid, which is incomplete, ambiguous, or not in compliance with the Bidding process will be rejected.

14.0 SUBMISSION OF BIDS

14.1 The tender is processed under Single Stage - Two Bid system. Bidder shall submit the Technical bid and Priced bid along with all the Annexure and Proforma (wherever applicable) and copies of documents in electronic form through OIL's e-procurement portal within the Bid Closing Date & Time stipulated in the e-tender. For submission of Bids online at OIL's E-Tender Portal, detailed instructions are available in **"HELP DOCUMENTATION"** available in OIL's E-Tender Portal. Guidelines for bid submission are also provided in the "Forwarding Letter". The Technical Bid is to be submitted as per Terms of Reference/Technical Specifications of the bid document and Priced Bid as per the Price Schedule. The Technical Bid should be uploaded in the "Technical Attachment" under "Techno-Commercial Bid" Tab Page only. Prices to be quoted as per Proforma-B

should be uploaded as Attachment just below the "Tendering Text" in the attachment link under "Techno-Commercial Bid" Tab under General Data in the e-portal. **No price should be given in the "Technical Attachment", otherwise bid shall be rejected.** The priced bid should not be submitted in physical form and which shall not be considered. For details please refer "INSTRUCTIONS" documents. However, the following documents in one set should necessarily be submitted in physical form in sealed envelope super-scribing the "IFB No., Brief Description of services and Bid Closing/Opening Date & Time along with the Bidder's name" and should be submitted to GM (C&P), Oil India Ltd., Rajasthan Project, 2A-District Shopping Centre, Saraswati Nagar, Basni, Jodhpur-342005, Rajasthan, India on or before 11.00 Hrs (IST) on the bid closing date indicated in the IFB:

i) The Original Bid Security along with 1(one) copy
ii) Power of Attorney for signing of the bid digitally
iii) Any other document required to be submitted in original as per bid document requirement.
iv) Printed catalogue and literature if called for in the bid document.

Documents sent through E-mail/Fax/Telephonic method will not be considered.

14.2 All the conditions of the contract to be made with the successful Bidder are given in various Sections of the Bid Document. Bidders are requested to state their compliance to each clause as per Proforma-D of the bid document and in case of non-compliance, if any, the same to be highlighted in the Proforma–D and the same should be uploaded along with the Technical Bid.

14.3 Timely delivery of the documents in physical form as stated in Para 15.1 above is the responsibility of the Bidder. Bidders should send the same through Registered Post or by Courier Services or by hand delivery to the Officer in Charge of the particular tender before the Bid Closing Date and Time. Company shall not be responsible for any postal delay/transit loss.

14.4 Bids received through the e-procurement portal shall only be accepted. Bids received in any other form shall not be accepted.

15.0 INDIAN AGENT/REPRESENTATIVE/RETAINER/ASSOCIATE: Not Applicable.

16.0 DEADLINE FOR SUBMISSION OF BIDS:

16.1 Bids should be submitted online as per the online tender submission deadline. Bidders will not be permitted by System to make any changes in their bid/quote after the bid submission deadline is reached.

16.2 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.

16.3 The documents in physical form as stated in Para 15.1 must be received by Company at the address mentioned above on or before 11.00 Hrs (IST) on the scheduled Bid Closing Date. Timely delivery of the same is the responsibility of the Bidders.

17.0 LATE BIDS: 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. The documents in physical form mainly the Original Bid Security if received by the Company after the deadline for submission prescribed by the Company shall be rejected and shall be returned to the Bidders in unopened condition immediately.

18.0 MODIFICATION AND WITHDRAWAL OF BIDS:

18.1 The Bidder after submission of Bid may modify or withdraw its Bid prior to Bid Closing Date & Time.

18.2 No Bid can be modified or withdrawn subsequent to the deadline for submission of Bids.

18.3 No Bid can 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 and Bidder shall also be debarred from participation in future tenders of OIL and shall be put in the Holiday List for a period of six (06) months to two (02) years as the case may be as per Company's Banning Policy.

19.0 EXTENSION OF BID SUBMISSION DATE: 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.

20.0 BID OPENING AND EVALUATION:

20.1 Company will open the Technical Bids, including submission made pursuant to clause 19.0, in presence of Bidder's representatives who choose to attend at the date, time and place mentioned in the Forwarding Letter. However, an authorisation letter (as per **Proforma-I**) 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, only "Technical Attachment" will be opened. Bidders therefore should ensure that technical bid is uploaded in the "Technical Attachment" Tab Page only in the E-portal.

20.2 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.

20.3 Bids which have been withdrawn pursuant to clause 19.0 shall not be opened. Company will examine bids to determine whether they are complete, whether requisite Bid Securities have been furnished, whether documents have been digitally signed and whether the bids are generally in order.

20.4 At bid opening, Company will announce the Bidder's names, written notifications of bid modifications or withdrawal, if any, the presence of requisite Bid Security, and such other details as the Company may consider appropriate.

20.5 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 vice-versa, clarifications may be sought by OIL. In all the above situations, the Bidder will not be allowed to change the basic structure of the Bid already submitted by them and no change in the price or substance of the Bid shall be sought, offered or permitted.

20.6 Prior to the detailed evaluation, Company will determine the substantial responsiveness of each bid to the requirement of the Bid Documents. For purpose of these paragraphs, a substantially responsive bid is one, which conforms to all the terms and conditions of the Bid 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 Bid 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. The Company's determination of Bid's responsiveness is to be based on the contents of the Bid itself without recourse to extrinsic evidence.

20.7 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.

20.8 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.

21.0 OPENING OF PRICED BIDS:

21.1 Company will open the Priced Bids of the technically qualified Bidders on a specific date in presence of representatives of the qualified Bidders. The technically qualified Bidders will be intimated about the Priced Bid Opening Date & Time in advance. In case of any unscheduled holiday or Bandh on the Priced Bid Opening Date, the Bids will be opened on the next working day.

21.2 The Company will examine the Price quoted by Bidders to determine whether they are complete, any computational errors have been made, the documents have been properly signed, and the bids are generally in order.

21.3 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price (that is obtained by multiplying the unit price and quantity) the unit price shall prevail and the total price shall be corrected accordingly. If there is a discrepancy between words, and figures, the amount in words will prevail. If any Bidder does not accept the correction of the errors, their Bid will be rejected.

22.0 CONVERSION TO SINGLE CURRENCY: Not Applicable.

23.0 EVALUATION AND COMPARISON OF BIDS: The Company will evaluate and compare the bids as per **BID EVALUATION CRITERIA (BEC), PART-2** of the Bid Document.

23.1 **DISCOUNTS / REBATES**: Unconditional discounts/rebates, if any, given in the bid will be considered for evaluation.

23.2 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.

23.3 **LOADING OF FOREIGN EXCHANGE**: There would be no loading of foreign exchange for deciding the inter-se-ranking of domestic Bidders.

23.4 **EXCHANGE RATE RISK**: Since Indian Bidders are now permitted to quote in any currency and also receive payments in that currency, Company will not be compensating for any exchange rate fluctuations in respect of the services.

23.5 **REPATRIATION OF RUPEE COST**: Not Applicable.

24.0 CONTACTING THE COMPANY:
24.1 Except as otherwise provided in **Clause 20.0** above, no Bidder shall contact Company 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 Company vide **sub-clause 21.6.**

24.2 An effort by a Bidder to influence the Company in the Company's bid evaluation, bid comparison or Contract award decisions may result in the rejection of their bid.

D. AWARD OF CONTRACT

25.0 AWARD CRITERIA:
25.1 The Company 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.

26.0 COMPANY'S RIGHT TO ACCEPT OR REJECT ANY BID:
26.1 Company 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 Company's action.

27.0 NOTIFICATION OF AWARD:
27.1 Prior to the expiry of the period of bid validity or extended validity, Company will notify the successful Bidder in writing by registered letter or by fax or E-mail (to be confirmed in writing by registered / couriered letter) that its Bid has been accepted.
27.2 The notification of award will constitute the formation of the Contract.
27.3 Upon the successful Bidder's furnishing of Performance Security pursuant to Clause below, the Company will promptly notify each un-successful Bidder and will discharge their Bid Security, pursuant to Clause 11.0 hereinabove.

28.0 PERFORMANCE SECURITY: Successful bidder has to submit Performance Security as mentioned in GCC clause no. 10.0.

28.1 Performance security @10% of total contract value is applicable against this contract. Out of which a Bank Guarantee of 2.5% of total contract value (PBG amount and validity mentioned in the LOA) has to be submitted as per GCC clause no. 10.0.

The Performance Bank Guarantee shall be denominated in the currency of the contract.

28.2 The Performance Bank Guarantee specified above must be valid as mentioned in the LOA. The Performance Bank Guarantee will be discharged by Company not later than 30 days following its expiry. In the event of any extension of the Contract period, Bank Guarantee should be extended by Contractor by the period equivalent to the extended period.

28.3 The Performance Bank Guarantee shall be payable to Company as compensation for any loss resulting from Contractor's failure to fulfil its obligations under the Contract.

28.4 The Performance Security will not accrue any interest during its period of validity or extended validity.

28.5 Failure of the successful Bidder to comply with the requirements of **clause 28.0 and/or 29.0** and their sub-clauses shall constitute sufficient grounds for annulment of the award and forfeiture of the Bid Security or Performance Security. In such an

eventuality, the party shall be put in the Holiday List for a period from six (06) months to two (02) years as the case may be as per Company's Banning Policy.

28.6 Bidders are requested to advise the Bank Guarantee issuing bank to comply with the following and ensure to submit, the receipt of the copy of SFMS message as sent by the issuing bank branch, along with the original Bank Guarantee in OIL's office.

The bank guarantee issued by the bank must be routed through SFMS platform as per following details:
(a) "MT 760 / MT 760 COV for issuance of bank guarantee
(b) "MT 760 / MT 767 COV for amendment of bank guarantee
The above message/intimation shall be sent through SFMS by the BG issuing bank branch to Axis Bank, Jodhpur Branch, IFS Code - UTIB0000057; Swift Code: AXISINBB057. Branch Address - AXIS Bank Ltd, Prince Tower, Near Jaljog Circle, Residency Road, Jodhpur - 342003".

28.7 Further to the aforementioned Performance Bank Guarantee, OIL shall deduct retention money from each running bill of the contractor during the currency of the contract. The retention money deducted shall be 7.5% value of each running bill.

28.8 75% of the total retention money shall be released along with the Performance Bank Guarantee. Balance 25% of retention money along with the retention money retained from the O&M bills shall be released within 30 days of end of O&M period.

29.0 SIGNING OF CONTRACT:
29.1 At the same time as the Company notifies the successful Bidder that its Bid has been accepted, the Company will either call the successful Bidder for signing of the agreement or send the Contract Form provided in the Bid Documents, along with the General & Special Conditions of Contract, Technical Specifications, Schedule of Rates incorporating all agreements agreed between the two parties.

29.2 The successful Bidder shall sign and date the contract and return it to the Company after receipt of LOA. Till the contract is signed, the LOA issued to the successful Bidder shall remain binding amongst the two parties.

29.3 In the event of failure on the part of the successful Bidder to sign the contract, OIL reserves the right to terminate the LOA issued to the successful Bidder and invoke the Bid Security or the Performance Security if submitted by the successful Bidder. The party shall also be put in the Holiday List for a period from six (06) months to two (02) years as the case may be as per Company's Banning Policy.

30.0 FURNISHING FRAUDULENT INFORMATION/DOCUMENTS:
30.1 If it is found that a Bidder/contractor has furnished fraudulent information / documents, the Bid Security/Performance Security shall be forfeited and the party shall be banned for a period of 3 (three) years from the date of detection of such fraudulent act besides the legal action as per Company's Banning Policy.

31.0 CREDIT FACILITY:
31.1 Bidders should indicate clearly in the Bid about availability of any credit facility inclusive of Government to Government credits indicating the applicable terms and conditions of such credit.

32.0 MOBILISATION ADVANCE PAYMENT: Not Applicable.

33.0 INTEGRITY PACT:

33.1 OIL shall be entering into an Integrity Pact with the Bidders as per format enclosed vide **Annexure-A1** of the Bid Document. The Integrity Pact has been duly signed digitally by OIL's competent signatory and uploaded in the OIL's e-portal. The Integrity Pact shall be uploaded by the Bidder (along with the technical Bid) duly signed by the same signatory who signed the Bid i.e. who is duly authorized to sign the Bid. Uploading the Integrity Pact in the OIL's E-portal with digital signature will be construed that all pages of the Integrity Pact has been signed by the Bidder's authorized signatory who has signed the bid. **If any Bidder refuses to sign Integrity Pact or declines to submit the Integrity Pact, their bid shall be rejected straightway.**

33.2 OIL has appointed the following persons as Independent External Monitors (IEM) for a period of 3 (three) years to oversee implementation of Integrity Pact in OIL. Bidders may contact the Independent External Monitor for any matter relating to the IFB at the following addresses:

1. Shri Shri Sutanu Behuria, IAS(Retd.);
   E-mail: sutanu2911@gmail.com
2. Shri Rudhra Gangadharan, IAS (Retd.), Ex-Secretary, Ministry of Agriculture
   E-mail: rudhra.gangadharan@gmail.com
3. Shri Om Prakash Singh, IPS (Retd.);
   E-mail: ops2020@rediffmail.com

34.0 LOCAL CONDITIONS:

34.1 It is imperative for each Bidder to be fully informed themselves of all Indian as well as local conditions, factors and legislation which may have any effect on the execution of the work covered under the Bidding Document. The Bidders shall be deemed, prior to submitting their bids to have satisfied themselves of all the aspects covering the nature of the work as stipulated in the Bidding Document and obtain for themselves all necessary information as to the risks, contingencies and all other circumstances, which may influence or affect the various obligations under the Contract.

No request will be considered for clarifications from the Company (OIL) regarding such conditions, factors and legislation. It is understood and agreed that such conditions, factors and legislation have been properly investigated and considered by the Bidders while submitting the Bids. Failure to do so shall not relieve the Bidders from responsibility to estimate properly the cost of performing the work within the provided timeframe. Company (OIL) will assume no responsibility for any understandings or representations concerning conditions made by any of their officers prior to award of the Contract. Company (OIL) shall not permit any Changes to the time schedule of the Contract or any financial adjustments arising from the Bidder's lack of knowledge and its effect on the cost of execution of the Contract.

35.0 SPECIFICATIONS: 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/services to be executed under the contract.

36.0 **CUSTOMS DUTY**: Not Applicable.

37.0 PURCHASE PREFERENCE: Purchase Preference to MSME will be applicable as per latest Govt. Guidelines. Bidders to take note of the same and quote accordingly. It is Bidder's responsibility to submit necessary documents from the Competent Authority to establish that they are eligible for purchase preference against this tender.

38.0 PURCHASE PREFERENCE ON LOCAL CONTENT: Purchase preference policy-linked with Local Content (PP - LC) notified vide letter no. O-27011/44/2015-ONG-II/FP dated 25.04.2017 of MoP&NG shall be applicable in this tender. Bidders seeking benefits, under Purchase Preference Policy (linked with Local Content) (PP-LC) shall have to

comply with all the provisions specified in **Annexure-X** and shall have to submit all undertakings / documents applicable for this policy.

39.0 General Health, Safety and Environment (HSE) aspects shall be as per the terms set forth in Appendix-A of the tender document.

40.0 Procedure for obtaining Labour License under Contract Labour (R&A) Act, 1970 &Central Rules-1971 shall be as per terms set forth in Appendix-B of tender document.

41.0 The User Manual provided on the e-portal on the procedure How to create Response for submitting offer may be referred for guidance.

42.0 Bidder must submit undertaking towards submission of authentic information/documents as per Format vide Annexure-XI.

43.0 Reference is invited to the office memorandum F.No. 6/18/2019-PPD dated 23rd July,2020 (order - public Procurement no.1) and clarification to order procurement no. 1 vide order (Public Procurement no. 3) dated 24th July'2020 issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, where Govt. of India restricts public procurement from a country which shares a land border with India. Bidders are advised to refer to this memorandum and submit their bids in compliance to the same. **Bidders must also submit an undertaking as per Proforma-A on their Company letterhead along with their technical bid.**

44.0 Oil India Limited (OIL) has engaged the following 09 (Nine) Independent Inspection Agencies for a period of 04 (four) years with effect from 06.05.2020 to verify and certify of various documents required against BEC/BRC of the tender:

i. M/s. RINA India Pvt. Ltd.
ii. M/s. Dr. Amin Controller Pvt. Ltd.
iii. M/s. Germanischer Llyod Industrial Services GmbH (DNV GL- Oil & Gas)
iv. M/s. TÜV SÜD South Asia Pvt. Ltd.
v. M/s. IRCLASS Systems and Solutions Private Limited
vi. M/s. Gulf Llyods Industrial Services (India) Pvt. Ltd.
vii. M/s. TUV India Private Limited
viii. M/s. TÜV Rheinland (India) Pvt. Ltd.
ix. M/s. Bureau Veritas (India) Private Limited

44.1 The Bidders have to get verified and certified the various documents required against BEC/BRC of the tender by anyone of the above Independent Inspection Agencies and submit the duly certified Inspection Certificate by the Inspection Agencies along with the Technical Bid of the Tender. All Charges of the Third-party Independent Inspection Agencies towards verification of bidder's documents and certification thereof shall be borne by the respective bidders and Payments on account of above inspection, verification and certification shall be made directly by the Bidder to the Inspection Agency(s). OIL will not be responsible for any payment dispute between Bidders and Third Party Inspection Agencies.

44.2 As mentioned above, Bidder(s) have to submit the verified documents along with the Technical Bids. Bid submitted with un-verified supporting documents shall not be normally considered. However, in case a bidder submits its bid alongwith all relevant supporting documents as per BEC/BRC without getting all/some of them verified by the designated Independent Inspection agency, such bid can be provisionally considered provided it is accompanied by an Undertaking by the Bidder on their official letterhead to submit the duly verified copies/verification certificate within seven (7) days of actual bid opening. Company will neither send any reminder nor seek any clarification in this regard from such bidders, and the bid will be rejected outright if the bidder fails to

submit the verified copies/verification certificate within seven (7) days of actual bid opening at its own risk and responsibility. If a bidder does not submit the undertaking towards submission of third party certification within 7 days from date of Bid Closing date, but certified document reaches us within the cut-off date of above seven (7) days, then such bids shall be considered.

44.3 The methodology of inspection/ verification of documents followed by the agencies is broadly as under but not limited to :

(a) Oil India Limited will incorporate a relevant clause in the tender along with the list of empanelled inspection agencies where document verification pertaining to BEC/BRC of the tender is required. The prospective bidder will contact any of the empanelled inspection agencies against such tender. When prospective bidders approach any of the OIL's empanelled Inspection Agency, the agency will ask for the tender document and should go through the Tender Document, especially the requirements of BEC/BRC and list the documents to be verified. The inspection Agency shall depute their qualified/competent inspector to the Bidder's premises to check the original documents and certify the copies which the bidder shall submit along with their bids. OIL will reserve the right to ask the inspection agencies to verify the documents with source, if required at no extra cost to OIL. A copy of the Inspection Certificate shall be directly sent to the Concerned Tendering officer of OIL INDIA LIMITED, mentioned in the respective tender.

(b) Verification of documents are normally categorised as under:

- General Requirement:
  - Check Bidder's PAN Card
  - Check Bidder's GST Certificate
  - Check ITR of company – last three years (minimum)
  - Check Bidder's Certificate of Incorporation – Domestic Bidder.

- Additional Documents : (If applicable against the tender)
  - Joint Ventures Agreements – To Double-check with JV Partners
  - Consortium Agreements – To Double-check with Consortium Partners
  - Holding/ Parent/Subsidiary Company – To check the notarized Share Holding pattern

- Technical Criteria
  - Experience Proof –To check Original Work Order as per BEC /criteria
  - To check Company Name
  - To check Similar Work Definition against Work Order, Scope of work (JV or Consortium too)
  - To check the Execution period
  - To Check the Completion Certificates – Letter of Appreciations of proper Execution
  - Reference contact verification and true copy verification
  - Match Original Work Order/Contract Copy with Soft Copies or notarized scan copies
- Financial Criteria
  - Check Audited Balance Sheet – Turnover as per BEC along with the bidder's compliance with respect to the following clause:

Considering the time required for preparation of Financial Statements, if the last date of the preceding financial / accounting year falls within the preceding six months reckoned from the original bid closing date and the Financial Statements

of the preceding financial / accounting year are not available with the bidder, then the financial turnover of the previous three financial/accounting years excluding the preceding financial / accounting year will be considered. In such cases, the Net worth of the previous financial / accounting year excluding the preceding financial / accounting year will be considered. However, the bidder has to submit an affidavit/undertaking certifying that 'the balance sheet/Financial Statements for the financial year _____ (as the case may be) has actually not been audited as on the Original bid closing date as per format'.

- Check Net-Worth – as per BEC
- Check Notarization validity
- Check original audited Balance Sheet with scan copies.
- To check the Line of Credit, if incorporated in the tender.

******

END OF PART - 1

PART – 2

BID EVALUATION CRITERIA (BEC)

A. 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. Bidders are advised not to take any exception/deviations to the bid document.

1.0 **Technical Criteria:**

1.1 Any offer which does not include all the jobs/services mentioned in the Scope of work will be considered as incomplete and rejected.

1.2 Bidder can be any proprietorship firms, partnership firms, private limited companies, Limited companies including PSUs meeting the requisite criteria as mentioned below.

1.3 The Bidder must have Experience of having successfully executed atleast one (01) similar job valuing not less than **INR 25 Cr.** for any Govt. Organization /Public Limited/Private Limited Company, during last 7 (seven) years calculated up to the original bid closing date. The bidder shall furnish necessary documentary evidences in the form of experience certificate(s) issued by the organization to whom such service has been rendered or a copy of contract/work order and completion certificate/payment certificate issued by the client against the said contract, failing which the offer will be rejected.

Note: 'Similar Works' means 'Construction project of Multi-Storied Minimum G+3 RCC Framed Structure Buildings of either Residential, Educational, Institutional, Assembly, Business or in combination of one or more types' employed either by Government organization, public sector or private limited company. The party should upload legible scanned soft copy (preferably colour copy, 200 dpi) of the documentary evidences issued by the employer. The certificates should contain at least the following information:

a) Tender/Contract/Work Order Number with date
b) Description of the job
c) Work Period / Completion date
d) Executed Value of contract

OR

1.3 Alternatively, the bidder must have of having successfully executed at least one (01) project of Multi-storied (G+3) Residential Complex valuing not less than **INR 25 Cr.** for commercial sale purpose, during last 7 (seven) years calculated up to the original bid closing date. The bidder shall submit the following supporting documents in support of the above:

i) Construction permission along with approved plan from local authority
ii) Drawings : Plot Plan / Layout & General Arrangement / Elevation

iii) Completion Certificate from the Architect / Engineer (Structural/Civil)
iv) Completion Certificate / Building use permission from local authority
v) Valuation Certificate from registered third party valuer / insurer
vi) Photographs of the building/complex/project
vii) Catalogue of the building/complex/project

NOTE: OIL reserves the right to verify all the claims of the bidder through a site visit for acceptance of the submitted documents.

1.4 The bidder to categorically submit an undertaking as per attached Annexure-E in regards to Building Management System (BMS) and Rooftop Solar PV Plant.

1.5 The submission may also be accompanied by a concise firm/company profile of the bidder (within 2 pages) mentioning major current / recent past projects among others.

1.6 The Bidder shall have a valid Electrical Contractor's License issued by State Electrical Licensing board. However, in case the bidder does not have a valid Electrical Contractor's License, they should provide an undertaking as per Annexure-B certifying that in case of award of contract to the bidder, the bidder shall ensure that all electrical jobs shall be executed by a sub-contractor OR self with valid Electrical Contractor's License.

1.7 Soft copies (*.pdf / *.jpg / *.png) should be directly scanned from the Original Documents, preferably in Colour, with at least 200 dpi resolution. Documents scanned with poor quality dpi or sharpness or poorly visible texts or inadequate data may lead to straight rejection of the bid. Notwithstanding above, the bidder may be asked to produce the original documents for verification.

1.8 If the bidder is executing similar works contract which is still running and the contract value/quantity executed prior to original date of bid submission is equal to or more than the amount as mentioned in para 1.2 above, such experience will also be taken in to consideration, provided that bidder has submitted satisfactory service execution certificate issued by the user.

1.9 Bidders shall upload duly filled BEC Document Check List as per Annexure-C**.**

2.0 **Financial Criteria:**

2.1 Annual Financial Turnover of the bidder during any of preceding three financial/accounting years from the original bid closing date should be at least **INR 25 Cr.**

2.2 Net worth of bidder must be positive for preceding financial/ accounting year.

2.3 Considering the time required for preparation of Financial Statements, if the last date of preceding financial / accounting year falls within the preceding six months reckoned from the original bid closing date and the Financial Statements of the preceding financial / accounting year are not available with the bidder, then the financial turnover of the previous three financial / accounting years excluding the preceding financial /accounting year will be considered. In such cases, the Net worth of the previous financial / accounting year excluding the preceding financial / accounting year will be considered. However, the bidder has to submit an

affidavit/undertaking certifying *that the balance sheet/Financial Statements for the preceding financial year (as the case may be) has actually not been audited so far.*

Notes:

For proof of Annual Turnover & Net worth any one of the following document must be submitted along with the bid: -

i) A certificate issued by a practicing Chartered/Cost Accountant (with Membership Number and Firm Registration Number), certifying the Annual turnover & Net worth as per format prescribed in ANNEXURE.

OR

ii) Audited Balance Sheet along with Profit & Loss account. In case of foreign bidders, self-attested/digitally signed printed published accounts are also acceptable.

2.4 In case the bidder is a Central Govt. Organization/PSU/State Govt. Organization/Semi-State Govt. Organization or any other Central/State Govt. Undertaking, where the auditor is appointed only after the approval of Comptroller and Auditor General of India and the Central Government, their certificates may be accepted even though FRN is not available. However, bidder to provide documentary evidence for the same.

3.0 Commercial Criteria:

3.1 Bids shall be submitted under single stage two Bid systems i.e. Technical Bid and Priced Bid separately in the OIL's e-Tender portal. Please ensure that Technical Bid / all technical related documents related to the tender are uploaded in the "Technical Attachments" under Rfx Information only. The "TECHNO-COMMERCIAL UNPRICED BID" shall contain all techno-commercial details except the prices. Please note that no price details should be uploaded in Technical RFx Response otherwise bid will be rejected.

3.2 Prices/Rates should be quoted in Indian Rupees and must be as per PRICE BID FORMAT uploaded under Notes and Attachment Tab. The rates quoted and uploaded in the "PRICE BID FORMAT" under Notes and Attachment Tab will only be considered.

3.3 Price Bid Format in the form of MS-Excel sheet has been uploaded in e-Tender.

3.4 Prices and rates quoted by Bidders must be held firm during the term of the contract and not be subject to any variation. Bids with adjustable price terms will be rejected.

3.5 Bid Security (in case of BG) in original must reach the office of GM (C&P), Oil India Limited, Rajasthan Field, 2-A, Saraswati Nagar, District Shopping Centre, Basni, Jodhpur – 342 005, Rajasthan, India, before the bid opening date and time, otherwise, bid will be rejected. The amount of Bid Security shall be as specified in the "Forwarding Letter". Scanned copy of this Bid Security should also be submitted /uploaded online along with the un-priced (Technical) Bid. Public Sector Undertakings and Firms registered with NSIC/Directorate of Industries in India are exempted from submission of bid security against this tender.

3.6 Performance security @10% of total contract value is applicable against this contract. Out of which a Bank Guarantee of 2.5% of total contract value (PBG amount and validity mentioned in the LOA) shall be submitted by the successful bidder within 30 days of issuance of Letter of Award. This PBG shall be released within 30 days after its expiry.

3.6.1 Further to the aforementioned bank guarantee, OIL shall deduct retention money from each running bill of the contractor during the currency of the contract. The retention money deducted shall be 7.5% value of each running bill. 75% of the total retention money shall be released along with the Performance Bank Guarantee. Balance 25% of retention money, along with the retention money retained from the O&M bills, shall be released within 30 days of end of O&M period.

3.6.2 Bidder to categorically confirm acceptance to clause no. 3.6 and 3.6.1 above and to Performance Security clauses under GCC and ITB of this tender.

3.7 Bids received in physical form, but not uploaded in OIL's e-Tender Portal will not be considered.

3.8 Bidders must quote rates in accordance with the price schedule outlined in PRICE BID FORMAT (Proforma-B), otherwise the Bid will be rejected. The Bid in which the rates for any part of the service/work are not quoted in Group A, B & C shall be rejected. However, if no charge is involved for any of the service/item, 'NIL' should be mentioned against such part of service for Group A, B & C. If bidder has not quoted in Group D, then it shall be considered as at par for Group D.

3.9 Bids received by Company after the bid closing date and time will be rejected.

3.10 User ID and Password are not transferable. Offers made by bidders who have not been issued/ permitted to download the bid document by the Company will be rejected.

3.11 Bids shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by bidder, in which case such corrections shall be initiated by the person(s) signing the bid. However, white fluid should not be used for making corrections. Any bid not meeting this requirement shall be rejected.

3.12 The Bids and all uploaded documents must be digitally signed using "Class 3" digital certificate (encryption enabled) [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.

3.13 Conditional offers will be rejected.

3.14 The following Clauses with all its sub-clauses should be agreed in to, failing which the bid will be rejected.

-Performance Security Clause
-Tax Liabilities Clause
-Insurance Clause
-Force Majeure Clause
-Termination Clause
-Arbitration Clause
-Applicable Law Clause
-Liquidated damages clause
-GST clause
-Integrity pact clause

3.15 Integrity pact: OIL shall be entering into an Integrity Pact with the bidder as per format enclosed annexure of the tender document. Each page of this Integrity Pact Proforma has been duly signed by OIL's competent signatory. The Proforma has to be returned by the bidder (along with the technical bid) duly signed by the same signatory

who signed the bid i.e. who is duly authorized to sign the bid. Any bid not accompanied by Integrity Pact Proforma duly signed by the bidder shall be rejected straightway. All pages of the Integrity Pact to be signed by the bidder's authorized signatory who sign the bid.

4.0 General:

4.1 Proforma-D: The Compliance statement must be filled up by bidders and to be submitted along with their bids. In case bidder takes exception to any clause of the bidding document not covered under BEC, 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 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 BEC.

4.2 To ascertain the substantial responsiveness of the bids, Company reserves the right to ask the bidder for clarification in respect of clauses covered under BRC also and such clarification fulfilling the BEC/BRC clauses in toto must be received on or before the deadline given by the company, failing which the offer will be summarily rejected.

4.3 If any of the clauses in the BEC contradicts with other clauses of bidding document elsewhere, then the clauses in the BEC shall prevail.

4.4 The original bid closing date shall be considered by OIL for evaluation of BEC/BRC Criteria even in case of any extension of the original bid closing date.

B. BID EVALUATION CRITERIA (BEC):

1.0 The evaluation of bids shall be done as per the Price Bid Format (SUMMARY) provided in the Tender / e-tender portal. Contract shall be awarded to the L1 bidder evaluated as per the price bid format.

2.0 If there is any discrepancy between the unit price and total price, the unit price will prevail and total price shall be corrected. Similarly, if there is any discrepancy between words and figure, the amount in words shall prevail and will be adopted for evaluation.

3.0 To ascertain the inter-se-ranking, bid prices shall be converted into Indian Rupees and the comparison of responsive bids shall be made strictly as per online Price bid format, subject to corrections / adjustments, if any.

4.0 Other terms and conditions of the enquiry shall be as per General Terms and Conditions for Local Tender. However, if any of the Clauses of the Bid Evaluation Criteria (BEC) mentioned here contradict the Clauses in the General Terms & Conditions of Local Tender of the tender and/or elsewhere, those mentioned in this BEC shall prevail.

Note:

a) It shall be the bidder’s responsibility to ensure submission of unambiguous /clear and sufficient documentary evidence in support of the evaluation criteria.
b) OIL reserves the right to verify any or all data/document/information provided by the bidder. False statement by Bidder will make it liable for appropriate action.
c) For the above purpose, supplementary reinforcing documents submitted by the bidder in response to specific query after bids are opened, may have later date after bid opening date provided that such the certification/letter contents are only historical/confirmatory in nature.

*****

Annexure-B

(Undertaking by the bidder, in case the bidder does not readily possess Electrical Contractor's License)

Date: .....

To,

Oil India Limited
Rajasthan Field
2A-District Shopping Centre
Saraswati Nagar, Basni
Jodhpur – 342005

Sub: Undertaking for Valid Electrical Contractor's License

Ref: **Tender No CJI5331P21 Dated 07.10.2020**

Dear Sir,

I/we hereby state that valid **Electrical Contractor's License** is not readily available with me/us as on bid closing date of the above tender.

In case the contract is awarded to me/us, the entire electrification jobs will be carried out through competent persons only having valid **Competency Certificate of Electrical Supervisor and Wiremen Permit**, working under the firm having valid **Electrical Contractor's License**, and documents as desired by OIL will be submitted before start of the work.

I/we also undertake that all electrification and related jobs as detailed in the SCOPE OF WORK/SPECIAL CONDITIONS OF CONTRACT FOR ELECTRICAL WORKS & BUIDLING MANAGEMENT SYSTEM (BMS) in the reference tender mentioned above to the satisfaction of OIL's Engineer-in-Charge.

Yours faithfully,

Bidder's Sign and Seal

Annexure-C

Bidder's CHECK LIST against Bid Evaluation Criteria (Technical)

Sl	Bid Evaluation Criteria (Technical)	Compliance (Yes / No)	Mention **file name** and **page number** of uploaded supporting documents.
A	**GENERAL**		
1	1.7 Soft copies (*.pdf / *.jpg / *.png) should be directly scanned from the Original Documents, preferably in Colour, with at least 200 dpi resolution. Documents scanned with poor quality dpi or sharpness or poorly visible texts or inadequate data may lead to straight rejection of the bid. Notwithstanding above, the bidder may be asked to produce the original documents for verification.		
a	Are all documents scanned legible and readable?	Yes / No	Please mention page number(s) & file name(s) of uploaded soft copy
b	Are all documents scanned without any alternations or editing?	Yes / No	
c	Are all documents scanned in COLOUR at 200dpi resolution in *.pdf / *.jpg / *.png format?	Yes / No	
B	**TECHNICAL [BID EVALUATION CRITERIA (BEC)]**		
1	1.3 The Bidder must have Experience of having successfully executed atleast one (01) similar job valuing not less than INR 25 Cr. for any Govt. Organization /Public Limited/Private Limited Company, during last 7 (seven) years calculated up to the original bid closing date. The bidder shall furnish necessary documentary evidences in the form of experience certificate(s) issued by the organization to whom such service has been rendered or a copy of contract/work order and completion certificate/payment certificate issued by the client against the said contract, failing which the offer will be rejected. Note: 'Similar Works' means 'Construction project of Multi-Storied Minimum G+3 RCC Framed Structure Buildings of either Residential, Educational, Institutional, Assembly, Business or in combination of one or more types' employed either by Government organization, public sector or private limited company. The party should upload legible scanned soft copy (preferably colour copy, 200 dpi) of the documentary evidences issued by the employer. The certificates should contain at least the following information: a) Tender/Contract/Work Order Number with date b) Description of the job c) Work Period / Completion date d) Executed Value of contract		
a	Have submitted 'Work Completion / Work Progress' certificate issued by the eligible employer?	Yes / No	Please mention page number(s) & file name(s) of uploaded soft copy
b	Is the employer a Govt. Organisation, Public Ltd or Pvt Ltd Company?	Yes / No	
c	Is minimum executed Contract Value = INR 25 Crore or higher?	Yes / No	
d	Was the declared work experience executed or completed during last 7 years?	Yes / No	
e	Is the construction project a Multi-Storied building (G+3 or above, RCC framed)?	Yes / No	
f	Is the building Type a Residential/Educational/Institutional/Assembly/Business or in combination?	Yes / No	
2	1.3 Alternatively, the bidder must have of having successfully executed at least one (01) project of Multi-storied (G+3) Residential Complex valuing not less than INR 25 Cr. for commercial sale purpose, during last 7 (seven) years calculated up to the original bid closing date. The bidder shall submit the following supporting documents in support of the above: i) Construction permission along with approved plan from local authority ii) Drawings : Plot Plan / Layout & General Arrangement / Elevation iii) Completion Certificate from the Architect / Engineer (Structural/Civil) iv) Completion Certificate / Building use permission from local authority v) Valuation Certificate from registered third party valuer / insurer vi) Photographs of the building/complex/project vii) Catalogue of the building/complex/project NOTE: OIL reserves the right to verify all the claims of the bidder through a site visit for acceptance of the submitted documents.		
a	Have submitted 'Work Completion / Work Progress' certificate issued by the Architect/Engineer (Structural Civil)?	Yes / No	Please mention page number(s) & file name(s) of uploaded soft copy
b	Have submitted Completion Certificate / Building use permission from local authority?	Yes / No	
c	Is minimum executed Contract Value = INR 25 Crore or higher? Have submitted valuation certificate from registered third party valuer / insurer?	Yes / No	
d	Was the declared work experience executed or completed during last 7 years?	Yes / No	
e	Is the construction project a Multi-Storied Residential building (G+3 or above, RCC framed)?	Yes / No	
f	Have submitted Drawings of the building?	Yes / No	
3	1.6 The Bidder shall have a valid Electrical Contractor's License issued by State Electrical Licensing board. However, in case the bidder does not have a valid Electrical Contractor's License, they should provide an undertaking as per Annexure-B certifying that in case of award of contract to the bidder, the bidder shall ensure that all electrical jobs shall be executed by a sub-contractor OR self with valid Electrical Contractor's License		
a	Have submitted valid Electrical Contractor's License of self or MoU partner? Or submitted	Yes / No	Please mention page

	undertaking as per **Annexure-B**?		number(s) & file name(s) of uploaded soft copy
4	1.4 The bidder to categorically submit an undertaking as per attached Annexure-E in regards to Building Management System (BMS) and Rooftop Solar PV Plant.		
a	Have submitted valid Electrical Contractor's License of self or MoU partner? Or submitted undertaking as per **Annexure-E**?	Yes / No	Please mention page number(s) & file name(s) of uploaded soft copy
5	1.5 The submission may also be accompanied by a concise firm/company profile of the bidder (within 2 pages) mentioning major current / recent past projects among others.		
a	Have submitted Company Profile with major projects?	Yes / No	Please mention page number(s) & file name(s) of uploaded soft copy

Bidder's Sign and Seal

Annexure-D

(Undertaking by the bidder, in case the last Financial Year has not been audited as required under Financial Criteria of BEC/BRC)

Date:.....

To,

Oil India Limited
Rajasthan Field
2A-District Shopping Centre
Saraswati Nagar, Basni
Jodhpur – 342005

Sub: Undertaking for Un-audited Financial Statement

Ref: **Tender No ..... Dated .....**

Dear Sir,

I/we hereby certify that the balance sheet/Financial Statements for the preceding financial year _____ has actually not been audited so far.

Yours faithfully,

Bidder's Sign and Seal

Annexure-E

(Undertaking by the bidder with regard to execution of BMS and Solar PV Plant)

Date:.....

To,

Oil India Limited
Rajasthan Field
2A-District Shopping Centre
Saraswati Nagar, Basni
Jodhpur – 342005

Sub: Undertaking for BMS and Roof-top Solar PV execution

Ref: **Tender No CJI5331P21 Dated 07.10.2020**

Dear Sir,

I/we hereby state that in case the contract is awarded to me/us, the execution of BMS (Building Management System) and Roof-top Solar PV will be carried out through technically competent person(s)/firm(s) only as detailed in the SCOPE OF WORK/SPECIAL CONDITIONS OF CONTRACT FOR ELECTRICAL WORKS & BUIDLING MANAGEMENT SYSTEM (BMS) in the reference tender mentioned above to the satisfaction of OIL's Engineer-in-Charge.

Note: The bidder to note that they cannot employ M/s Reynold Automation for execution of BMS job.

Yours faithfully,

*****

END OF PART – 2

PART-3

SECTION-I

GENERAL CONDITIONS OF CONTRACT

1.0 APPLICABILITY, DEFINITION & INTERPRETATION

1.1 Applicability

All clauses in the General Conditions of Contract [GCC] shall apply to all transactions except as otherwise stated in the Special Conditions of Contract [SCC] and/or BEC/BRC. Furthermore, in the event if there is any conflict between the Principal text of the Agreement and the Appendixes, the Principal text will prevail.

1.2 Definition & Interpretation

In the contract (as hereinafter defined) the following words and expressions shall have the meaning hereby assigned to them except where the context otherwise requires:

1.2.1 COMPANY/OIL/Operator:

Shall mean Oil India Limited [OIL] a public sector undertaking, incorporated under COMPANY's Act 1956 having its registered office at Duliajan-786602, Assam, India and includes its successor and permitted assigns.

1.2.2 CONTRACTOR:

Shall mean the person or persons, firm or COMPANY or corporation incorporated in India or abroad, who has been awarded with the contract and includes contractor's legal representatives, his successors and permitted assigns.

1.2.3 Contract:

Shall mean a written agreement between the COMPANY and the CONTRACTOR for execution of the services/works including all contract documents and subsequent amendments, if any.

1.2.4 Site:

Shall mean the place in which the operations/services are to be carried out or places approved by OIL for the purposes of the CONTRACT together with any other places designated in the CONTRACT as forming part of the site.

1.2.5 COMPANY's Site Representative/Engineer:

Shall mean the person or the persons appointed by the COMPANY from time to time to act on its behalf at the site for overall co-ordination, supervision and project management at site.

1.2.6 Sub-Contract:

Shall mean order/contract placed by the CONTRACTOR for any portion of the CONTRACT or work sublet with necessary written consent of COMPANY on third party. Such sub-letting shall not relieve the CONTRACTOR from any obligation, duty or responsibility under the CONTRACT.

1.2.7 **Sub-Contractor:**
Shall mean any person or firm or COMPANY (other than CONTRACTOR) to whom any part of the work has been entrusted by CONTRACTOR, with written consent of OIL or the persons appointed by OIL, successors and permitted assigns of such persons, firm or COMPANY).

1.2.8 **Contractor's Representative:**
Shall mean such person/or persons duly appointed representative at the site and base as the CONTRACTOR may designate in writing to the COMPANY as having authority to act for the CONTRACTOR in matters affecting the work and to provide the requisite services.

1.2.9 **Contract Price/Value:**
Shall mean the sum accepted or the sum calculated in accordance with the rates accepted in tender and/or the contract rates as payable to the CONTRACTOR for the entire execution and completion of the services/works, including amendments/modification/change order issued by the COMPANY.

1.2.10 **Firm price:**
The prices will remain unchanged, except for statutory changes, during currency of the CONTRACT unless specifically agreed to in writing by COMPANY.

1.2.11 **Service/Works/Operations:**
Shall mean and include all items and things to be supplied/done and all work/Service to be performed by the CONTRACTOR as specified in the Scope of Work under this CONTRACT and shall also include all extra, additional, altered or substituted works/services as required for the purpose of successful execution of the Contract.

1.2.12 **Equipment/Materials/Goods:**
Shall mean and include any equipment, machinery, instruments, stores, goods which CONTRACTOR is required to provide to the COMPANY for/under the CONTRACT and amendments thereto.

1.2.13 **Drawings:**
Shall mean and include all Engineering sketches, general arrangements/ layout drawings, sectional plans, all elevations, photographs, etc. related to the CONTRACT together with modification and revision thereto.

1.2.14 **Specifications:**
Means and includes all technical specifications, provision attached and referred to in the tender/contract document regarding method and manner of performing the services and qualities of the service/materials to be provided under the contract and also as modified by the COMPANY/its site representative during the execution of contract in the best interest of service.

1.2.15 **Engineer In-charge (EIC):**
Shall mean the person designated from time to time by the COMPANY and shall include those who are expressly authorized by the COMPANY to act for and on its behalf for operation of the contract.

1.2.16 **Inspectors:**

Shall mean any person or outside Agency nominated by COMPANY to inspect equipment, materials and services, if any, in the CONTRACT (stage wise as well as final) as per the terms of the CONTRACT.

1.2.17 **Tests:**

Shall mean such process or processes to be carried out by the CONTRACTOR as are prescribed in the CONTRACT, considered necessary by the COMPANY or their representative to ascertain quality, workmanship, performance and efficiency of equipment or services thereof.

1.2.18 **Approval:**

Shall mean and include the written consent duly signed by COMPANY or their authorized official in respect of all documents, drawings or other particulars in relation to the CONTRACT.

1.2.19 **Day:**

Shall mean a calendar day of twenty –four (24) consecutive hours beginning at 00:00 hours with reference to local time at the site.

1.2.20 **Month:**

Shall mean a calendar month as per Gregorian calendar.

1.2.21 **Year:**

Shall mean calendar year as per Gregorian calendar.

1.2.22 **Working day:**

Means any day which is not declared to be holiday by the COMPANY.

1.2.23 **Bid/offer:**

Shall mean the proposal/Offer along with supporting documents submitted by the bidder in response to the tender or enquiry in accordance with the terms of Tender or Enquiry, for consideration by COMPANY, prior to award of contract.

1.2.24 **Guarantee:**

Shall mean the period and other conditions governing the warranty/guarantee of the services as provided in the CONTRACT.

1.2.25 **Mobilization:**

Shall mean rendering the equipment fully manned and equipped as per CONTRACT and ready to begin work at site designated by the COMPANY and accepted by the COMPANY after inspection.

1.2.26 **De-mobilization:**

Shall mean the removal of all items forming part of the mobilization from the site of the COMPANY and inspection and acceptance thereafter by the COMPANY including compliance of requirement in relation to re-export of imported equipment/materials under concessional duty scheme in accordance with relevant notification from Customs Authorities.

1.2.27 **Willful Misconduct:**

Shall mean intentional disregard of good and prudent standards of performance or proper conduct under the Contract with knowledge that it is likely to result in any injury to any person or persons or loss or damage of property of the Company or Third Party.

1.2.28 **Gross Negligence:**

Shall mean any act or failure to act (whether sole, joint or concurrent) by a person or entity which was intended to cause, or which was in reckless disregard of or unjustifiable indifference to, avoidable and harmful consequences such person or entity knew, or should have known, would result from such act or failure to act. Notwithstanding the foregoing, Gross negligence shall not include any action taken in good faith for the safeguard of life or property.

1.2.29 **Criminal Negligence:**

Shall mean that the crime happened negligently, there was duty of care upon the Person but inadvertently due to his negligence, the duty was breached, which causes harm to the people in the form of death or serious injury.

1.2.30 **GST Legislations:**

'GST legislations' means 'any or all of the following legislations as may be applicable to the CONTRACTOR and OIL:

(A) The Central Goods & Services Tax Act, 2017;
(B) The Integrated Goods & Services Act, 2017;
(C) The Union Territory Goods & Services Tax Act, 2017;
(D) The respective State Goods & Service Tax Acts'
(E) The Goods and Services (Compensation to States) Act, 2017
(F) The Customs Act and the Customs Tariff Act.
(G) Any other applicable Act related to GST

2.0 **CONTRACT DOCUMENT:**

2.1 **Governing language:** The governing language for the CONTRACT shall be English. All CONTRACT documents and all correspondence and communication to be given and all other documentation to be prepared and supplied under the CONTRACT shall be written in English and the CONTRACT shall be construed and interpreted in accordance with English language.

2.2 **Entire Agreement:** The CONTRACT constitutes the entire agreement between OIL and the CONTRACTOR with respect to the subject matter of the CONTRACT and supersedes all communication, negotiations and agreement (whether written or oral) of the parties with respect thereto made prior to the date of this agreement, unless such communication(s) expressly forms part of the contract or included by reference.

2.3 **Amendment in CONTRACT:** No Amendment of the Contract shall be valid unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party thereto. OIL shall not be bound by any printed conditions, provisions in the CONTRACTOR's BID, forms of acknowledgement of CONTRACT, invoice and other documents which purport to

impose any condition at variance with or supplement to CONTRACT.

3.0 **WAIVERS AND AMENDMENTS:**

3.1 **Waivers:** It is fully understood and agreed that none of the terms and conditions of this contract shall be deemed waived by either party unless such waiver is executed in writing only by the duly authorized representatives of both the parties. The failure of either party to execute any right shall not act as a waiver of such right by such party.

3.2 **Change Program:** It is agreed that CONTRACTOR shall carry out work in accordance with the completion program to be furnished by the COMPANY, which may be changed from time to time by reasonable modifications in the program as COMPANY sees fit. COMPANY's instruction in this regard shall be final and binding.

4.0 **CONTRACT TIMELINE:**

4.1 **Effective Date of Contract:**

The contract shall become effective as of the date COMPANY notifies the CONTRACTOR in writing that it has been awarded the contract. This date of issuance of Letter of Award (LOA) by the COMPANY will be the effective date of contract. All terms and conditions of the contract shall come into force with the date of issuance of LOA.

4.2 **Date of Commencement of Operation:**

The date on which the mobilization is completed in all respects and CONTRACTOR is ready to commence operation as per the contract provision [Certified by the COMPANY's representative] will be treated as the date of Commencement of Operation.

4.3 **Duration of the contract:**

The contract shall be valid for a period as defined in the LOA and Special Conditions of Contract [SCC].

5.0 **SCOPE OF WORK/CONTRACT:**

Scope of the CONTRACT shall be as defined in the CONTRACT, specifications, drawings and Appendices.

6.0 **GENERAL OBLIGATION OF CONTRACTOR:**

CONTRACTOR shall, in accordance with and subject to the terms and conditions of this Contract:

6.1 Perform the work described in the Terms of Reference/Scope of Work. The CONTRACTOR shall execute the work with professional competence and in an efficient and workman like manner.

6.2 Except as otherwise provided in the Terms of Reference and the special Conditions of the contract, employ all labours/personnel as required to perform the work.

6.3 Perform all other obligations, work and services which are required by the terms of this contract or which reasonably can be implied from such terms as being necessary for the successful and timely completion of the work.

6.4 Comply with all applicable statutory obligations specified in the contract.

6.5 CONTRACTOR shall be deemed to have satisfied himself before submitting their 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.

6.6 CONTRACTOR shall be deemed, prior to submitting their bids, to have satisfied themselves about the weather conditions, working culture in the area, socio-political environment, safety & security aspects, law & order situation and law of the land, and obtain for themselves all necessary information as to the risks, contingencies and all other circumstances, which may influence or affect the various obligations under the Contract.

6.7 CONTRACTOR shall give or provide all necessary supervision during the performance of the services and as long thereafter within the warranty period as COMPANY may consider necessary for the proper fulfilling of CONTRACTOR's obligations under the contract.

7.0 **GENERAL OBLIGATION OF COMPANY:**

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

7.1 Pay CONTRACTOR in accordance with terms and conditions of the contract.

7.2 Allow CONTRACTOR access, subject to normal security and safety procedures, to all areas as required for orderly performance of the work as specified in the Scope of Works of the contract or work connected therewith.

7.3 Perform all other obligations required of COMPANY by the terms of this contract.

8.0 **DUTIES AND POWER/AUTHORITY:**

8.1 **OIL's site representative/engineer:**

The duties and authorities of OIL's site representative/engineer are to act on behalf of OIL for:

(a) Overall supervision, co-ordination and Project Management at site.

(b) Proper and optimum utilization of equipment and services.

(c) Monitoring of performance and progress

(d) Commenting/countersigning on reports made by the CONTRACTOR's representative at site in respect of works, receipts, consumption etc. after satisfying himself with the facts of the respective cases.

(e) He shall have the authority, but not obligation at all times and any time to inspect/test/examine/verify any equipment machinery, instruments, tools, materials, personnel, procedures and reports etc. directly or indirectly pertaining to the execution of the work. However, this shall not construe to imply an acceptance by the inspector. Hence, the overall responsibility of quality of work shall rest solely with the CONTRACTOR.

(f) Each and every document emerging from site in support of any claim by the CONTRACTOR has to have the countersignature/comments of the OIL's representative/engineer without which no claim shall be entertained by the OIL.

8.2 **CONTRACTOR's representative:**

(a) The CONTRACTOR's representative shall have all the powers requisite for the performance of the Service/Works, subject to holding due authorization from the CONTRACTOR.

(b) Representative(s) shall liaise with OIL's representative/engineer for the proper co-ordination and timely completion of the works and on any matter pertaining to the works.

(c) Representative(s) shall extend full co-operation to OIL's representative/inspector/engineer in the manner required by them for supervision/inspection/observation of equipment, material, procedures, performance, reports and records pertaining to works.

(d) To have complete charge of CONTRACTOR's personnel engaged in the performance of the work and to ensure compliance of rules and regulations and safety practice.

9.0 **Personnel to be deployed by contractor:**

CONTRACTOR warrants that it shall provide competent, qualified and sufficiently experienced personnel to perform the work correctly and efficiently.

9.1 The CONTRACTOR should ensure that their personnel observe all statutory safety requirement including those prescribed by the COMPANY. Upon COMPANY's written request, CONTRACTOR, entirely at its own expense, shall remove immediately any personnel of the CONTRACTOR determined by the COMPANY to be unsuitable and shall promptly replace such personnel with personnel acceptable to the COMPANY. Replacement personnel should be mobilized within 15 days from the date of issuance of notice without affecting the operation of the COMPANY.

9.2 The CONTRACTOR shall be solely responsible throughout the period of the contract for providing all requirements of their personnel including but not limited to, their transportation to & fro from field site, enroute/ local boarding, lodging, personal protective gear & medical attention etc. COMPANY shall have no responsibility or liability in this regard.

9.3 However, COMPANY shall provide available medical assistance/facilities to CONTRACTOR's Personnel in case of emergency at its own establishment on chargeable basis.

9.4 CONTRACTOR's key personnel shall be fluent in English language (both writing and speaking).

10.0 **PERFORMANCE SECURITY:**

10.1 On receipt of notification of award from the COMPANY, the CONTRACTOR shall furnish the Performance Security to COMPANY within 15 (fifteen) days from the date of issue of LOA for an amount specified in the Forwarding Letter and Letter of Award (LOA) as per Proforma-F and must be in the form of a Bank Draft/Cashier's cheque/Banker's cheque*/ NEFT/RTGS/Electronic fund transfer to designated account of OIL# or Fixed Deposit Receipt (account OIL INDIA LIMITED) or irrevocable Bank Guarantee from Any schedule Indian Bank or Any Branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank in case of domestic CONTRACTOR/service provider.

10.2 Bank Guarantee issued by a Bank, amongst others, must contain the following particulars of such bank:

Full address.
Branch Code.
Code Nos. of the authorized signatory with full name and designation.
Phone Nos., Fax Nos., E-mail address.

10.3 The domestic CONTRACTOR/service provider(s) will have to submit the Bank Guarantee from any of the scheduled banks and on non-judicial stamp paper of requisite value as per the Indian Stamp Act, purchased in the name of the issuing banker.

10.4 The Performance Security shall be denominated in the currency of the contract.

10.5 The Performance Security specified above must be valid for the entire duration of the Contract and claim period should be valid for a minimum of 03 (three) months beyond the contract period. The Performance Security will be discharged by COMPANY not later than 30 days following its expiry of claim period. In the event of any extension of the Contract period, Bank Guarantee should be extended by CONTRACTOR by the period equivalent to the extended period.

10.6 The Performance Security shall be encashed by COMPANY on account of CONTRACTOR's failure to fulfil its obligations under the Contract and/or non-performance/un-satisfactory of the Contractor. Company shall not be required to proof any loss or damage on account of Contractor's non-performance/un-satisfactory performance.

10.7 The Performance Security will not accrue any interest during its period of validity or extended validity.

10.8 Failure of the successful Bidder to comply with the requirements of clause 10.0 shall constitute sufficient grounds for annulment of the award and forfeiture of the Bid Security. In such an eventuality, action will be initiated as per the Banning Policy of OIL in vogue.

#Subject to credit in OIL's account within prescribed time

**The validity of Bank Draft/Cashier's/Banker's cheque (as applicable) should not be less than 3 months.*

In the event CONTRACTOR fails to honour any of the commitments entered into under this agreement, and/or in the event of termination of the contract under provisions of Integrity Pact and/or in respect of any amount due from the CONTRACTOR to OIL, OIL shall have unconditional option under the guarantee to invoke the above bank guarantee and claim the amount from the bank. The bank shall be obliged to pay the amount to OIL on demand.

11.0 **SIGNING OF CONTRACT:**

The successful bidder is required to sign a formal detailed contract with OIL within a maximum period of 60 days of date of LOA. Until the contract is signed, the LOA as well as GCC & SCC as prescribed in the Tender, shall remain binding amongst the two parties. In the event of failure on the part of the successful

Bidder to sign the contract, OIL reserves the right to terminate the LOA issued to the successful Bidder and invoke the Bid Security or the Performance Security if submitted by the successful Bidder. Such CONTRACTOR shall be put on holiday as per the Banning Policy of OIL [available at www.oil-india.in].

12.0 **CLAIMS, TAXES & DUTIES:**

12.1 **Claims:**

CONTRACTOR agrees to pay all claims, taxes and fees for equipment, labour, materials, services and supplies to be furnished by it hereunder and agrees to allow no lien or charge resulting from such claims to be fixed upon any property of COMPANY. COMPANY may, at its option, pay and discharge any liens or overdue charges for CONTRACTOR's equipment, labour, materials, services and supplies under this CONTRACT and may thereupon deduct the amount or amounts so paid from any sum due, or thereafter become due, to CONTRACTOR hereunder.

12.2 **Notice of claims:**

CONTRACTOR or COMPANY, as the case may be, shall promptly give the other, notice in writing of any claim made or proceeding commenced for which that party is entitled to indemnification under the CONTRACT. Each party shall confer with the other concerning the defense of any such claims or proceeding, shall permit the other to be represented by counsel in defense thereof, and shall not affect settlement of or compromise any such claim or proceeding without the other's written consent.

12.3 **Taxes:**

12.3.1 CONTRACTOR, unless specified otherwise in the CONTRACT, shall bear all tax liabilities, duties, Govt. levies etc. including GST and customs duty, Corporate and personnel taxes levied or imposed on the CONTRACTOR on account of payments received by it from the COMPNAY for the work done under this CONTRACT. It shall be the responsibility of CONTRACTOR to submit to the concerned Indian authorities, the returns and all other concerned documents required for this purpose and to comply in all respects with the requirements of the laws in this regard, in time.

12.3.2 Tax levied on CONTRACTOR as per the provisions of Indian Income Tax Act and any other enactment/rules on income derived/payments received under the contract will be on CONTRACTOR's account.

12.3.3 CONTRACTOR shall be responsible for payment of personal taxes, if any, for all the personnel deployed in India by CONTRACTOR.

12.3.4 The CONTRACTOR shall furnish to the COMPANY, if and when called upon to do so, relevant statement of accounts or any other information pertaining to work done under the contract for submitting the same to the Tax authorities, on specific request from them in accordance with provisions under the law. CONTRACTOR shall be responsible for preparing and filing the return of income etc. within the prescribed time limit to the appropriate authority.

12.3.5 Prior to start of operations under the contract, the CONTRACTOR shall furnish the COMPANY with the necessary documents, as asked for by the COMPANY and/or any other information pertaining to the contract, which may be required to be submitted to the Income Tax authorities at the time of obtaining "No Objection Certificate" for releasing payments to the CONTRACTOR.

12.3.6 Corporate income tax will be deducted at source from the invoice at the specified rate of income tax as per the provisions of Indian Income Tax Act as may be in force from time to time and COMPANY will issue TDS Certificate to the CONTRACTOR as per the provisions of Income Tax Act.

12.3.7 Corporate and personnel taxes on CONTRACTOR shall be the liability of the CONTRACTOR and the COMPANY shall not assume any responsibility on this account.

12.3.8 All local taxes, levies and duties, sales tax, octroi, etc. on purchases and sales made by CONTRACTOR shall be borne by the CONTRACTOR.

12.3.9 CONTRACTOR shall provide all the necessary compliances/invoice/ documents for enabling OIL to avail Input tax credit benefits in respect of the payments of GST which are payable against the CONTRACT. The CONTRACTOR should provide tax invoice issued under GST legislations for the goods and Services (indicating GST). Payment towards the components of GST shall be released by OIL only against appropriate documents i.e.: Tax Invoice/Bill of entry for availing input tax credit (as applicable).

12.3.10 The tax invoices as per above provisions should contain all the particulars as required under the invoicing rules under the GST legislations, including, but not limited to the following:

(i) Name, Address and the GST Registration Number (under the relevant Tax Rules) of the Service Provider (CONTRACTOR).

(ii) Name and Address and GST Registration Number of the Service Receiver (Address of OIL).

(iii) Description, Classification and Value of taxable service/goods and the amount of applicable tax (CGST, SGST, IGST, UTGST and cess).

12.3.11 In case of imported goods, CONTRACTOR/supplier is required to provide original Bill of Entry or copy of Bill of Entry duly attested by Custom authority.

12.3.12 The CONTRACTOR should mention the Place of supply in the invoice raised under GST Law.

12.3.13 OIL would not accept any invoice without its GSTIN mentioned on the invoice

***Note**: CONTRACTOR who is under composition levy of the GST legislation would raise Bill of supply instead of Tax invoice, which will have GSTIN of supplier as well as OIL.*

12.4 **Goods and Services Tax:**

12.4.1 "GST" shall mean Goods and Services Tax charged on the supply of material(s) and services. The term "GST" shall be construed to include the Integrated Goods and Services Tax (hereinafter referred to as "IGST") or Central Goods and Services Tax (hereinafter referred to as "CGST") or State Goods and Services Tax (hereinafter referred to as "SGST") or Union Territory Goods and Services Tax (hereinafter referred to as "UTGST") depending upon the import/ interstate or intrastate supplies, as the case may be. It shall also mean GST compensation Cess, if applicable.

12.4.2 Where the OIL is entitled to avail the input tax credit of GST:

OIL will reimburse the GST to the Supplier of Goods/Services (Service Provider) at actual against submission of Invoices as per format specified in rules/regulation of GST to enable OIL to claim input tax credit of GST paid. In case of any variation in the executed quantities, the amount on which the GST is applicable shall be modified in same proportion. Returns and details required to be filled under GST laws &rules should be timely filed by supplier with requisite details.

12.4.3 Where the OIL is not entitled to avail/take the full input tax credit of GST:

OIL will reimburse GST to the Supplier of Goods/Services (Service Provider) at actual against submission of Invoices as per format specified in rules/ regulation of GST subject to the ceiling amount of GST as quoted by the bidder. In case of any variation in the executed quantities (If directed and/or certified by the In-Charge) the ceiling amount on which GST is applicable will be modified on pro-rata basis.

12.4.4 The CONTRACTOR will be under obligation for charging correct rate of tax as prescribed under the respective tax laws. Further the CONTRACTOR shall avail and pass on benefits of all exemptions/concessions available under tax laws. Any error of interpretation of applicability of taxes/duties by the CONTRACTOR shall be to CONTRACTOR's account.

12.4.5 In case of statutory variation in GST, other than due to change in turnover, payable on the contract value during contract period, the Supplier of Goods/Services (Service Provider) shall submit a copy of the 'Government Notification' to evidence the rate as applicable on the Bid due date and on the date of revision.

12.4.6 Beyond the contract period, in case OIL is not entitled for input tax credit of GST, then any increase in the rate of GST beyond the contractual delivery period shall be to Service provider's account whereas any decrease in the rate GST shall be passed on to the OIL.

12.4.7 Beyond the contract period, in case OIL is entitled for input tax credit of GST, then statutory variation in applicable GST on supply and on incidental services, shall be to OIL's account.

12.4.8 Claim for payment of GST/Statutory variation, should be raised within two [02] months from the date of issue of 'Government Notification' for payment of differential (in %) GST, otherwise claim in respect of above shall not be entertained for payment of arrears.

12.4.9 The base date for the purpose of applying statutory variation shall be the Bid Opening Date.

12.4.10 The CONTRACTOR will be liable to ensure to have registered with the respective tax authorities, wherever applicable and to submit self-attested copy of such registration certificate(s) and the CONTRACTOR will be responsible for procurement of material in its own registration (GSTIN) and also to issue its own Road Permit/E-way Bill, if applicable etc.

12.5 **Anti-profiteering clause**

12.5.1 As per Clause 171 of GST Act it is mandatory to pass on the benefit due to reduction in rate of tax or from input tax credit to the consumer by way of commensurate reduction in prices.

12.5.2 In case rating of Contractor is negative/black listed after award of work for supply of goods/services, then OIL shall not be obligated or liable to pay or reimburse GST to such vendor/Contractor and shall also be entitled to deduct/recover such GST along with all penalties/interest, if any, incurred by OIL.

13.0 **CUSTOMS DUTY, IF APPLICABLE**: NOT APPLICABLE

14.0 **INSURANCE**:

14.1 CONTRACTOR shall at his own expense arrange secure and maintain insurance with reputed insurance companies to the satisfaction of the Company as follows:

Contractor at his cost shall arrange, secure and maintain insurance as may be necessary and to its full value for all such amounts to protect the works in progress from time to time and the interest of Company against all risks as detailed herein. The form and the limit of such insurance, as defined here in together with the under works thereof in each case should be as acceptable to the Company. However, irrespective of work acceptance the responsibility to maintain adequate insurance coverage at all times during the period of Contract shall be that of Contractor alone. Contractor's failure in this regard shall not relieve him of any of his responsibilities & obligations under Contract. All costs on account of insurance liabilities covered under Contract will be to Contractor's account and will be included in Value of Contract. However, the Company may from time to time, during the currency of the Contract, ask the Contractor in writing to limit the insurance coverage risk and in such a case, the parties to the Contract will agree for a mutual settlement, for reduction in value of Contract to the extent of reduced premium amounts. Contractor shall cover insurance with Indian Insurance Companies.

14.2 Any deductible set forth in any of the above insurance shall be borne by Contractor.

14.3 CONTRACTOR shall require all of his sub-Contractor to provide such of the foregoing insurance coverage as Contractor is obliged to provide under this Contract and inform the Company about the coverage prior to the commencement of agreements with its sub-Contractors.

14.4 All insurance taken out by Contractor or their sub-contractor shall be endorsed to provide that the underwriters waive their rights of recourse on the Company and to the extent of the liabilities assumed by Contractor under this Contract.

14.5 **Certificate of Insurance:**

Before commencing performance of the CONTRACT, CONTRACTOR shall furnish OIL with certificates of insurance indicating:

a) Kinds and amounts of insurance as required herein
b) Details of coverage

c) Insurance corporation or companies carrying the aforesaid coverage
d) Effective and expiry dates of policies
e) That OIL shall be given thirty (30) days written advance notice of any material change in the policy
f) Waiver of subrogation endorsement has been attached to all policies and
g) The territorial limits of all policies.

14.6 Contractor shall also inform the Company at least 60 days in advance regarding the expiry cancellation and/or changes in any of such documents & ensure revalidation/renewal, etc., as may be necessary well in time.

14.7 If any of the above policy expire or/are cancelled during the term of this CONTRACT and CONTRACTOR fails for any reason to renew such policies, OIL in no case shall be liable for any loss/damage occurred during the term when the policy is not effective. Furthermore, a penal interest @1% of the Total contract value shall be charged towards not fulfilling of the contractual obligations. Notwithstanding above, should there be a lapse in any insurance required to be taken by the Contractor for any reason whatsoever, loss/damage claims resulting therefrom shall be to the sole account of Contractor.

14.8 Contractor on demand from Company shall furnish the Insurance Policy having detail terms and conditions, with respect to any Certificate of Insurance submitted to the Company.

CONTRACTOR shall, at his own expense, arrange appropriate comprehensive insurance to cover all risks assumed by the CONTRACTOR under this CONTRACT in respect of CONTRACTOR's equipment, tools and any other belongings of the CONTRACTOR and its personnel as well deputed under this CONTRACT during the entire period of their engagement in connection with this CONTRACT including extensions if any. The CONTRACTOR shall also carry adequate insurance cover against damage/loss to third party person/property. OIL will have no liability on this account.

14.9 **Principal Assured**

The following are to be included as Principal Assured(s) in the Insurance Policies (except in case of Workmen's Compensation/Employer's Liability insurance):
"Oil India Limited, and CONTRACTOR's name (as appearing in the Contract /LOA)".

14.10 **Waiver of subrogation:**

All insurance policies of the CONTRACTOR with respect to the operations conducted hereunder as set forth in clauses hereof, shall be endorsed by the underwriter in accordance with the following policy wording:

"The insurers hereby waive their rights of subrogation against Oil India Limited or any of their employees or their affiliates and assignees".

14.11 **Deductible:**

The CONTRACTOR shall take policy with minimum deductible as per IRDA prescribed for the policy(ies). That portion of any loss not covered by insurance

provided for in this article solely by reason of deductible provision in such insurance policies shall be to the account of the CONTRACTOR.

14.12 **Compliance with Sec 25(1), of "The General Insurance Business (Nationalization) Act 1972"**
Section 25(1) of "The General Insurance Business (Nationalization) Act 1972" is reproduced below:

"No person shall take out or renew any policy of insurance in respect of any property in India or any ship or other vessel or aircraft registered in India with an insurer whose principal place of business is outside India save with the prior permission of the Central Government".

The above requirement of aforesaid Act needs to be complied with by the CONTRACTOR wherever the aforesaid provisions of Act apply, and compliance confirmations submitted.

14.13 **Loss Payee Clause:**
The Insurance Policies should mention the following in Loss Payee Clause:
"In respect of Insurance claims in which OIL's interest is involved, written consent of OIL will be required".

14.14 **On account payment to OIL in case of claim**
In case any loss or damage happen and where OIL's interest is involved, OIL reserves the right to recover the loss amount from the CONTRACTOR prior to final settlement of the claim.

14.15 CONTRACTOR shall require all of its SUB-CONTRACTORs to provide such of the foregoing insurance cover as the CONTRACTOR is obligated to provide under this CONTRACT.

14.16 CONTRACTOR shall at all time during the currency of the contract provide, pay for and maintain the following insurance amongst others:

i) **Workman Compensation and/Employers' Liability Insurance**: Workmen's compensation and employer's liability insurance as required by the laws of the country of origin of the employee.

ii) **Commercial General Liability Insurance**: Commercial General Public Liability Insurance covering liabilities including contractual liability for bodily injury, including death of persons, and liabilities for damage of property. This insurance must cover all operations of CONTRACTOR required to fulfil the provisions under this Contract.

iii) **Comprehensive General Automotive Liability**: Automobile Public Liability Insurance covering owned, non-owned and hired automobiles used in the performance of the work hereunder, with bodily injury limits and property damage limits shall be governed by Indian Insurance Regulations.

iv) **Carrier's Legal Liability Insurance:** Carrier's Legal Liability Insurance in respect of all CONTRACTOR's items to be transported by the CONTRACTOR to the site of work, for physical loss or destruction of or damage to goods or merchandise,

while in transit.

v) **Public Liability Act Policy:** Public Liability Act Policy covering the statutory liability arising out of accidents occurring during the currency of the contract due to handling hazardous substances as provided in the Public Liability Insurance Act 1991 and the Rules framed there under.

vi) **Pradhan Mantri Suraksha Bima Yojana (PMSBY) and Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY):** CONTRACTOR shall, ensure that all his/its personnel deployed under this contract have obtained additional insurance coverage under the Pradhan Mantri Suraksha Bima Yojana (PMSBY) and Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) through the participating banks and submit the proof of such insurance coverage to the satisfaction of OIL.

vii) CONTRACTOR's equipment used for execution of the work hereunder shall have an insurance cover with a suitable limit (as per international standards).

viii) **Any other insurance policy set forth in the SCC**

Note: An undertaking by the service provider has to be mandatorily provided during the Mobilization time that they have taken all the Insurance provisions as per the contract and as the Law and Insurance Regulation.

15.0 **LIABILITY:**

15.1 Except as otherwise expressly provided herein, neither COMPANY nor its servants, agents, nominees, CONTRACTORs, or sub-CONTRACTORs shall have any liability or responsibility whatsoever to whomsoever for loss of or damage to the equipment and/or loss of or damage to the property of the CONTRACTOR and/or their CONTRACTORs or sub-CONTRACTORs, irrespective of how such loss or damage is caused and even if caused by the negligence of COMPANY and/or its servants, agent, nominees, assignees, CONTRACTORs and sub-CONTRACTORs.

15.2 The CONTRACTOR shall protect, defend, indemnify and hold harmless COMPANY from and against such loss or damage and any suit, claim or expense resulting there from. Neither COMPANY nor its servants, agents, nominees, assignees, CONTRACTORs, sub-CONTRACTORs shall have any liability or responsibility whatsoever for injury to, illness, or death of any employee of the CONTRACTOR and/or of its CONTRACTORs or sub-CONTRACTOR irrespective of how such injury, illness or death is caused and even if caused by the negligence of COMPANY and/or its servants, agents nominees, assignees, CONTRACTORs and sub-CONTRACTORs. CONTRACTOR shall protect, defend, indemnify and hold harmless COMPANY from and against such liabilities and any suit, claim or expense resulting there from.

15.3 The CONTRACTOR hereby agrees to waive its right of recourse and further agrees to cause its underwriters to waive their right of subrogation against COMPANY and/or its underwriters, servants, agents, nominees, assignees, CONTRACTORs and sub-CONTRACTORs for loss or damage to the equipment of the CONTRACTOR and/or its sub-CONTRACTORs and/or their employees when such loss or damage or liabilities arises out of or in connection with the performance of the contract limited to the CONTRACTOR's liabilities agreed to

under this Contract.

15.4 The CONTRACTOR hereby further agrees to waive its right of recourse and agrees to cause its underwriters to waive their right of subrogation against COMPANY and/or its underwriters, servants, agents, nominees, assignees, CONTRACTORs and sub-CONTRACTORs for injury to, illness or death of any employee of the CONTRACTOR and of its CONTRACTORs, sub-CONTRACTORs and/or their employees when such injury, illness or death arises out of or in connection with the performance of the contract limited to the CONTRACTOR's liabilities agreed to under this Contract.

15.5 Except as otherwise expressly provided herein, neither CONTRACTOR nor its servants, agents, nominees, CONTRACTORs or sub-CONTRACTORs shall have any liability or responsibility whatsoever to whomsoever for loss of or damage to the equipment and/or loss or damage to the property of the COMPANY and/or their CONTRACTORs or sub-CONTRACTORs, irrespective of how such loss or damage is caused and even if caused by the negligence of CONTRACTOR and/or its servants, agents, nominees, assignees, CONTRACTORs and sub-CONTRACTORs. The COMPANY shall protect, defend, indemnify and hold harmless CONTRACTOR from and against such loss or damage and any suit, claim or expense resulting there from.

15.6 Except as otherwise expressly provided herein, neither CONTRACTOR nor its servants, agents, nominees, assignees, CONTRACTORs, sub-CONTRACTORs shall have any liability or responsibility whatsoever to whomsoever for injury or illness, or death of any employee of the COMPANY and/or of its CONTRACTORs or sub-CONTRACTORs irrespective of how such injury, illness or death is caused and even if caused by the negligence of CONTRACTOR and/or its servants, agents, nominees, assignees, CONTRACTORs and sub-CONTRACTORs. COMPANY shall protect, defend indemnify and hold harmless CONTRACTOR from and against such liabilities and any suit, claim or expense resulting there from.

15.7 The COMPANY agrees to waive its right of recourse and further agrees to cause its underwriters to waive their right of subrogation against CONTRACTOR and/or its underwriters, servants, agents, nominees, assignees, CONTRACTORs and sub-CONTRACTORs for loss or damage to the equipment of COMPANY and/or its CONTRACTORs or sub-CONTRACTORs when such loss or damage or liabilities arises out of or in connection with the performance of the contract.

15.8 The COMPANY hereby further agrees to waive its right of recourse and agrees to cause it underwriters to waive their right of subrogation against CONTRACTOR and/or its underwriters, servants, agents, nominees, assignees, CONTRACTORs and sub-CONTRACTORs for injury to, illness or death of any employee of the COMPANY and of its CONTRACTORs, sub-CONTRACTORs and/or their employees when such injury, illness or death arises out of or in connection with the performance of the Contract.

16.0 **LIMITATION OF LIABILITY**:

a) Notwithstanding any other provisions herein to the contrary, except only in cases of willful misconduct and/or criminal acts and/or criminal negligence, neither the CONTRACTOR nor the COMPANY (OIL) shall be liable to the other, whether in Contract, tort, or otherwise, for any consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided however that this exclusion shall not apply to any obligation of the CONTRACTOR to pay

Liquidated Damages to the COMPANY and/or COMPANY's right to forfeit the Performance Bank Guarantee(s) in terms of the contract.

b) Notwithstanding any other provisions incorporated elsewhere in the contract, the aggregate liability of the CONTRACTOR in respect of this contract, whether under Contract, in tort or otherwise, shall not exceed 100% of the Contract Price (if not specified otherwise in SCC), provided however that this limitation shall not apply to the cost of repairing or replacing defective equipment by the CONTRACTOR, or to any obligation of the CONTRACTOR to indemnify the COMPANY with respect to Intellectual Property Rights.

c) COMPANY shall indemnify and keep indemnified CONTRACTOR harmless from and against any and all claims, costs, losses and liabilities in excess of the aggregate liability amount in terms of clause (b) above.

17.0 **LIABILITY OF UNION GOVERNMENT OF INDIA:**

It is expressly understood and agreed upon by and between CONTRACTOR and OIL INDIA LIMITED, and that OIL INDIA LIMITED is entering into this agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that Union of India is not a party to this agreement and has no liabilities, obligations or rights, whatsoever hereunder. It is expressly understood and agreed that OIL INDIA LIMITED is an independent legal entity with power and authority to enter into contracts solely on its own behalf under the applicable laws of India and general principles of the Contract law. The bidder/CONTRACTOR expressly agrees, acknowledges and understands that OIL INDIA LIMITED is not an agent, representative or delegate of the Union of India. It is further understood and agreed that Union of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the contract. Accordingly, bidder/ CONTRACTOR hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Union of India arising out of this contract and covenants not to sue the Union of India as to any manner, claim, cause of action or thing whatsoever arising of or under this agreement.

18.0 **CONSEQUENTIAL DAMAGE:**

Except as otherwise expressly provided, neither party shall be liable to the other for special, indirect or consequential damages resulting from or arising out of the contract, including but without limitation, to loss or profit or business interruptions, howsoever caused and regardless of whether such loss or damage was caused by the negligence (either sole or concurrent) of either party, its employees, agents or sub-CONTRACTORs.

19.0 **RISK PURCHASE:**

In the event, CONTRACTOR's failure to provide the services as per the Contractual scope, terms and conditions, COMPANY (OIL) reserves the right to hire the services from any other source at the CONTRACTOR's risk & cost and the difference in cost shall be borne by the CONTRACTOR. Further, OIL shall retain the right of forfeiture of Performance Bank Guarantee and any other action

as deemed fit. In certain operational situations OIL reserves the right to take over the site including the service equipment at the risk and cost of the CONTRACTOR.

20.0 **INDEMNITY AGREEMENT:**

20.1 Except as provided hereof CONTRACTOR agrees to protect, defend, indemnify and hold COMPANY harmless from and against all claims, suits, demands and causes of action, liabilities, expenses, cost, liens and judgments of every kind and character, without limit, which may arise in favour of CONTRACTOR's employees, agents, CONTRACTORs and sub-CONTRACTORs or their employees or in favour of any third party(is) on account of bodily injury or death, or damage to personnel/property as a result of the operations contemplated hereby, regardless of whether or not said claims, demands or causes of action arise out of the negligence or otherwise, in whole or in part or other faults.

20.2 Except as provided hereof COMPANY agrees to protect, defend, indemnify and hold CONTRACTOR harmless from and against all claims, suits, demands and causes of action, liabilities, expenses, cost, liens and judgments of every kind and character, without limit, which may arise in favour of COMPANY's employees, agents, CONTRACTORs and sub-CONTRACTORs or their employees or in favour of any third party(is) on account of bodily injury or death, or damage to personnel/property as a result of the operations contemplated hereby, regardless of whether or not said claims, demands or causes of action arise out of the negligence or otherwise, in whole or in part or other faults.

21.0 **INDEMNITY APPLICATION:**

The indemnities given herein above, whether given by COMPANY or CONTRACTOR shall be without regard to fault or to the negligence of either party even though said loss, damage, liability, claim, demand, expense, cost or cause of action may be caused, occasioned by or contributed to by the negligence, either sole or concurrent of either party.

22.0 **ROYALTY PATENTS:**

Each party shall hold harmless and indemnify the other from and against all claim and proceedings for or on account of any patent rights, design, trade mark or other protected rights arising from any use of materials, equipment, processes, inventions and methods, which have not been imposed on the attending party by the terms of the contract or the specifications forming part thereof.

23.0 **WARRANTY AND REMEDY OF DEFECTS:**

23.1 CONTRACTOR warrants that they shall perform the work in a first class, workmanlike, and professional manner and in accordance with their highest degree of quality, efficiency and current state of the art technology/industry practices and in conformity with all specifications, standards and drawings set forth or referred to in the Terms of Reference and with instructions and guidance, which COMPANY may, from time to time, furnish to the CONTRACTOR.

23.2 Should COMPANY discover at any time during the tenure of the Contract or till the Unit/equipment/tools are demobilized from site or base camp (if applicable) that the work does not conform to the foregoing warranty, CONTRACTOR shall after receipt of notice from COMPANY, promptly perform any and all corrective

work required to make the services conform to the Warranty. Such corrective Work shall be performed entirely at CONTRACTOR's own expenses. If such corrective Work is not performed within a reasonable time, the COMPANY, at its option may have such remedial Work performed by others and charge the cost thereof to CONTRACTOR subject to a maximum of the contract value payable for the defective work which needs corrective action which the CONTRACTOR must pay promptly. In case CONTRACTOR fails to perform remedial work, or pay promptly in respect thereof, the performance security shall be forfeited.

24.0 **SUBCONTRACTING/ASSIGNMENT:**

24.1 CONTRACTOR shall not subcontract, transfer or assign the contract, or any part under this contract, to any third party(ies). Except for the main services under this contract, CONTRACTOR may sub-contract the petty support services subject to COMPANY's prior written approval. However, CONTRACTOR shall be fully responsible for complete execution and performance of the services under the Contract.

24.2 Consequent upon of placement of contract, if successful bidder(s)(other than Micro/Small Enterprise) is procuring materials/services from their sub-vendor, who is a Micro or Small Enterprise registered with District Industry Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of MSME with prior consent in writing of the purchasing authority/Engineer in Charge the details like Name, Registration No., Address, Contact No., details of material and value of procurement made, etc. of such enterprises shall be furnished by the CONTRACTOR at the time of submission of invoice/bill.

25.0 **RECORDS, REPORTS AND INSPECTION:**

The CONTRACTOR shall, at all times during the currency of the contract, permit the COMPANY and its authorized employees and representatives to inspect all the Work performed and to witness and check all the measurements and tests made in connection with the said work. The CONTRACTOR shall keep an authentic, accurate history and logs including safety records of each service item with major items consumed, which shall be open at all reasonable times for inspection by the COMPANY's designated representatives and its authorized employees. The CONTRACTOR shall provide the COMPANY's designated representatives with a daily written report, on form prescribed by the COMPANY showing details of operations during the preceding 24 hours and any other information related to the said services requested by the COMPANY whenever so requested. The CONTRACTOR shall not, without COMPANY's written consent allow any third person(s) access to the said information or give out to any third person information in connection therewith.

26.0 **CONFIDENTIALITY, USE OF CONTRACT DOCUMENTS AND INFORMATION:**

26.1 CONTRACTOR shall not, without COMPANY's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing pattern, sample or information furnished by or on behalf of COMPANY in connection therewith, to any person other than a person employed by CONTRACTOR in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only, as may be necessary for purposes of

such performance with prior permission from COMPANY. However, nothing hereinabove contained shall deprive the CONTRACTOR of the right to use or disclose any information which is:

a) possessed by the CONTRACTOR, as evidenced by the CONTRACTOR's written records, before receipt thereof from the COMPANY which however the CONTRACTOR shall immediately inform to COMPANY; or

b) required to be disclosed by the CONTRACTOR pursuant to an order of a court of competent jurisdiction or other governmental agency having the power to order such disclosure, provided the CONTRACTOR uses its best efforts to provide timely notice to COMPANY of such order to permit COMPANY an opportunity to contest such order subject to prior permission from COMPANY.

26.2 CONTRACTOR shall not, without COMPANY's prior written consent, make use of any document or information except for purposes of performing the contract.

26.3 Any document supplied to the CONTRACTOR in relation to the contract other than the Contract itself remain the property of COMPANY and shall be returned (in all copies) to COMPANY on completion of CONTRACTOR's performance under the Contract if so required by COMPANY.

26.4 During the currency of the Contract, COMPANY and its employees, agents, other CONTRACTORs, sub-CONTRACTORs (of any tier) and their employees etc. may be exposed to certain confidential information and data of the CONTRACTOR. Such information and data held by the COMPANY, its employees, agents, other CONTRACTORs, sub-CONTRACTORs (of any tier) and their employees in the strictest Confidence and shall not be disclosed to any other party except on a need to know basis.

However, the above obligation shall not extend to information which:

i) is, at the time of disclosure, known to the public which CONTRACTOR shall immediately inform COMPANY;
ii) is lawfully becomes at a later date known to the public through no fault of CONTRACTOR subject to CONTRACTOR's undertaking that no information has been divulged by them to the public;
iii) is lawfully possessed by CONTRACTOR before receipt thereof from COMPANY which should be immediately informed to COMPANY;
iv) is developed by CONTRACTOR independently of the information disclosed by COMPANY which should be shared with the COMPANY;
v) CONTRACTOR is required to produce before competent authorities or by court order subject to prior permission from COMPANY;

27.0 **REMUNERATION AND TERMS OF PAYMENT:**

27.1 COMPANY shall pay to the CONTRACTOR during the term of the Contract the amount due from time to time calculated according to the rates of payment set and in accordance with other provisions hereof. No other payments shall be due from COMPANY unless specifically provided for in the Contract. All payments will be made in accordance with the terms hereinafter described.

27.2 Request for payment/part payment to third party i.e. other than the party on whom the contract has been awarded will not be entertained by OIL under any

circumstances.

27.3 MANNER OF PAYMENT: All payments due by COMPANY to CONTRACTOR hereunder shall be made at CONTRACTOR's designated bank. Bank charges, if any will be on account of the CONTRACTOR.

27.4 Payment of any invoices shall not prejudice the right of COMPANY to question the validity of any charges therein, provided COMPANY within one year after the date of payment shall make and deliver to CONTRACTOR written notice of objection to any item or items the validity of which COMPANY questions.

27.5 INVOICES: Mobilization charges will be invoiced only upon completion of mobilization as certified by COMPANY representative and CONTRACTOR is ready at site for starting the services/operation. Payment of mobilization charges shall be made within 45 days following the date of receipt of undisputed invoices by COMPANY.

27.6 CONTRACTOR shall send invoice to COMPANY on the day following the end of each month for all daily or monthly charges due to the CONTRACTOR.

27.7 CONTRACTOR will submit 02 (Two) sets of all invoices duly super scribed `Original' and `copy' as applicable to the COMPANY for processing payment. Separate invoices for the charges payable under the contract shall be submitted by the CONTRACTOR for foreign currency and Indian currency.

27.8 Payment of monthly invoices, if undisputed, shall be made within 30 days following the date of receipt of invoice by COMPANY.

27.9 COMPANY shall within 30 days of receipt of the invoice notify the CONTRACTOR of any item under dispute, specifying the reasons thereof, in which event, payment of the disputed amount may be withheld until settlement of the dispute, but payment shall be made of any undisputed portion on or before the due date. This will not prejudice the COMPANY's right to question the validity of the payment at a later date as envisaged in clause no. 27.4 above.

27.10 The acceptance by CONTRACTOR of part payment on any billing not paid on or before the due date shall not be deemed a waiver of CONTRACTOR's rights in any other billing, the payment of which may then or thereafter be due.

27.11 Payment of Final demobilization charges shall be made if applicable within 45 days on receipt of invoice by COMPANY accompanied by the following documents from the CONTRACTOR:

a) Audited account up to completion of the Contract.
b) Tax audit report for the above period as required under the Indian Tax Laws.
c) Documentary evidence regarding the submission of returns and payment to taxes for the expatriate personnel engaged by the CONTRACTOR or by its sub-CONTRACTOR.
d) Proof of re-export of all items including the unutilized spares and consumables (excepting consumables consumed during the contract period) and also cancellation of re-export bond if any.
e) Any other documents as required by applicable Indian Laws.

In case, no demobilization charges are payable, the documents mentioned above

will have to be submitted by the CONTRACTOR before release of the final payment by the COMPANY. A certificate from Chartered Accountant on (a), (b) & (c) above will suffice.

27.12 CONTRACTOR shall maintain complete and correct records of all information on which CONTRACTOR's invoice are based upto 02 (two) years from the date of last invoice. Such records shall be required for making appropriate adjustments or payments by either party in case of subsequent audit query/objection.

28.0 **PAYMENT OF COMMISSION/FEE/REMUNERATION OF INDIAN AGENT /CONSULTANT/REPRESENTATIVE/RETAINER/ASSOCIATE OF FOREIGN PRINCIPAL (APPLICABLE IN ICB TENDERS ONLY):**

The Commission/fee/remuneration of the Indian agent/ consultant/ associate/ representative/retainer, if any, will be paid within 30 days of the payment of invoice made to the CONTRACTOR, The amount of commission/ fee/remuneration as a percentage of invoice value as per contract provisions will be deducted by COMPANY/OIL from the monthly invoices of the CONTRACTOR and paid to the Indian agent/ consultant/ representative/retainer/associate.

29.0 **DETAILS OF STATUTORY PAYMENTS LIKE EPF AND ESI ETC.**

Wherever applicable, the CONTRACTOR (including those engaging 'International Workers') shall have itself registered under Employees' Provident Fund and Miscellaneous Provisions Act, 1952 and Employees' State Insurance Act, 1948 and follow the relevant statutory provisions including Rules made there-under concerning contractual workers.

The CONTRACTOR shall be required to submit the following documents/details to the Corporation:

(i) Copy of PF-ECR duly stamped by the designated Bank, alongwith a print of the digitally signed PDF data sheet of the ECR, as proof of payment, each month, details of this PDF data sheet shall be verified by the appropriate authority (i.e. Payment Making Authority) in the COMPANY from the official website of EPFO (http://www.epfindia.gov.in).

(a) Copy of the online challan endorsed/stamped by the designated bank as proof of receipt of payment towards monthly contribution of ESI contribution.
(b) Copy of Return of contribution in respect of ESI for each contribution period of the six months i.e. for the contribution period ended 30th Sept and the contribution period ended 31st March.

(ii) As an Annexure to each EPF-ECR and ESI Challan(s), CONTRACTOR shall also furnish the following Certificates:

1) The furnished information is correct to the best of his knowledge.
2) In case any discrepancies or irregularities is/are noticed in this undertaking, then OIL is free to inform the PF/ESIC Authorities.
3) Before the completion of contract, CONTRACTOR shall serve one-month

notice to all his contractual workers, informing that their services will be terminated.

4) Within one month on completion/expiry of the contract, CONTRACTOR shall pay all the dues/terminal dues such as leave with wages, bonus (if applicable), Gratuity (if applicable), to all his contractual workmen, failing which CONTRACTOR's Bank Guarantee/Security Deposit may be withheld by OIL.

COMPANY may verify the deposit of statutory contribution made by the CONTRACTORs with the EPFO/ESI authorities, where deemed necessary. However, before making payment of the last bill/invoice of the CONTRACTOR, the COMPANY may verify the details/status of the payment towards EPF/ESI made by the CONTRACTOR from the authorities/official website of EPF/ESI (i.e. http://www.epfindia.gov.in and http://www.esic.in). In case the information furnished by the CONTRACTOR is found to be incorrect the COMPANY shall take appropriate action against the CONTRACTOR in accordance with law.

The CONTRACTOR agrees and undertakes to indemnify OIL for any liabilities arising out of declarations made by him in future on violation or provisions of the EPF Act 1952 and ESI Act 1948.

30.0 **TIMELY MOBILISATION AND LIQUIDATED DAMAGES:**

a) Time is the essence of this Contract. If the CONTRACTOR fails to mobilize and deploy the required manpower/equipment and/or fails to commence the operation within the period specified as specified under mobilization clause under SCC, OIL shall have, without prejudice to any other right or remedy in law or contract including sub clause (b) below, the right to terminate the contract.

b) If the contractor is unable to mobilize/deploy and commence the operation within the period specified in sub clause (a) above, it may request OIL for extension of the time with unconditionally agreeing for levy and recovery of LD. Upon receipt of such a request, OIL may at its discretion, extend the period of mobilization and shall recover from the CONTRACTOR, as an ascertained and agreed Liquidated Damages, a sum equivalent to @ 0.5% of contract value including mobilization cost, per week or part thereof of delay subject to maximum of 7.5% of the Contract Price.

c) The parties agree that the sum specified above is not a penalty but a genuine pre-estimate of the loss/damage which will be suffered by OIL on account of delay on the part of the CONTRACTOR and the said amount will be payable without proof of actual loss or damage caused by such delay.

d) LD will be calculated on the basis of Total Contract value [(if not specified otherwise in SCC] excluding duties and taxes, where such duties/taxes have been shown separately in the contract. However, the applicable GST on the LD shall have to be borne by the CONTRACTOR. Accordingly, the liquidated damages shall be recovered from the CONTRACTOR along with applicable GST.

31.0 **FORCE MAJEURE:**

In the event of either party being rendered unable by `Force Majeure' to perform any obligation required to be performed by them under the contract, the relative obligation of the party affected by such `Force Majeure' will stand suspended as provided herein. The term force majeure as employed herein shall mean Acts of God such as earthquake, hurricane, typhoon, flood, volcanic activity etc.; war (declared/undeclared); riot, revolts, rebellion, terrorism, sabotage by persons other than the CONTRACTOR's Personnel; fires, explosions, ionising radiation or contamination by radio-activity or noxious gas, if not caused by CONTRACTOR's fault; declared epidemic or disaster; acts and regulations of respective Govt. of the two parties, namely the COMPANY and the CONTRACTOR and civil commotions, lockout not attributable to the CONTRACTOR.

Upon occurrence of such cause, the party claiming that it has been rendered unable as aforesaid thereby, shall notify the other party in writing within 72 (Seventy-Two) hours of the alleged beginning and ending thereof, giving full particulars and satisfactory evidence in support of its claim.
Should 'force majeure' condition as stated above occurs and should the same be notified within 72 (Seventy-two) hours after its occurrence the `force majeure' rate (if specified in the SCC of the Contract) shall apply for the first 15 (fifteen) days for each such occasion.

Either party shall have the right to terminate the Contract if such `force majeure' conditions continue beyond successive 60 (Sixty) days [or exclusively mentioned in the SCC of the Contract] with prior written notice of 15 days, provided termination of the Contract does not result into safety hazard to the life and property on account of withdrawal of operations or the operation is at critical stage. COMPANY shall have the absolute right to decide whether any safety hazard exists or operation is at critical position and decision of the COMPANY shall binding upon the CONTRACTOR.

Should either party decide not to terminate the Contract even under such condition, no payment would apply after expiry of fifteen (15) days force majeure period. [or exclusively mentioned in the SCC of the Contract]

Time for performance of the relative obligation suspended by Force Majeure shall then stand extended by the period for which such cause lasts.

If however, relative obligation of the party affected by such 'Force Majeure' is limited to part of the obligation(s), the contract shall not be terminated and the parties shall continue to perform their respective obligations, which are not affected by the 'force majeure' condition, provided the obligations affected by the 'force majeure' do not preclude the parties in performing the obligations not affected by such conditions.

32.0 **SET-OFF:**

Any sum of money due and payable to the CONTRACTOR (including Performance Security refundable to them) under this or any other Contract, whether in progress or in future, may be appropriated by OIL and set-off against any claim of OIL (or such other person or persons contracting through OIL) for payment of a

sum of money arising out of this contract or under any other contract made by the CONTRACTOR with OIL (or such other person or persons contracting through OIL).

33.0 **WITHHOLDING:**

COMPANY may withhold or nullify the whole or any part of the amount due to CONTRACTOR, after informing the CONTRACTOR of the reasons in writing, on account of subsequently discovered evidence in order to protect COMPANY from loss on account of:

33.1 For non-completion of jobs assigned as per Scope of Work/Terms of Reference.

33.2 Defective work not remedied by CONTRACTOR.

33.3 Claims by COMPANY's recognized sub-CONTRACTOR of CONTRACTOR or others filed or on the basis of reasonable evidence indicating probable filing of such claims against CONTRACTOR.

33.4 Failure of CONTRACTOR to pay or provide for the payment of salaries/ wages, contributions, taxes or enforced savings with-held from wages etc. with respect to personnel engaged by the CONTRACTOR.

33.5 Failure of CONTRACTOR to pay the cost of removal of unnecessary debris, materials, tools, or machinery.

33.6 Any failure by CONTRACTOR to fully reimburse COMPANY under any of the indemnification provisions of this Contract. If, during the progress of the work CONTRACTOR shall allow any indebtedness to accrue for which CONTRACTOR, under any circumstances in the opinion of COMPANY, may be primarily or contingently liable or ultimately responsible and CONTRACTOR shall, within five days after demand is made by COMPANY, fail to pay and discharge such indebtedness, then COMPANY may during the period for which such indebtedness shall remain unpaid, with-hold from the amounts due to CONTRACTOR, a sum equal to the amount of such unpaid indebtedness.

33.7 Withholding will also be effected on account of the following:

i) Order issued by a Court of Law or statutory authority in India.
ii) Income-tax deductible at source according to law prevalent from time to time in the country.
iii) Any obligation of CONTRACTOR which by any law prevalent from time to time to be discharged by COMPANY in the event of CONTRACTOR's failure to adhere to such laws.
iv) Any payment due from CONTRACTOR in respect of unauthorized imports.

When all the above grounds for withholding payments are removed, payment shall thereafter be made for amounts so with-held.

33.8 COMPANY reserves the right to disburse or deposit the amount so withheld to the concerned person(s) or agency or government authority, as the case may be, besides nullifying such amount on account of loss suffered by the COMPANY against 33.2, 33.3, 33.6 & 33.7 above.

34.0 **APPLICABLE LAWS:**

The Contract shall be deemed to be a Contract made under, governed by and construed in accordance with the laws of India for the time being in force and shall be subject to the sole and exclusive jurisdiction of Courts situated in Jodhpur and Principal Bench of Jodhpur High Court.

This Agreement including all matter connected with this Agreement, shall be governed by the laws of India (both substantive and procedural) for the time being in force and shall be subject to exclusive jurisdiction of Courts, mentioned hereinabove. Foreign companies, operating in India or entering into Joint ventures in India, shall also be governed by the laws of India and shall be subject to sole and exclusive jurisdiction of above Courts.

The CONTRACTOR shall ensure full compliance of various Indian Laws and Statutory Regulations, as stated below, to the extent applicable, as stated below, but not limited to, in force from time to time and obtain necessary permits/licenses etc. from appropriate authorities for conducting operations under the Contract:

a) The Mines Act 1952
b) The Oil Mines Regulations, 1984
c) The Employees' Compensation Act, 1923
d) The Code of Wages, 2019
e) The Contract Labour (Regulation & Abolition) Act, 1970 and the rules framed there under
f) The Employees Pension Scheme, 1995
g) The Interstate Migrant Workmen Act., 1979 (Regulation of employment and conditions of service).
h) The Employees Provident Fund and Miscellaneous Provisions Act, 1952
i) Goods and Service Tax Act
j) Customs & Excise Act & Rules
k) Factories Act, 1948
l) Industrial Disputes Act, 1947
m) Payment of Gratuity Act, 1972
n) Environmental Protection Act, 1986 & other pollution control Acts.

Note: The above Acts are only indicative and not exhaustive. The Acts shall include the rules and regulations framed thereunder.

35.0 **LABOUR LAWS:**

i) CONTRACTOR shall comply with the provisions of various labour related laws, including but not limited to the Code of Wages, 2019, Employee Provident Fund and Miscellaneous Provisions Act 1952, COMPANY's Liability Act 1938, Employees' Compensation Act 1923, Industrial Disputes Act 1947, the Maternity Benefit Act 1961 and Contract Labour (Regulation and Abolition) Act 1970, Employment of Children Act 1938, Employees' State Insurance Act, 1948 or any modifications/amendment thereof or any other law relating thereto and rules made there under from time to time.

ii) No Labour below the age of eighteen [18] years shall be employed on the work.

iii) CONTRACTOR shall not pay less than what is provided under law to labourers engaged by him on the work.

iv) CONTRACTOR shall at his expense comply with all labour laws and keep the COMPANY indemnified in respect thereof.

v) CONTRACTOR shall pay equal wages for men and women in accordance with applicable Labour laws.

vi) If the CONTRACTOR is covered under the Contract Labour (Regulation and Abolition) Act, he shall obtain a license from licensing authority [i.e. office of the Labour Commissioner] by payment of necessary prescribed fee and the deposit, if any, before starting the work under the Contract. Such fee/deposit shall be borne by the CONTRACTOR.

vii) CONTRACTOR must obtain the PF Code from the concerned PF Authority under Employees Provident Fund and Miscellaneous Provisions Act, 1952. Similarly, CONTRACTOR must obtain ESI Code under Employees State Insurance Act.

viii) CONTRACTOR being the employer of the labours/personnel to be engaged under the contract shall be liable to pay gratuity to the labours/personnel as per the provision of the Payment of Gratuity Act, 1972 and accordingly, shall keep the COMPANY indemnified in respect thereof. If however, COMPANY requires to pay gratuity to such labour(s) as per the direction of the competent authority under the Act, COMPANY shall recover such amount from the outstanding dues payable to the CONTRACTOR under the contract or any other contract(s).

ix) CONTRACTOR shall furnish to Engineer in Charge the distribution return of the number & description, by trades of the work people employed on the works. CONTRACTOR shall also submit on the 4th& 19th of every month to Engineer in Charge a true statement showing in respect of the 2nd half of the preceding month & the 1st half of the current month (1) the accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused by them and (2) the number of female workers who have been allowed Maternity Benefit as provided in the Maternity Benefit Act 1961 on Rules made there under and the amount paid to them.

x) Engineer in Charge shall on a report having been made by an inspecting officer as defined in Contract Labour (Regulation and Abolition) Act 1970 have the power to deduct from the money due to the CONTRACTOR any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfillment of the conditions of the Contract for the benefit of workers, non-payment of wages or of deductions made from his or their wages which are not justified by the terms of the Contract or non-observance of the said regulations.

xi) The CONTRACTOR shall indemnify the COMPANY against any payments to be made under and for the observance of the provisions of the aforesaid acts without prejudice to his right to obtain indemnity from his sub-CONTRACTOR.

36.0 **STATUTORY REQUIREMENTS:** During the tenure of this CONTRACT nothing shall be done by the CONTRACTOR in contravention of any law, act and/or rules/regulations, thereunder or any amendment.

37.0 **GENERAL HEALTH, SAFETY & ENVIRONMENT (HSE) GUIDELINES:**

37.1 It will be solely the CONTRACTOR's responsibility to fulfil 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 of that state where it is operating. Ensure that all sub-CONTRACTORs hired by CONTRACTOR comply with the same requirement as the CONTRACTOR himself and shall be liable for ensuring compliance all HSE laws.

37.2 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.

37.3 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.

37.4 Any compensation arising due to accident of the Contractor's personnel while carrying out the job, will be payable by the contractor.

37.5 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 shall have the right to direct the contractor to cease work until the non-compliance is corrected.

38.0 POLLUTION AND CONTAMINATION:

The CONTRACTOR shall be liable for all surface and sub-surface pollution to the extent caused by CONTRACTOR and resulting from CONTRACTOR's operation/service or spillage or dumping of solvents/additive substances or pollutants, which the CONTRACTOR brings to the Site for use in connection with Work to be performed under this Contract.

Notwithstanding anything to the contrary contained herein, it is agreed that except on the ground of willful misconduct or criminal misconduct, COMPANY shall release, indemnify and hold CONTRACTOR and its sub-CONTRACTORs harmless from any and all claims, judgments, losses, expenses and any costs related thereto (including but not limited to Court costs and "Attorney's fees") for:

a) Damage to or loss of any reservoir or producing formation; and/ or
b) Damage to or loss of any well; and/or
c) Any other subsurface damage or loss; and/ or
d) Any property damage or loss or personal injury or death arising out of or in connection with a blowout, fire explosion and loss of well control regardless of cause.

39.0 STATUTORY VARIATION/NEWLY ENACTED LAW:

39.1 All duties, taxes except otherwise specified in the Contract as applicable on the closing date of bid submission as per relevant acts and rules shall be in CONTRACTOR's account. Variation in case of custom duty on CIF value declared

by the bidder shall be to COMPANY account.

39.2 In the event of introduction of any new legislation or any amendment or enforcement of any Act or Law, rules or regulations of Government of India or State Government(s) or Public Body, which becomes effective after the date of submission of Price Bid or revised price bid, if any, for this CONTRACT and which results in increased/decreased cost of the works under the CONTRACT through increased/decreased liability of taxes and/or duties, required to be paid by the CONTRACTOR, (other than personnel and Corporate taxes), the Parties shall agree to a revision in pricing to reflect such change subject to the production of documentary proof to the satisfaction of the COMPANY/CONTRACTOR as applicable to the extent which directly is attributable to such introduction of new legislation or change or amendment as mentioned above and adjudication by the competent authority (applicable when disputed by COMPANY) & the courts wherever levy of such taxes/duties are disputed by COMPANY/CONTRACTOR.

39.3 Any increase in net amount of the duties and taxes (i.e. the amount of taxes/duties payable minus eligible credit of taxes/duties paid on input services/inputs) after the contractual completion/mobilization date during the extended period will be to the CONTRACTOR's account, where delay in completion/mobilization period is attributable to the CONTRACTOR. However, any decrease in net amount of the duties and taxes (i.e. the amount of taxes/duties payable minus eligible credit of taxes/duties paid on input services/inputs) after the contractual completion/mobilization date will be to COMPANY's account.

39.4 The Contract Price and other prices given in the Schedule of Prices are based on the applicable tariff as indicated by the CONTRACTOR in the Schedule of Prices. In case this information subsequently proves to be wrong, incorrect or misleading, COMPANY will have no liability to reimburse/pay to the CONTRACTOR the excess duties, taxes, fees, if any finally levied/imposed by the concerned authorities. However, in such an event, COMPANY will have the right to recover the difference in case the rate of duty/tax finally assessed is on the lower side.

39.5 Notwithstanding the provision contained in Clause-39.1 to 39.4 above, the COMPANY shall not bear any liability in respect of:

i. Personal taxes on the personnel deployed by CONTRACTOR, his sub-CONTRACTOR/sub-sub-CONTRACTORs and Agents etc.

ii. Corporate taxes and Fringe benefit tax in respect of CONTRACTOR and all of their sub-CONTRACTORs, agents etc.

iii. Other taxes & duties including Customs Duty and GST in addition to new taxes etc. in respect of sub-CONTRACTORs, vendors, agents etc. of the CONTRACTOR.

iv. Any liability on the CONTRACTOR, which was accrued under the old law or contract, which the CONTRACTOR is obligated to pay either to the COMPANY or to the Government Authority.

39.6 In order to ascertain the net impact of the amendment/ revisions/enactment of various provisions of taxes/duties, the CONTRACTOR is liable to provide following disclosure to COMPANY:

i. Details of each of the input services used in relation to providing service to COMPANY including estimated monthly value of input service and GST tax amount.

ii. Details of Inputs (material/consumable) used/required for providing service to COMPANY including estimated monthly value of input and GST paid/payable on purchase of inputs.

39.7 The above provisions would be applicable only in case of variation in rate of taxes and duties on supply of services to OIL and not applicable on taxes and duties on input (goods and services) towards such services.

39.8 Any claim or reduction on account of change in law shall be accompanied with undertaking that the provisions of anti-profiteering clause under GST Act have been complied with.

40.0 **SEVERABILITY:**

Should any provision of this agreement be found to be invalid, illegal or otherwise not enforceable by any court of law, such finding shall not affect the remaining provisions hereto and they shall remain binding on the parties hereto.

41.0 **Commission of misconduct/submission of fraudulent document by the bidder/contractor and Banning thereof:**

The information and documents furnished by the bidder/CONTRACTOR in respect of the tender/contract are accepted by COMPANY to be true and genuine. However, if it comes to the notice of the COMPANY anytime either during the pendency of the tender or after award of the contract or after completion the contract that a Bidder/CONTRACTOR furnished fraudulent document/false information in relation to the subject tender/contract or committed any misconduct, appropriate action shall be taken against the Bidder/CONTRACTOR for debarment/banning of the bidder/CONTRACTOR from participating in any future tender of the COMPANY in terms of the COMPANY's Banning Policy, 2017 besides making the CONTRACTOR liable for other penal action including termination of ongoing contract(s) at his/her risk and peril. In such event, the Bid Security/Performance Security in respect of ongoing contract(s) shall be forfeited by the COMPANY.

42.0 **SETTLEMENT OF DISPUTES:**

42.1 **Arbitration (Applicable for Suppliers/CONTRACTORs other than PSU and MSME):**

1. Except as otherwise provided elsewhere in the contract, if any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives or assignees, in connection with construction, meaning, operation, effect, interpretation of the contract or breach thereof which parties are unable to settle mutually, the same shall be referred to Arbitration as provided hereunder:

2. A party wishing to commence arbitration proceeding shall invoke Arbitration Clause by giving 30 days' notice to the other party. The notice invoking

arbitration shall specify all the points of dispute with details of the amount claimed to be referred to arbitration at the time of invocation of arbitration and not thereafter. If the claim is in foreign currency, the claimant shall indicate its value in Indian Rupee for the purpose of constitution of the arbitral tribunal.

3. It is agreed and undertaken by the Parties that irrespective of country of origin of the CONTRACTOR, the arbitration proceedings shall be governed by the Arbitration and Conciliation Act, 1996 and under no circumstances, the proceedings shall be construed as International Arbitration.

4. The number of arbitrators and the appointing authority will be as under:

Claim amount (excluding claim for interest and counter claim, if any)	Number of Arbitrator	Appointing Authority
Upto INR 25.00 Lakh	Not applicable	Not applicable
Above INR 25.00 Lakh Upto INR 25 Crore	Sole Arbitrator	OIL
Above INR 25 Crore	3 Arbitrators	One Arbitrator by each party and the 3rd Arbitrator, who shall be the presiding Arbitrator, by the two Arbitrators.

5. The parties agree that they shall appoint only those persons as arbitrators who accept the conditions of the arbitration clause. No person shall be appointed as Arbitrator or Presiding Arbitrator who does not accept the conditions of the arbitration clause.

6. If any of the Arbitrators so appointed dies, resigns, becomes incapacitated or withdraws for any reason from the proceedings, it shall be lawful for the concerned party/arbitrators to appoint another person in his place in the same manner as aforesaid. Such person shall proceed with the reference from the stage where his predecessor had left if both parties consent for the same; otherwise, he shall proceed de novo.

7. Parties agree and undertake that neither shall be entitled for any pre-reference or pendente-lite interest on its claims. Parties agree that any claim for such interest made by any party shall be void.

8. The arbitral tribunal shall complete the proceedings, make and publish the award within time stipulated in the Arbitration and Conciliation Act, 1996(as amended).

9. If after commencement of the arbitration proceedings, the parties agree to settle the dispute mutually or refer the dispute to conciliation, the arbitrators shall put the proceedings in abeyance until such period as requested by the parties. Where the proceedings are put in abeyance or terminated on account of mutual settlement of dispute by the parties, the fees payable to the arbitrators shall be determined as under:

(i) 20% of the fees if the claimant has not submitted statement of claim.
(ii) 40% of the fees if the pleadings are complete

(iii) 60% of the fees if the hearing has commenced.
(iv) 80% of the fees if the hearing is concluded but the award is yet to be passed.

10. Each party shall be responsible to make arrangements for the travel and stay etc. of the arbitrator appointed by it. Claimant shall also be responsible for making arrangements for travel/stay arrangements of the Presiding Arbitrator and the expenses incurred shall be shared equally by the parties.

In case of sole arbitrator, both parties shall equally share all expenditures that may be required to be incurred.

11. The fees and other administrative/secretarial expenses of the arbitrator(s) shall not exceed the model fee as stipulated in Schedule--- of the Act and such expenses shall be equally borne by the parties.

12. The Place/Seat of Arbitration shall be Guwahati or the place where the contract is executed. The venue of the arbitration shall be decided by the Arbitrator(s) in discussion with the parties. The cost of arbitration sittings shall be equally borne by the parties.

13. The Arbitrator(s) shall give reasoned and speaking award and it shall be final and binding on the parties.

14. Subject to aforesaid, provisions of the Arbitration and Conciliation Act, 1996 and any statutory modifications or re-enactment thereof shall apply to the arbitration proceedings under this clause.

42.2 **Arbitration (applicable in case of Contract awarded on Public Sector Enterprise):**

a) In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract (s) between Central Public Sector Enterprises (CPSEs) and also between CPSEs and Government Departments/Organizations (excluding disputes -concerning Railways, Income Tax, Customs & Excise Departments), such dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in OPE OM No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22-05-2018.

b) A party wishing to commence arbitration proceeding shall invoke Arbitration Clause and refer the dispute(s) to AMRCD with a copy to the other party. The notice invoking arbitration shall specify all the points of dispute with details of the amount claimed to be referred to arbitration at the time of invocation of arbitration and not thereafter.

c) Upon such reference, the dispute shall be decided by the Competent Authority appointed under the AMRCD, whose decision shall bind the parties finally and conclusively. The parties in the dispute will share equally the cost of the arbitration as intimated by the Arbitrator.

42.3 **Arbitration (Applicable to Micro, Small and Medium Enterprise)**

In the event of any dispute or difference relating to, arising from or connected with the Contract, efforts shall be made to resolve the dispute(s) amicably by mutual consultation and in case such dispute(s) cannot be resolved through

mutual consultation, then same shall be resolved through the procedure as prescribed in Section-18 of the Micro, Small and Medium Enterprises Development Act, 2006.

42.4 **Resolution of disputes through conciliation by OEC**

(Not Applicable in cases where value of dispute is less than Rs. 25 Lakhs and more than 2 Crore)

If any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives or assignees, in connection with construction, meaning, operation, effect, interpretation of the contract or breach thereof which parties are unable to settle mutually, Company at its discretion, on its own or on the request of the CONTRACTOR, may refer the dispute to Outside Expert Committee ("OEC") to be constituted by Corporate Business Committee (CBC), OIL as provided hereunder:

a) The party desirous of resorting to conciliation shall send a notice of 30 (thirty) days to the other party of its intention of referring the dispute for resolution through OEC. The notice invoking conciliation shall specify all the points of disputes with details of the amount claimed to be referred to OEC and the party concerned shall not raise any new issue thereafter.

b) OIL shall nominate three outside experts, one each from Financial/commercial, Technical and Legal fields from the Panel of Outside Experts maintained by OIL who shall together be referred to as OEC (Outside Experts Committee).

c) Parties shall not claim any interest on claims/counterclaims from the date of notice invoking conciliation till execution of settlement agreement, if so arrived at. In case, parties are unable to reach a settlement, no interest shall be claimed by either party for the period from the date of notice invoking conciliation till the date of OEC recommendations in any further proceeding.

d) The Proceedings of the OEC shall be broadly governed by Part III of the Arbitration and Conciliation Act, 1996 including any modifications thereof. Notwithstanding above, the proceedings shall be summary in nature and Parties agree to rely only upon documentary evidence in support of their claims and not to bring any oral evidence in the OEC proceedings.

e) OEC shall hear both the parties and recommend possible terms of settlement between the parties. The recommendations of OEC shall be non-binding and the parties may decide to accept or not to accept the same. Parties shall be at liberty to accept the OEC recommendation with any modification they may deem fit.

f) Where recommendations are acceptable to both the parties, a settlement agreement will be drawn up in terms of the OEC recommendations or with such modifications as may be agreed upon by the parties. The settlement agreement shall be signed by both the parties and authenticated by all the OEC members either in person or through circulation. This settlement agreement shall have the same legal status and effect as that of an arbitration award on agreed terms on the substance of the dispute rendered by an arbitral tribunal under Section 30 of the Arbitration and Conciliation Act, 1996.

g) OIL will share all other guidelines regarding reconciliation through OEC with the

CONTRACTOR when it resorts to settlement through OEC. Both parties agree to adhere to these guidelines.

h) All the expenditure incurred in the OEC proceedings shall be shared by the parties in equal proportion. The parties shall maintain account of expenditure and present to the other for the purpose of sharing on conclusion of the OEC proceedings.

i) The OEC proceedings must be completed within a period of 3(three) months from the date of constitution of the OEC with a provision of extension of one months, subject to mutual agreement. The Place of OEC shall be either at New Delhi or Guwahati.

j) If the parties are not able to resolve the dispute through OEC or do not opt for conciliation through OEC, the party may invoke arbitration clause as provided in the contract.

k) The parties shall be represented by their in-house employees/executives. No party shall bring any advocate or outside consultant/advisor/agent. Ex-officers of OIL who have handled the matter in any capacity directly or indirectly shall not be allowed to attend and present the case before OEC on behalf of Contractor. However, ex- employees of parties may represent their respective organizations.

l) Solicitation or any attempt to bring influence of any kind on either OEC Members or OIL is completely prohibited in conciliation proceedings and OIL reserves the absolute right to close the conciliation proceedings at its sole discretion if it apprehends any kind of such attempt made by the Contractor or its representatives.

42.5 **Exclusions**

Parties agree that following matters shall not be referred to conciliation or arbitration:

i) Any claim, difference or dispute relating to, connected with or arising out of OIL's decision to initiate any proceedings for suspension or debarment or banning, or decision to suspend or to ban or to debar business dealings with the bidder/CONTRACTOR and/or with any other person involved or connected or dealing with bid/contract/bidder/CONTRACTOR.

ii) Any claim, difference or dispute relating to, connected with or arising out of OIL's decision under the provisions of Integrity Pact executed between OIL and the Bidder/CONTRACTOR.

iii) Any claim, difference or dispute relating to, connected with or arising out of OIL's decision to comply with any order or directive of any statutory or government authority.

iv) Any claim which is less than Rs. 25 Lakh.

43.0 **COMPLETION OF CONTRACT:**

Unless otherwise terminated under the provisions of any other relevant Clause or extended through written communication, this Contract shall be deemed to have

been completed at the expiry of the Period specified in the contract or period of defect liability, as provided for under the Contract, whichever is later.

44.0 **TERMINATION:**

44.1 **Termination on expiry of the contract**: This Agreement shall be deemed to have been automatically terminated on the expiry of the contract period unless OIL has exercised its option to extend this contract in accordance with the provisions, if any, of this contract.

44.2 **Termination of contract for death**: If the CONTRACTOR is an individual or a proprietary concern and the individual or the proprietor dies or if the CONTRACTOR is a partnership concern and one of the partners dies then unless, the COMPANY is satisfied that the legal heir of the individual or the proprietary concern or the surviving partners are capable of carrying out and completing Contract, the COMPANY is entitled to cancel the Contract for the uncompleted part without being in any way liable for any compensation payment to the estate of the deceased CONTRACTOR and/or to the surviving partners of the CONTRACTOR's firm on account of the cancellation of Contract. The decision of the COMPANY in such assessment shall be final & binding on the parties. In the event of such cancellation, the COMPANY shall not hold the estate of the deceased CONTRACTOR and/or the surviving partners of CONTRACTOR's firm liable for any damages for non-completion of the Contract.

44.3 **Termination on account of Force Majeure**: Unless the contract provides otherwise, either party shall have the right to terminate this Contract on account of Force Majeure as set forth in Article-31.0 above.

44.4 **Termination on account of insolvency**: In the event that the CONTRACTOR or its collaborator or its guarantor at any time during the term of the Contract, becomes insolvent or makes a voluntary assignment of its assets for the benefit of creditors or is adjudged bankrupt or under the process of insolvency or liquidation, then the COMPANY shall, by a notice in writing have the right to terminate the Contract and all the CONTRACTOR's rights and privileges hereunder, shall stand terminated forthwith.

However, COMPANY shall be at liberty to give the Receiver or Liquidator or Insolvency Professional Manager, as appointed by the Competent Court/Tribunal, the option of carrying out the Contract subject to its technical & financial competence and his providing a guarantee for due and faithful performance of the Contract.

44.5 **Termination for Unsatisfactory Performance**: If the COMPANY considers that, the performance of the CONTRACTOR is unsatisfactory, or not as per the provision of the Contract, the COMPANY shall notify the CONTRACTOR in writing and specify in details the cause of dissatisfaction. The COMPANY shall have the option to terminate the Contract by giving 15 days' notice in writing to the CONTRACTOR, if CONTRACTOR fails to comply with the requisitions contained in the said written notice issued by the COMPANY. In the event CONTRACTOR rectifies its non-performance to the satisfaction of the COMPANY, the option of termination may not be exercised by the COMPANY. If however CONTRACTOR repeats non-performance subsequently, COMPANY shall exercise the option to terminate contract by giving 07 days' notice. Such CONTRACTOR shall be put on holiday as per the Banning Policy of OIL [available at www.oil-india.in].

44.6 **Termination due to change of ownership and Assignment**: In case the

CONTRACTOR's rights and/or obligations under this Contract and/or the CONTRACTOR's rights, title and interest to the equipment/ material, are transferred or assigned without the COMPANY's written consent, the COMPANY may at its option, terminate this Contract. COMPANY shall not be however under any obligation to accord consent to the CONTRACTOR for change of ownership & assignment of the contract.

44.7 If at any time during the term of this Contract, breakdown of CONTRACTOR's equipment results in CONTRACTORs being unable to perform their obligations hereunder for a period of 15 successive days, COMPANY at its option, may terminate this Contract in its entirely or partially to the extent non-performance, without any further right or obligation on the part of the COMPANY, except for the payment of money then due. No notice shall be served by the COMPANY under the condition stated above.

44.8 **Termination for delay in mobilization**: CONTRACTOR is required to mobilize complete equipment alongwith crew for commencement of services at the specified site within the maximum allowed number of days from the date of LOA/Notice for Mobilization as specified in the special conditions of contract. If the CONTRACTOR (successful bidder) fails to complete the mobilization as above, OIL shall have, without prejudice to any other clause of the CONTRACT, the right to terminate the contract.

44.9 Notwithstanding any provisions herein to the contrary, the Contract may be terminated at any time by the COMPANY on giving 30 (thirty) days written notice to the CONTRACTOR due to any other reason not covered under the above Article from 44.1 to 44.8 and in the event of such termination the COMPANY shall not be liable to pay any cost or damage to the CONTRACTOR except for payment of services as per the Contract upto the date of termination.

44.10 **Consequence of Termination**: In all cases of termination herein set forth, the relative obligations of the parties to the Contract shall be limited to the period up to the date of termination. Notwithstanding the termination of this Contract, the parties shall continue to be bound by the provisions of this Contract that reasonably require some action or forbearance after such termination.

Upon termination of this Contract, CONTRACTOR shall return to COMPANY all of COMPANY's properties, which are at the time in CONTRACTOR's possession.

In the event of termination of contract, COMPANY will issue Notice of termination of the contract with date or event after which the contract will be terminated. The contract shall then stand terminated and the CONTRACTOR shall demobilize their personnel & materials.

Demobilization charges shall not be payable by COMPANY in case of Article from 44.4 to 44.7.

45.0 **TO DETERMINE THE CONTRACT:**

In such an event the contract shall stand terminated and shall cease to be in force from the date of such notification by the COMPANY. Thereafter the CONTRACTOR shall stop forthwith any of the work then in progress, except those work which the COMPANY may, in writing, require to be done to safeguard any property or work, or installations from damages, and the COMPANY may take

over the remaining unfinished work of the CONTRACTOR and complete the same through a fresh CONTRACTOR or by other means, at the risk and cost of the CONTRACTOR, and any of its sureties if any, shall be liable to the COMPANY for any excess cost occasioned by such work having to be so taken over and completed by the COMPANY over and above the cost at the rate/cost specified in the schedule of quantities and rates/prices.

46.0 **WITHOUT DETERMINING THE CONTRACT:**

To take over the work of the CONTRACTOR or any part thereof and complete the same through a fresh CONTRACTOR or by other means, at the risk and cost of the CONTRACTOR. The CONTRACTOR and any of its sureties are liable to the COMPANY for any excess cost over and above the cost at the rates specified in the schedule of quantities and rates/prices, occasioned by such work having been taken over and completed by the COMPANY.

47.0 **ERRING/DEFAULTING AGENCIES:**

Erring and defaulting agencies like bidder, CONTRACTOR, supplier, vendor, service provider will be dealt as per OIL's Banning Policy dated 6th January, 2017 available in OIL's website: www.oil-india.com. Moreover, OIL reserves the right to take legal or any other action on the basis of merit of the case.

48.0 **MISCELLANEOUS PROVISIONS:**

48.1 CONTRACTOR shall give notices and pay all fees at their own cost required to be given or paid by any National or State Statute, Ordinance, or other Law or any regulation, or bye-law of any local or other duly constituted authority as may be in force from time to time in India, in relation to the performance of the services and by the rules & regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the services.

48.2 CONTRACTOR shall conform in all respects with the provisions of any Statute, Ordinance of Law as aforesaid and the regulations or bye-law of any local or other duly constituted authority which may be applicable to the services and with such rules and regulation, public bodies and Companies as aforesaid and shall keep COMPANY indemnified against all penalties and liability of every kind for breach of any such Statute, Ordinance or Law, regulation or bye-law.

48.3 During the tenure of the Contract, CONTRACTOR shall keep the site where the services are being performed reasonably free from all unnecessary obstruction and shall store or dispose of any equipment and surplus materials and clear away and remove from the site any wreckage, rubbish or temporary works no longer required. On the completion of the services, CONTRACTOR shall clear away and remove from the site any surplus materials; rubbish or temporary works of every kind and leave the whole of the site clean and in workmanlike condition to the satisfaction of the COMPANY.

48.4 Key personnel cannot be changed during the tenure of the Contract except due to sickness/death/resignation of the personnel or any other justified situation in which case the replaced person should have equal experience and qualification, which will be again subject to prior approval, by the COMPANY.

******

END OF SECTION – I, Part - 3

Part – 3

SECTION – II

SCOPE OF WORK/SPECIAL CONDITIONS OF CONTRACT FOR CIVIL WORKS

1. **SCOPE OF WORKS:** The primary scope of the work is construction of **OIL Executive Residential Complex – Jodhpur**. The works under this contract shall include project management but not limited to providing labour, tools and plants, machineries, transport and all other components viz. Civil, Electrical, BMS, Rooftop PV Plant, Plumbing, Sanitation, Landscaping, Fire safety and other related works up to the finishing so as to render it readily habitable except soft furnishing, including supply of all materials (unless otherwise mentioned specifically) so as to complete the project in all respect. The scope also includes following and maintaining project execution standards of guidelines as set by Green Building certification bodies such as GRIHA/IGBC.
2. **SITE LOCATION:** The site is located at Khasra No 677, near Judicial Academy, about 1.8 km from Jhalamand Circle, Jodhpur, Rajasthan.
3. **DURATION OF AGREEMENT AND WORK ORDERS:** The contract shall be valid for a period of 24 months from the date of issuance of Work order.
   Within the currency of the contract period, a gross period Work Order and multiple individual Sub - Work Orders may be issued against different individual set of jobs. The completion period of each Sub-Work Orders shall be different depending upon the approved Gantt chart (from Primaviera) but within the gross contract period. The commencement and sequence of Sub-Work Orders shall be depending upon the criticality as per Critical Path Method (CPM) analysis. In case of non-performance or under performance by the contractor, Liquidated Damages (LD) shall be imposable for every individual Work Orders separately against respective Work Order values. However, the total value and method of evaluation shall be as per Liquidated Damages clause.
4. **EXECUTION ON ITEM RATE BASIS:** The works shall be carried out by contractor on item rate basis in conformity with the detailed drawing, scope of work, technical specifications, special conditions of the tender documents (including any addition/modification/ alteration/deletion made from time to time therein found essential for completion of works) for civil and all other works unless otherwise specifically mentioned in the line item.
5. **VARIATIONS/DEVIATIONS IN ITEMS, SPECS. & QUANTITIES:** There is no limit in variation of the quantum or values of the individual items. The rates shall remain firm in all the cases. The Engineer-In-Charge may increase or decrease the quantity of individual items to any extent based on costs and technical optimization or any other reason it shall in his opinion be desirable. The contractor shall be responsible for fair rates quoted against individual items irrespective of its quantity or its combination with other items. The rates are deemed to have sufficient profit margins, overhead, site conditions and other uncertainties factors in the project.
   The Engineer-In-Charge may discard any of the items having unreasonably higher rates quoted than the prevailing market trend, and instruct for opting alternate deviated items from CPWD-DSR or partial substitution from the market or may go for separate third party independent procurements. The contractor shall not object to the decision in the pretext of gross loss or otherwise.
   The Engineer-In-Charge may accept minor deviations in the item specifications provided the same is technically acceptable and financially not implicating significant changes in his/her opinion.

The Engineer-In-Charge may also discard any of the items without citing reasons to the contractor. The Engineer-In-Charge may also ask for the best quality materials amongst the approved list.

The contractor shall not contest to the above or ask for justification. The decision of the Engineer-In-Charge shall be final and binding on to the contractor.

6. Payment shall be at actuals based on the prices mentioned in the Schedule of Rates of the Contract.
7. **RATES FOR SUPPLEMENTARY ITEMS:** Item deviations shall not be permitted in general. However, in case of unavoidable circumstances Engineer-In-Charge may advise for supplementary / deviated items as per job requirements. The payment rates for such items shall be adopted flat from the CPWD-DSR 2018 after deduction of flat 18% GST component and then added with contractor's quoted percentage % adjustment (markup/discount), but without adjustment for applicable Cost Index or otherwise. The formula for calculation shall be [Contract Rate = (DSR2018/1.18) x (100% +- quoted % markup/rebate)]. The items specification shall be of nearest possible descriptions with the CPWD-DSR. The interpretation of similarity and decision thereon by the Engineer-In-Charge shall be final and binding. In case customization of rates are necessitated, such items shall be analyzed as per CPWD's Delhi Analysis of Rates (DAR-2018) format where the input rates would be the actual cost incurred (without GST component) subject to furnishing of documentary evidences (genuine GST invoice wherever applicable). The basic rates and coefficient wherever applicable shall be as per DSR'2018 with quoted percentage markup/discount. No additional costs shall be added for royalty, octroi etc. which is deemed to have taken care by quoted percentage markup/discount.
8. **DISCLOSURE OF INPUT COSTS:** The contractor may be asked for procurement details of some major items (e.g. cement, reinforcement, aggregates, masonry blocks, electrical, sanitary) or entire items of the project such as individual invoices of material procurement, source of procurement, transportation, manufacturer's details, materials details, testing certificates, details of wage payments to the work-site labourers etc. All original documents shall be maintained by the contractor, and a set of relevant copies self-certified by the contractor shall be submitted to the Engineer-In-Charge, as and when asked.
9. **PRICE VARIATION OVER TIME:** The rates quoted in the contract shall remain firm throughout the original contract period. However, if project is delayed inordinately for the reasons not attributable to the contractor directly or indirectly, other than Force majeure, Price Variation Clause (PVC) may be effected in order to protect both the parties from un-anticipated sharp inflation changes over long period. The contractor shall initiate claim if such variation exceeds more than 10% rise in CPI indices between contract signing month and 30thmonths thereafter, at the time of actual execution { ($CPI_{30th\ month} - CPI_{agreement}$)/$CPI_{agreement}$x 100 >10% }.

   The contractor may be compensated with price difference flatly based on All India Consumer Price Index for Industrial Workers (CPI-IW) published by RBI / Labour Bureau, Govt. of India. The contractor shall not claim for any individual predominant materials price hikes, as the case may be.

   Such price variation shall be admissible only if the contractor did not delay directly or indirectly in any of the other activities or WBS (Work Breakdown Structure) elements during the gross period of execution. Also the Contractor shall establish the loss incurred by way of Rate Analyses as per DAR-2018 format for all individual items; so as to compare with the contract SoQ rates. The Rate Analyses shall be substantiated with actual invoices for major materials. A flat lump sum compensation will be calculated as per the formula:

   [Price Variation = Q x (($CPI_{actual} - CPI_{agreement}$)/$CPI_{agreement}$– 10%],

   Where,

   Q = Value of items /quantities executed after 30th month of signing the contract agreement.

   CPI_{actual} = All India Consumer Price Index (IW) during the month of actual execution.

$CPI_{agreement}$= Consumer Price Index during month of signing contract agreement;

If price variation clause is invoked by the contractor, and if subsequently the Price Variation value when calculated with the same formula comes negative, then the same amount shall be deducted from the contractor's bills. Price variation if applicable shall be reconciled after completion of the project. This clause is not applicable for post commissioning operation and maintenance or rectification costs if any. Please note that Price variations due to change in statutory taxes/GST rates shall be dealt separately as per relevant clause in the contract.

10. **CONTRACTOR's RESPONSIBILITY IN UNDERSTANDING THE CONTRACT:** The contractor shall be deemed to have satisfied himself before tendering as to the sufficiency and correctness of his tender for the works and of the rates and prices quoted in the brief specifications, drawings, scope of work and payment (billing) schedule, which rates and prices shall, except as otherwise provided, cover all obligations under the contract and all matters and things found necessary for proper completion and maintenance of the works. It shall be the responsibility of the contractor to incorporate the changes that may be different from the scope of work envisaged at the time of tendering and as actually required to be executed. The contractor has quoted his rates after clearly studying the scope of work given in Tender Documents availed by him by downloading from the website or made available to him at the tendering stage itself and getting fully satisfied with the various items and technical intricacies involved in the work under his scope of work as envisaged in the tender. OIL shall not entertain any claim of the contractor on account of error or omission by him in this respect.

11. **STATUTORY APPROVALS:** OIL shall be responsible for Building Drawing approval from Jodhpur Development Authority (JDA) and NOC from Indian Air Force (IAF) / Airport Authority of India for height clearance. For obtaining all other statutory approvals during construction and thereafter, the contractor shall be responsible on behalf OIL or on his behalf unless otherwise parameters are fully dependent on OIL. Necessary liasoining to be undertaken wherever required with no extra claim. All the approvals shall be taken before the scheduled completion period and in any case before the work can be taken over.

12. **ORDER OF PRECEDENCE OF DOCUMENTS:** The following Additional Conditions of Contract shall be read in conjunction with General Conditions of Contract (GCC) and other conditions of the tender documents. In case of difference, contradiction, discrepancy, with regard to conditions of contract, Specifications, Drawings, Bill of quantities etc. forming part of the contract, the following shall prevail in order of precedence.
    a) Work Order (for start and end dates)
    b) Deviation Orders / Site Order Book
    c) Schedule of Quantities /Descriptions in line items
    d) Approved / Reviewed shop drawings/RFC Drawings
    e) Field Test Reports
    f) Statutory directives
    g) Technical specifications in this contract
    h) Special Condition of Contract.
    i) Relevant B.I.S. Codes
    j) Latest CPWD/Specifications
    k) Tender Document & Amendments

The scope also includes following and maintaining project execution standards of guidelines as set by Green Building certification bodies such as GRIHA/IGBC.

13. **SUB-LETTING OF SPECIALIZED JOBS:** Sub-letting the certain specialized items may be permitted with permission from the Engineer-In-Charge. However, responsibility in entirety shall always rest with the primary contractor in all respect. The eligibility of nature of the specialized jobs and the nature of sub-contractor vendor (e.g., authorized service provider) shall be as decided by Engineer-In-Charge.

14. **FREQUENCY OF BILL PAYMENT:** The mode of payment may not be oftener than monthly. Payment of works will be made only when the Engineer-in-charge is fully satisfied with the quality and service ability of the works. Running Bills may not be processed unless substantial tangible jobs are completed, the assessment of such quantum shall rest with the discretion of the Engineer- In-Charge. Contractor has to submit their claimed measurement details (against completed payable items) in soft copy in spreadsheet (MS excel sheet) to the Engineer-In-Charge in the FORMAT of CMB (Computerized Measurement Book) as generally practised by CPWD or OIL Civil Engineering section. The measurement shall be verified jointly by the contractor and Engineer-In-Charge or his authorized representatives. Subsequently, contractor shall raise invoice against the undisputed measurements along with supporting documents if any for payments.

15. **COMMINUCATION FOR SITE WORKS:** In addition to usual written communication, the other mode of retrievable communication such as e-mail, social media etc passed on to the contractor or his representatives shall deemed to be valid instruction for the purpose of site related day-to-day activities. However, vital formal communications shall be by way of usual signed formal letters/documents only.

16. **SAFETY CODE**: Contractor shall adhere to safe construction practice and guard against hazardous and unsafe working conditions and shall comply with BIS guidelines (published in relevant IS codes), CPWD Safety code and any other safety directives issued by Engineer-In-Charge from time to time. Tool box meeting / safety briefing shall be conducted with work force before commencement of every hazardous works including works in heights. Full time safety net shall be laid around the structure from all practicable sides from floor slab level 2 onward with proper props as approved by Engineer-In-Charge.

17. **GREEN BUILDING COMPLIANCE:** Apart from design aspects (largely decided by OIL), Contractor shall maintain good house-keeping of the work site throughout the project period as instructed by the Engineer-In-Charge from time to time. Worksite arrangements and works methodology shall be fully compliant to the guidelines as prescribed by GREEN BUILDING certifying agencies such as IGBC/GRIHA with necessary documentations wherever necessary. No additional payments shall be compensated on account of meeting such compliances.

    Some of the indicative parameters (but not limited to) are stripping and stacking top soil for re-use in landscaping, use of optimum concrete curing procedure, selection of building materials along with its technical and commercial details including source, distances and sources of material supplies, re-use and recycling of waste materials, types of construction tools, equipment and accessories, water consumption rate with meters, effluent treatment and re-use of water, air pollution monitoring with devices, carrying of materials and wastes in covered vehicles, covering/sprinkling of water on to fine aggregates, loose earths and other source of dusts with non-potable STP water, limiting vehicular speed to 10km/h, noise level, worksite ambience, providing other applicable proper labour amenities etc. Contractor may refer to https://igbc.in and www.grihaindia.org for details. Requirements not meeting the compliances as deemed by the Engineer-In-Charge may not be permitted at the site.

18. **WATER DURING CONSTRUCTION:** The contractor shall arrange water fit for the purpose of drinking and construction at their own cost. Boring underground water may be permitted at site subject to permission from the statutory body and suitability of the water for drinking/construction purpose. Contractor shall install PVC storage tank of adequate capacity for drinking purpose. For construction purpose, construction of ground tank may be permitted at the site as approved by the Engineer-In-Charge. Water meter shall be installed at all its sources (municipal/bore-well/tanker).Uncontrolled usage of water for construction purpose or for labour camp and un-managed discharge of effluent shall not be permitted at the site.

19. **ELECTRICITY DURING CONSTRUCTION:** The contractor will make his/their own arrangement for power supply. All the works of the contractor shall be done as per Indian Electricity Act and Rules framed there under and approved by the Engineer-in-

Charge. The temporary lines will be removed forthwith after the completion of the work or if there is any hindrance caused to the other work due to the alignment of these lines, the contractor will re-route or remove the temporary lines at his own cost. The power connection shall have valid permission from the concerned authority. Noiseless DG shall be arranged in case of non-availability of power supply at remote corners or otherwise.

20. CONSTRUCTION PLAN TO BE SUBMITTED: Contractor shall to submit construction activity plan, material storage, Tower Crane position, vehicular movement plan, labour camp, water and electricity plan etc to OIL approval before issuance of Work Order. The plan is to be prepared to ensure the following and is to be applied effectively during the whole construction phase:

a) Demarcate area on the site plan to which the site activities would be limited during construction by the contractor. The demarcated area should be separated from the rest of the site through a physical barrier.
b) Construction materials such as sand, aggregate etc. to be stored in demarcated areas within low height enclosures to limit spillage, waste and site contamination due to winds.
c) Location should be identified on the construction site to store the used/scrap wastes. Both these wastes should be separately stored in Bins and handed over to authorized agencies for safe disposal.
d) Location for other ancillary set ups.

21. ENGAGEMENT OF SPECIALIZED AGENCY: The Contractor shall engage competent and experienced specialized agency (as the case may be) approved by OIL for execution of items like Electrical works, elevator system, BMS, solar panel, STP etc as required. The Contractor will submit the credentials of the specialized agencies for approval by OIL. However, the entire responsibility towards quantity and quality of the entire project including services shall remain with the main Contractor. Nothing extra will be paid on this account**.**

22. ENABLING WORKS: Enabling works and other site arrangements shall not be payable. Enabling works shall be as directed by Engineer-In-Charge as per requirement of the project from time to time. The contractor shall comply without claiming for any compensation. Some of the enabling works are as tabulated below (Not exhaustive).

Sl	Description (Minimum requirement)
1	**SITE OFFICE:** a) OIL personnel room (2 persons): 7.2sqm (carpet area), A/C, Table/Chair-2 set with other general office furnishing b) Contractor personnel (10 persons): 20sqm (carpet area), cooler, Table/Chair- 10 set with other general furnishing c) Toilet Block: 6sqm (carpet area) WC cum bath – 2 set (unisex) with tiles, basins, mirror, health faucet and other standard fitting. d) Kitchen/pantry: 5sqm (carpet area) having counter, sink-tap, LPG-burner set etc. e) Desktop with 21" monitor, core i7 processor, 8 GB RAM f) Multifunction printer: Laser jet g) Broadband connection h) Necessary signage with stiff framed flex prints or better materials.
2	**SITE LAB:** i) 20sqm, cooler, Table/Chair- 1 set with other general furnishing
3	**CEMENT GODOWN:** a) As per CPWD specification with minimum capacity of 600 bags with first-in, first-out provision
4	**ENVIRONMENTAL CONSERVATIONS, AIR AND SOIL POLLUTION CONTROL:** 1) Continuous PPGI barricading sheet with height 3.0m, from ground/road

	level within 3 months from the commencement of the works. In case of existing boundary walls or new wall being constructed, the balance height may be covered with appropriate materials. Full height Scaffolding net- high density Polyethylene UV stabilized, shading coefficient minimum 75% (as per directives) 2) Erosion channel with mesh/bunds and sedimentation tanks during monsoon to prevent site erosion or to reduce movement of soil outside during the project. 3) Acoustic diesel generator sets (complying CPCB norms), stack height 3 m from the top with a cap etc. 4) Vehicle wheel washing facility/gravel bed at all vehicular entrances/exits of the site. 5) Spill prevention plan/dyke walls for storage of hazardous items e.g., HSD, admixtures, bitumen etc. 6) Water meter and Waste Water treatment system (MBBR) for reuse
5	**CCTV and Access control :** j) 7 Nos camera, 2 MP, IP 66 at different corners with varying pole heights up to 20m from ground. k) Biometric attendance with finger print + face (iris) detection (for staff and labourers) l) Connection to internet for remote monitoring and recording from the office (OIL HOUSE). m) Monitor – 32" two nos; NVR/DVR backup – 8TB and Other related accessories
6	**High Mast LED lights:** Erection of 2 Nos 20m height in case of insufficient illumination for works/surveillance.
7	**ACCOMMODATION - FOR CONTRACTOR'S TECHNICAL PERSONNEL:** 3 Nos of 2 bed rooms with furnishing befitting and officer (Similar to Hotel Room)
8	**ACCOMMODATION LABOUR CAMP:** For 99 on-site resident labourers with amenities as per directives
9	**OTHER LABOUR AMMENITIES:** Canteen, Crèche, rest room etc as per government directives / CPWD GCC.
10	**AREA LIGHTING:** Adequate lightings with poles and LED lights sufficient lux required for construction during night in case of insufficient illumination for works/surveillance.
11	**WATER STORAGE TANK:** Adequate UG (masonry with impervious layer) tank and PVC storage tanks with proper pumps, plumbing and fittings.
12	**MANNED SECURITY GATES (24 Hrs):** Proper Security hut security in shifts.
13	**AIR MONITORING DEVICE:** Ambient Air Monitoring Device shall be installed as per requirement of GRIHA / IGBC / NAAQ
	NB: *1. The size, arrangement, specifications, list of item etc may be variable with layout as approved by the Engineer-In-Charge.* *2. In case of non-compliances on any of the above requirements by the contractor within 7 days of intimation, the Engineer-In-Charge may engage any available third parties on nomination basis (without going through public procurement method) at the cost and risk of the contractor, whose payment shall be made by the contractor or recovered from the contractor's payment/PBG.*

23. WORK IN MONSOON AND SUMMER: The Contractor must maintain minimum labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No extra rate will be considered such work in monsoon. During monsoon and other period, it shall be the

responsibility of the Contractor to keep the construction work site free from water logging at his own cost.

During summer heat, the contractor shall ensure necessary safety measures of the workers against scorching summer heat in the form of loo or otherwise.

In case of works stoppage on account of above, the cause and duration shall be recorded in the Hindrance Register duly countersigned by the Engineer-In-Charge for validation.

24. WORKING PERIOD AND SHIFTS: The working time at the time of work is 48 hours per week. Over timework is permitted in cases of need, however OIL shall not compensate the same in any manner. Contractor shall obtain Labour Licence of minimum 300 labourers for peak engagement. Full time labourer shall not be less than 99 labourers camped at the site from the second month onward after commencement. Shift working up to 2 shifts per day will be operated whenever necessary to commensurate the work progress. The contractor shall take this aspect in to consideration for formulating his rates in the bid. No extra claims will be entertained on this account. The contractor must arrange for the placement of workers in such a way that delayed completion of the work or any part thereof for any reason whatsoever will not affect their proper employment. OIL shall not entertain any claim for idle time payment whatsoever. For carrying out critical work on Sundays and holidays, the Contractor shall approach the Engineer-in-Charge or his representative at least two days in advance and obtain permission in writing.

25. SETTING OUTWORKS: The Engineer-in-Charge shall furnish the Contractor with only the corners of the work site land plots and a level bench mark. The Contractor shall set out the works and shall provide and efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.

The Contractor shall/provide, fix and be responsible for the maintenance of all stakes, templates, level marks, profiles and other similar things and shall take necessary precautions to prevent their removal or disturbance and shall be responsible for the consequence of such removal or disturbance should the same take place and for their efficient and timely reinstatement. The Contractor shall also be responsible for the maintenance of all existing survey marks, boundary marks, distance marks and centre line marks, either existing or supplied and fixed by the Contractor. The work shall be set out to the satisfaction of the Engineer-In-Charge. The approval thereof or presence of OIL personnel in setting out the work shall not relieve the Contractor or any of his responsibilities.

Before beginning the works, the Contractor shall at his own cost, provide all necessary reference and level posts, pegs, bamboo, flags, ranging rods, strings and other materials for proper layout of the work in accordance with the scheme for bearing marks acceptable to the Owner. The Centre, longitudinal or face lines and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct marks at the centre to enable a theodolite to be set over it. No work shall be started until all these points are checked and approved by the Engineer-in-Charge in writing but such approval shall not relieve the Contractor of any of his responsibility. The Contractor shall also provide all labour, material and other facilities, as necessary, for the proper checking of layout and inspection of the points during construction. Pillars bearing identification marks located at the sites of units of works under construction should be protected and fenced by the Contractor.

26. RESPONSIBILITY FOR LEVEL AND ALIGNMENT: The Contractor shall be entirely and exclusively responsible for the horizontal and vertical alignment, the levels and correctness of every part of the work and shall rectify effectually any errors or imperfections therein. Such rectifications shall be carried out by the Contractor, at his own cost, when instructions are issued to that effect by the Engineer-in-Charge.

27. COORDINATION AMONGST VARIOUS WORKS: There will be instances where more than one agency is working at the same time at the site. The contractor shall at all times remain bound to co-ordinate with the agencies, deployed for the above works, including providing free access and making required provisions for them in

execution of works pertaining to their portion of works. He shall also remain bound to ensure uninterrupted progress of work by these agencies in a peaceful and smooth manner. He shall also remain bound to make the required changes / additions / alterations in the works done by him to accommodate the items under the scope of work of such other agencies deployed by OIL. The contractor is deemed to have made the estimated allowances in this respect while quoting his rates at the tendering stage.

28. TECHNICAL SPECIFICATIONS: All the materials, workmanship, methodology or any other parameters shall be Material specifications, workmanship and methodology of various items shall be as per latest IS Codes published by BIS or CPWD specifications or approved manufacturer's standard recommendations (in the order of preference) unless otherwise mentioned in this contract. Interpretation and direction of the Engineer In-Charge shall be final and binding on the contractor. The contractor or their representative shall not contest on technical requirements.

All materials to be used for the jobs shall be shown to the Engineer-In-Charge for quality checks/inspection followed by approval for utilization. Materials rejected by the Company must be removed by Contractor from work site within 48 Hrs. of rejection, failing which the Company reserves the right to get the rejected materials removed under risk and cost of the Contractor.

For the items where scope of design rests with the contractor, the overall allowed dimensions for the designs may be restricted within certain limits depending upon the site conditions. For example, STP may have to be custom designed so as to install underground and contained within restricted foot print. Rooftop Solar Panel installation may have to be installed in landscape pattern, at elevated frames (sy 2.1m above terrace so as to allow free human passage below the panels, and also have minimum projection height for aesthetic and statutory reasons. Similarly, substation room size, the sizes of panels and other equipment shall be optimally sized, so as to cover minimum footprint.

29. DEFECT LIABILITY: The defect liability for the property and all the items shall be 12 months from the date of actual completion or end of Work Order period whichever is later unless otherwise specifically mentioned. However, in case of specialized items where such period mentioned/requirement is higher than 12 months, higher period will be applicable.

30. OPERATION MAINTENANCE OF SPECIALISED ITEMS: For items like Roof Top Solar Photo Voltaic Plant, Building Management System (BMS), Sewage Treatment Plant (STP) etc, the contractor shall perform free Operation and Maintenance including consumable and spares during the defect liability period including providing 16 hours skilled BMS operator in the control room, and it shall commence from formal date of full project completion. The contractor shall also agree to enter into sub-contracts for Annual Maintenance Contracts separately for additional minimum period of 5 years and extendable up to full machine/plant's useful life. These contracts may however be short closed by Oil India Ltd. at any point of time with minimum 6-month notice period.

31. LIQUIDATED DAMAGE (LD): Liquidated Damage on the gross project shall be as detailed in General Conditions of the Contract (GCC). Time is the essence of this Contract. In the event of the Contractor's default in timely completion of the project within the stipulated period, the Contractor shall be liable to pay liquidated damages @ 1/2% of contract value, per week or part thereof of delay subject to maximum of 7.5%. Liquidated Damages will be reckoned from the expiry date of the scheduled completion date. Liquidated Damages shall be applicable on the value of delayed item(s) 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) per week of delay of the total contract cost subject to a maximum of 7.5% of total contract cost. Decision of Engineer-in-Charge shall be binding in this regard.

Additionally, intermediate penalties shall be levied against delay in performance of individual set of activities as mentioned in the MASTER GANTT CHART, which shall be considered as provisional Retention Money deductions and shall be reconciled at the end of the overall project with respect to gross Liquidated Damages if any. In case the overall project is completed despite intermediate delays in one or more activities, the provisional Retention Money/penalty amounts deducted shall be refunded to the contractor.

Liquidated Damages are to be recovered from the final bill & not from the running bills. In case adequate amount may not be available in the final bill, necessary recovery can be made from previous bill(s) or Performance security submitted by the contractor.

32. PENALTIES AND RECOVERIES (IN ADDITION TO LD): Apart from Liquidated Damages, penalties and recoveries may be levied on various ground as mentioned below:

Sl	Description	Recovery
1	Recoveries for direct or indirect damages to OIL's property, assets or services etc if not corrected by the contractor or any works / material supply through third party due to non-compliance by the contractor.	Value assessed by OIL + 25% mark up (In case of disagreement, the contractor may appeal OIL for further review with his valuer representative)
2	Non deployment of requisite Technical Manpower	As per relevant clause
3	Non Deployment of Tools and Plants	As per relevant clause
4	Non Deployment of Lab and office equipments	As per relevant clause
5	Non adherence to the methodologies and compliances prescribed by Green Building certifying agencies, thereby leading to losing of scoring points for Green Building Certification.	INR 5,00,000.00 (INR Five Lakh) per mark lost (fully attributable to the contractor's fault) subject to maximum of INR 25 Lakh
6	Non compliance to the safety guidelines. Proper staging/scaffolding, safety net, non-conducting of Helmet, harness, lifeline, safety shoes,	Rs. 1,000 (One thousand) for each instance of lapse. Penalty to be levied with written warning by EIC with photographic evidence wherever applicable. This shall be at the discretion of the EIC.
7	Non adherence to Housekeeping after first instruction.	Rs. 500 (Five hundred) for each instance of serious lapse as decided by EIC. Penalty to be levied with written warning by EIC with photographic evidence wherever applicable.

33. MINIMUM TOOLS, PLANT AND MACHINERIES: The list of minimum tools, plant and machinery to be provided by the contractor during the execution of the project. The deployment of such equipment shall be within 14 days of intimation to the contractor. Non-deployment of the equipment within stipulated time may invite penalty equivalent to daily/hourly rental for the delay period which shall deducted from the bill as deemed by Engineer-In-Charge. The rental for the purpose shall be as per CPWD basic rates or prevailing market rate (based on single quotation collected by Engineer-In-Charge with or without intimation to the contractor) whichever is higher.

LIST OF MINIMUM TOOLS, PLANT AND MACHINERY

Sl	Description	Quantity	Period
1	Total station	1 No	Whenever instructed
2	Autolevel and accessories	1 No	Full time
3	Silent DG set up to 250 KVA	As required	Whenever instructed
4	Fully automatic Batching Plant for RMC, capacity 30 cum per Hr, Concrete pump, boom pump	1 set	For all building RCC
5	Welding machine set	As required	Whenever instructed
6	Back Hoe loader (JCB)	As required	Whenever instructed
7	Diesel concrete mixer with hopper (Full bag capacity)	2 Nos	Whenever instructed
8	Pickup/Utility vehicle + Two wheeler	1 set	Full time
9	Water Tanker	1 No	-do-
10	Steel cutting & bending machine	5 Nos	Whenever instructed
11	Tower Crane Min 20m ht and 20m cantilever	2 No	Whenever instructed
12	Transit concrete Mixers	2 nos.	During concreting works
13	Formwork/shuttering (aluminium/steel/plywood)	3500 sqm	During RCC works
14	Steel treaded props / cup lock scaffolding/Net	3500 sqm	During RCC works
15	Stair Tower/ Access scaffold up to 20m	14 Sets	Super structure works
16	Needle vibrators	12 nos.	During RCC works
18	Plate vibrators	8 nos.	During RCC works
19	Tractors with trolley	2 nos.	Whenever instructed

Note:

(a) The quantities and list of equipment mentioned above are tentative and can be increased/ amended as per the requirement of work OR as per the direction of Engineer-in-Charge. The contractor has to deploy all the required equipment to complete all the works within stipulated specifications & time period as contract documents.

(b) Use of Ballies, bamboos, dented forms or any other traditional forms, shuttering/props/ staging etc. shall not be allowed at the site.

(c) Contractor will not be allowed to take out equipment from the site without the written permission of Engineer-in-Charge.

34. INSURANCE: The contractor shall arrange at his own cost 'Contractor's All Risk' (CAR) Policy and any other policy pertaining to the project for value and coverage as deemed necessary by Engineer-In-Charge.

35. TECHNICAL MANPOWER: The contractor shall depute the minimum set of technical manpower within 10 days of issuance of formal Work Order (in case of full time personnel) or after instruction issued by Engineer-In-charge (in case of part time personnel). The contractor shall submit the resumes and credential certificates against all the personnel and shall maintain register, including entries in EPF and compliances. The contractor should ensure to the extent possible that same engaged personnel remain till end of the project. In exceptional case of repatriation, the contractor shall ensure replacement personnel immediately within next day. Penalty shall be levied on per day basis for non-deployment of the above manpower after cut-off date as instructed by the Engineer-In-Charge. One day weekly off shall be permitted in staggered manner with roster as approved by Engineer-In-charge. However, weekly one rest days and holidays maximum up to 10 days during the year

against a designation may be exempted from penalty unless otherwise job exigency arises as deemed by Engineer-In-Charge. The personnel shall be available during all shifts of working time. The above shall not absolve the obligations of the contractor. All risks and liability shall remain with the contractor.

LIST OF MINIMUM TECHNICAL MANPOWER

Sl	Designation/Qualification	Nos	Penalty for non-deployment
1	Project Manager (Full time): Graduate in Civil Engg. + 8 year experience	1	INR 5000/- per day
2	Civil Engineer – Planning & Supervision (Full time): Graduate in Civil Engg + 5 year experience with Primaviera	1	INR 3000/- per day
3	Civil Engineer – Supervision & Quality Control (Full time): Graduate in Civil Engg + 5 year experience	1	INR 3000/- per day
4	Civil Engineer - Monitoring & Measurements (Full time): Graduate in Civil Engg. + 3 year experience	1	INR 2500/- per day
5	Electrical Engineer (Full time): Graduate in Elect Engg. + 3 year experience. He/she must have valid supervisor's certificate of competency issued by state licensing board.	1	INR 2500/- per day
6	Labour cum Safety Officer (Full Time): Graduate + 2 Year experience with good comm. skill	1	INR 2000/- per day
7	BMS Engineer (during preliminary and execution): Graduate in Instrumentation/IT/CSE/ECE + 2 year experience in BMS	1	INR 2000/- per day
8	Supervisor – Civil (Full time): Diploma in Civil Engg+ 5 year experience	2	INR 1500/- per day
9	Supervisor cum Lab assistant (Full time): Diploma in Civil Engg+ 5 year experience	2	INR 1500/- per day
10	Electrical-Supervisor (Full time): Diploma in Electrical Engg+ 5 year experience	1	INR 1500/- per day

Note:

(a) Experience means post-qualification relevant experience as approved by Engineer-In-Charge.

(b) Bidder has to take into account the expected revision of wages during the contract period while quoting against the tender.

(c) In case of non-deployment of manpower as per above for more than 10 days at a stretch, action shall be initiated as per clause no. 40 of this section (Section-II, SCOPE OF WORK/SPECIAL CONDITIONS OF CONTRACT FOR CIVIL WORKS).

36. QUALITY CONTROL / TESTS: Quality control shall be monitored from time to time during the works execution. Various Lab / field tests as directed shall have to be performed by the contractor without any extra cost to the company. The necessity, types and frequency of such tests shall be at the discretion of the Engineer-In-Charge which he/she considered necessary based on the factors such as job nature of items, workmanship, quantum of the items etc.

LIST OF MINIMUM MEASURING, MONITORING AND TESTING EQUIPMENT

Sl.	Description	Qty	Penalty for not providing
1	Compressive Testing machine (100 Tons)	1 no	5% (five percent) of individual instrument cost on per day basis without ceiling. Cost of instrument shall be as decided by EIC based on standard instrument of any reputed make.
2	Digital Weighing Machine (0-5 kg)	1 no	
3	Slump test apparatus	2 nos	
4	Set of sieves for grading of coarse aggregates	1 set	
5	Set of sieves for grading fine aggregates	1 set	
6	Vicat Apparatus with accessories	1 set	
7	Electrically operated oven (300deg Centigrade)	1 no	
8	Sampling Trays	1 no	
9	150X150X150 IS marked Cube Moulds	18 nos	
10	Measuring Cylinders - 1000ml,500 ml,100 ml	1 set	
11	Wash Bottles, Capacity 500 ml	1 set	
12	Rebound hammer	1 set	
13	Industrial Thermometer	5 Nos	
14	Vernier caliper	2 set	
15	Screw gauge	3 set	
16	Digital distance meter	1 set	
17	3m, 5m 30m 50m tape and steel rules	1 set	
18	Cores Apparatus for conducting Proctor Density Tests	1 set	

(a) The quantities of equipment indicated are tentative and can be increased as per the requirement of work OR as per the direction of Engineer-in-Charge. The above equipment list is indicative and not complete. The contractor has to deploy all the required equipment to complete all the works within stipulated specifications & time period as contract documents.

(b) The contractor will not be allowed to take out equipment from the site without the written permission of Engineer-in-Charge.

37. MANDATORY TESTS: The contractor shall perform mandatory tests as per BIS / CPWD norms or as directed by the Engineer-In-Charge. These tests may be exempted for non-critical works irrespective of gross quantities and prescribed frequencies.

38. SECURED ADVANCE: Not applicable for this tender.

39. PROJECT SCHEDULE AND TRACKING: Party has to abide by the Master Gantt Chart uploaded by OIL along with the tender and the same has to be categorically confirmed by the bidder. This Gantt Chart may be reviewed with the successful bidder during kick-off meeting of the project and deviation to the extent of 5% may be allowed at the discretion of OIL. However, the entire project has to be completed within the specified time limit (24 months). Once the modified Gantt Chart is signed by both the parties, the progress of the project will be monitored as per this signed Gantt Chart and penalty will be applicable based on the signed Gantt Chart. The contractor shall execute the works so as to complete the works within the stipulated completion time for each and every individual activity as per the master GANTT CHART of OIL. **If the contractor fails to meet individual activity target completion as per master GANTT CHART (unless otherwise justified with sufficient acceptable ground), penalty shall be levied against each individual activity at the rate of 10% of the respective activity value, which shall be retained as provisional 'Retention money'.**

40. ACTIONS ON NON COMPLIANCE OF WORKS: The contractor shall complete the work within the time specified by the Engineer-In-Charge failing which the company shall have the right to get the work done by any other means. Unless otherwise

specified, such notice period shall be 7 days from the date of receipt of such instruction. In case the contractor exhibits:

a) Underperformance with slow progress
b) Delivering poor workmanship/materials
c) Non-compliance of the instructions
d) Abandons the Agreement
e) Any other disobedience affecting the interest of the job,

Then the Engineer-In-Charge shall have the right to get it executed through any other agency on behalf of the contractor on nomination basis at the risk and cost of the contractor. Such works through third party may be on higher than the contract rates, to which the contractor shall not have any claim whatsoever. The cost incurred by OIL for such works will be recovered from the outstanding bills of the contractor or from his security deposit with the Company.

41. MEASURMENT: Engineer-in-charge shall, except as otherwise provided, ascertain and determine measurement and the value in accordance with the contract work done. All measurement of all items having financial value shall be entered in Computerized Measurement Book (CMB) and/or level field book so that a complete record is obtained of all works performed under the contract. All site measurements wherever applicable shall be taken jointly by OIL and the contractor. Certain measurements such as reinforcement quantity, earth work in excavation/back fill, concrete volume etc shall be derived from the drawings unless deviation recorded/observed at the site by the Engineer-In-Charge. Contractor signing on the CMB or SES pages is deemed to be acceptance of the payable quantities. If the contractor or his authorized representative does not remain present at the time of measurements after the contractor has been given a notice of 1 day in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by Engineer-In-Charge shall be deemed be accepted by the Contractor. The contractor shall, without extra charge, provide all assistance with every appliance labour and other things necessary for measurements and recording levels. All work to be measured as per latest IS standards with up to date corrections.

42. DRAWINGS: Proposed preliminary drawings such as Key Map, Plot Plan, Layout plans, Boundary Wall, Parking Plan, Terrace plan (for Roof top solar PV pant), Cable Trench routes, Foundation details, Beam Column frames with reinforcement details etc. The drawings in the tender documents are meant for broad initial visualization only by the contractor. The actual working drawings for site execution purpose shall be released from time to time with seal 'RELEASED FOR CONSTRUCTION' (RFC). There may be changes to any extent when compared with the initial drawings annexed in the tender document. The approved working drawings may also undergo multiple subsequent revisions.

43. APPROVED MAKES/MODELS:

The approved makes / models with sample picture for the project are as in ANNEXURE – I (Make). This list is not sacrosanct. The Engineer-In-Charge shall also have the discretion to adopt item from other makes not listed in 'Approved Makes' but within the same range as, on finding better technical specification retaliation /reliability /suitability factors in the un-listed items.

From approved item list, irrespective of the market prices, the Engineer-In-Charge may ask for best of the options from amongst the approved list. Contractor is deemed to have quoted rates considering higher range products. On not finding satisfactory in quality at the time of execution, the Engineer-In-Charge may also discard/reject any of the items even though the same listed in approved make. At the time of execution, when an item is not approved by the Engineer-In-Charge on quality/technical ground, the contractor shall not insist on to supply such less costing inferior material as a matter of their contractual rights, even though the same was of approved make mentioned in this contract document.

The contractor shall prepare a sample 'Flat' with at least 1m high wall portions (after slab casting) and seek approval from the Engineer-In-Charge/OIL Management.

SPECIAL TECHNICAL CONDITIONS - CIVIL WORKS

Unless otherwise specifically mentioned in SoQ or elsewhere in this contract, all the technical specifications shall be guided by:

(1) CPWD SPECIFICATIONS 2019 (VOL. 1 & 2)
Published DIRECTOR GENERAL, CPWD, New Delhi

For details visit:-https://cpwd.gov.in/

(2) Relevant **INDIAN STANDARD (IS) CODES** Published by Bureau of Indian Standards, New Delhi
For details visit:-https://bis.gov.in/

***

END OF SECTION – II, PART - 3

Part – 3

SECTION – III

SCOPE OF WORK/SPECIAL CONDITIONS OF CONTRACT FOR ELECTRICAL WORKS & BUIDLING MANAGEMENT SYSTEM (BMS)

The SCC for the Electrical Part of the Tender comprises two basic parts as follows:

A. GENERAL
B. TECHNICAL

A. GENERAL

1.1.0 Special conditions of contract shall be read in conjunction with the General Conditions of Contract, Bill of Quantities, specifications of work, drawings and any other document forming part of this contract wherever the context so requires.
1.1.1 Notwithstanding the sub-division of the documents into these separate sections and volumes, every part of each shall be deemed to be supplementary of every other part and shall be read with and into the contract so far as it may be practicable to do so.
1.1.2 Where any portion of the General Conditions of contract is repugnant to or at variance with any provisions of the Special conditions of Contract, then unless different intention appears, the provisions of the Special Conditions of Contract shall be deemed to override the provision(s) of General Conditions of Contract only to the extent that such repugnance or variance cannot be reconciled with the tender conditions of contract and shall be to the extent of such repugnance of variations, prevail; it being understood that the provisions of General Conditions of Contract shall otherwise prevail.
1.1.3 Wherever it is stated anywhere in this tender document that such and such a supply is to be effected or such and such a work is to be carried out, if shall be understood that the same shall be effected/carried out by the contractor at his own cost, unless a different intention if specifically, and expressly stated herein or otherwise explicit from the context.
1.1.4 The materials, design and workmanship shall satisfy the relevant Indian Standards, the job specifications contained herein & codes referred to. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied. In the absence of any Standard/Specifications/Codes of practice for detailed specifications covering any part of the work covered in this tender, the instructions/directions of Company will be binding on the Contractor.
1.1.5 The items given under Bill of Quantity shall be read in conjunction with scope of work, scope of supply (by Contractor) and job specifications and in case of any irreconcilable conflict between them the provision in the item under "Bill of Quantity" will override the corresponding provision only if the scope of work, scope of supply and job specifications, which cannot be reconciled in such cases the decision of Company shall be final and binding on the contractor.
1.1.6 In case of contradiction between Indian Standards, General Conditions of Contract, Special Conditions of contract, Specifications Drawings, Bill of Quantity, the following shall prevail in order of precedence.
(i) Letter of intent / Detailed Letter of intent along with statement of Agreed Variations and its enclosures.
(ii) Bill of Quantity/Schedule of Quantity.
(iii) Special Conditions of Contract
(iv) Job specifications
(v) Drawings
(vi) General Condition of contract
(vii) Indian Standard/Technical/Material Specifications.

1.2.0 LOCATION OF SITE AND SITE PARTICULARS

1.2.1 Construction of OIL RF Housing Complex at Jodhpur, Rajasthan

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

1.3.0 STATUTORY REQUIREMENT FOR WORK

1.3.1 The contractor should have valid Electrical Contractor License issued or recognized/endorsed by State Licensing Board. In case license expires during contract period the same shall be renewed by the contractor. The contract may be terminated if the license is not renewed.

1.3.2 In case the contractor/firm does not possess Electrical Contractor License, he/the firm may sign an MoU with another person/firm who/which possesses valid Electrical Contractor License issued or recognized/endorsed by State Licensing Board. In such a case, the partner having the valid Electrical contractor license shall be responsible for executing the electrical portion of the contract as per stipulations detailed in the tender.

1.3.3 Contractor shall employ work persons with valid wireman permit (covering relevant portions), issued/recognized by State Licensing Board to carry out all electrical jobs and shall deploy one supervisor holding valid Electrical supervisor's competency certificate (covering relevant portions), issued/recognized/endorsed by State Licensing Board for supervision of electrical jobs.

1.3.4 All the certificates/permits/licenses mentioned above shall be valid during contract period.

1.3.5 Quality of jobs carried out by the Contractor shall be of high standard and should be as per the norms of BIS, NEC, CEA Regulations and other electrical standards recognized by the company.

1.4.0 POWER

Electricity required for wiring purpose shall be arranged by the contractor at their own cost. The Contractor shall have to ensure use of proper safety device like RCBO/ELCB/RCCB while using their own Power supply.

1.5.0 SCOPE OF SUPPLY

Company does not envisage supplying any material for this work & contractor shall arrange all materials, instruments, tools and tackles etc. required for execution of the work. Makes of items shall be as per attached Make List only ("Annexure III"- for electrical items).

1.6.0 SCOPE OF WORK

Brief details of work to be carried out by the contractor are as described below. This will include supply, storage, laying, installation, jointing and testing, obtaining approvals, testing and commissioning and completion of different electrical works. The contractor shall finally give a certificate of electrical work executed by him stating the job done as per the requirement of Central Electricity Authority Regulations, 2010. The work shall be carried out as described in Schedule of Quantities (SOQ), specifications, and drawings, BIS/NEC guidelines and as per the instructions by Engineer-in-charge (electrical), of the Company. The scope of work shall cover electrification works of any office building/Industrial house/ residential area or as specified by concerned Engineer in charge.

The broad items/activities covered under "electrical works" shall include the supply, installation, testing and commissioning of any or all of the following:

i) Point wiring of light points, call bell points, Ceiling fan points, and exhaust fan points

ii) Plug points, general power points, metal clad plug & socket outlet points etc. including light and power accessories etc., complete in all respects
iii) All surface/concealed wiring through BIS marked medium/heavy duty PVC Casing capping/conduit, on or through wall, roof, roof beams, false ceiling, floors, cable trays etc.
iv) LT panel at Electrical Control room
v) Cables including Earthing cable from LT panel to VTPN DBs/TPN DBs
vi) Cables from Main Distribution Boards (VTPN DB) to Distribution Boards (TPN/SPN DB), sub main wiring from main/sub distribution boards to various final distribution boards/switch boards
vii) Main Distribution Boards (VTPN DB), Sub-Main Distribution Boards (TPN DB) and Sub Distribution Boards (SPN DB), as required
viii) Light fixtures (including external light fittings) and ceiling & exhaust fans
ix) Earthing of all Main VTPN DB, SPN DBs, switchboards etc. complete in all respects
x) Erection of 9 M LT pole grouted with PCC collar with fixing of double brackets on pole where necessary
xi) Fixing of Street lights on LT pole
xii) Laying & connection of cable to the Street lights from Street light panel
xiii) All LT panels, APFC panel and Feeder Pillars
xiv) DP Structure
xv) HT panel
xvi) 1215 KVA Transformer
xvii) DG Set and AMF panel
xviii) Roof Top Solar PV panel
xix) Load current Limiter
xx) HT and LT Energy Meters
xxi) HT and LT cables
xxii) Earth Electrodes

1.7.0 SCHEDULE OF QUANTITIES/RATE

1.7.1 The quantities shown against the various items are only approximate and may vary to any extent individually subject to relevant clause of General Conditions of Contract. Any increase or decrease in the quantities shall not form the basis for alteration of rates quoted and accepted including where low/high rates have been quoted by the successful bidder.

1.7.2 The Engineer in charge reserves the rights to interpolate or extrapolate the rate for any new item of work not finding a place in the Bill of Quantity, for similar items of lower and/or higher magnitude available in the Bill of Quantity.

1.7.3 In case any activity though specifically not covered in Bill of Quantity description but covered under scope of work/spec./drawing etc., contractor has to carry out the same without any extra claim.

1.7.4 The words “Bill of Quantity”, “BOQ”, “Schedule of Quantity” and “SOQ”, appearing in this document, carry the same meaning.

1.8.0 MEASUREMENTS, BILLING & PAYMENT

1.8.1 All works shall be measured in metric system based on actual work done as per the terms and conditions of the Tender documents.

1.8.2 The final bill shall be submitted by the Contractor within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the contractor (approved by OIL) whichever is earlier. No further claims shall be made by the Contractor after submission of the final bill and these shall be deemed to have been waived and extinguished.

1.8.3 Final bill based on Schedule of Quantity shall be prepared and submitted based on joint measurements (OIL and contractor). Contractor shall ensure that bills are submitted promptly and timely.

1.9.0 DEDUCTIONS FOR INCORRECT WORK:

If the Engineer-in-charge(Electrical) deems it expedient to correct work damaged or not done in accordance with the contract, an equitable deduction from the contract price shall be made thereof and the decision of the engineer shall be final.

1.10.0 CONTRACT DRAWINGS

Contractor has to prepare all working drawings mentioned below and obtain approval from the engineer in charge (Electrical) before starting of the civil work if associated with the concerned Electrical equipment/device.

a) Layout diagram of complete wiring showing route for wiring from electrical panel to VTPN DB to TPN/SPN DB, TPN DB to SPN DB, SPN DB to Switch Board, Light and ceiling positions etc. showing all roof/floor/beam route layout
b) Schematic diagram for complete electrical work
c) Contractor shall keep at least one copy each of drawings, conditions of contract, specifications, instructions and schedule of quantities at the site of works available for reference by any authorized representative Engineer-in-charge(Electrical), at all times during the progress of the works.

1.11.0 COMPLETION DOCUMENTS

The contractor shall submit 3 copies of **AS BUILT** layout drawings to OIL after completion of the work. These complete drawings shall give the following information:

a) Layout of all equipment, switch boards, DB's etc.
b) Location of DB's, Sub-mains, junction boxes & earthing (floor-wise)
c) Schematic diagram for overall electrical distribution
d) "As-Built" Layout of lighting & power wiring: Complete wiring showing route for wiring from electrical panel to VTPN DB to TPN/SPN DB, TPN DB to SPN DB, SPN DB to Switch Board, Light and ceiling positions etc. showing all roof/floor/beam route layout
e) Cable schedule
f) Operation & Maintenance Manuals for equipment if any
g) Manufacturers' test reports & data sheets for equipment if any
h) Electrical test certificate for the electrical work done as per CEAR, 2010

B. TECHNICAL

2.0.1 SCOPE

This section covers the general technical requirements and measurement system of the various components in Internal Electrical Installation works.

2.0.2 TERMINOLOGY

The definition of terms shall be in accordance with IS: 732-1989 (Indian Standard Code of Practice for Electrical Wiring), except for the definitions of "point", "circuit", and "sub-main wiring", which are defined hereunder.

2.0.3 POINT WIRING

A point wiring (other than socket outlet point wiring)

i. Shall extend from the controlling switch/MCB/controller to the corresponding point/device (lamps/luminaire/fan/exhaust fan/call bell etc.). Point/device refers to either single devices (like lamps, fans, etc.) or multiple devices controlled from one single switch/MCB/controller (like chandeliers, group of decorative lamps, etc.). Point wiring does not include switch which is covered under a separate item (supply and fixing of modular switch).
ii. Includes supply & fixing of all items as specified in SOQ, like device holders, wires, conduit/casing-capping, accessories like screws, rawl plug, outlet boxes, junction boxes, pull-through boxes etc., including metal/PVC boxes if any, provided with switch boards for loose wires/conduit terminations, bushed conduit or porcelain tubing where wiring cables pass through wall etc.
iii. Shall be measured in terms of number of "points" only. There shall be no linear measurement for point wiring, or for the number and size of wires used.
iv. Details of wire size, material, conduit/casing capping, colour of insulation as in SoQ.
v. It is to be noted that point wiring is based on consideration of the length as per CPWD standard.

2.0.4 Light plug point (socket outlet point) wiring:
A Socket ("*plug point*") outlet point wiring

i. Shall extend from the switchboard to the corresponding wall socket outlet. Sockets may include a single socket or multiple sockets (of same rating) in one module.
ii. Includes plug points (6A), and other similar wall outlets.
iii. Shall be reckoned as total length of wiring and shall be measured on linear basis along the run of wiring.
iv. Details of wire size, material, conduit/casing capping, colour of insulation as in SoQ

2.1.0 CIRCUIT WIRING:

Circuit wiring

i. Shall extend from the distribution board up to the switch board/box
ii. Include all wiring accessories
iii. Shall be reckoned as total length of wiring and measured on linear basis along the run of wiring
iv. Details of wire size, material, conduit/casing capping, colour of insulation as in SoQ

2.1.1 POWER PLUG POINT WIRING:

Power plug point wiring
i. Shall extend from distribution board to 5/6 A and 15/16 A 6 pin socket outlet Include all wiring accessories
ii. Shall be reckoned as total length of wiring and measured on linear basis along the run of wiring
iii. Details of wire size, material, conduit/casing capping, colour of insulation as in SoQ

2.1.2 SUB-MAIN WIRING

Sub-main wiring

- Shall extend from one main/distribution switchboard to another
- Shall be reckoned as total length of wiring and measured on linear basis along the run of wiring
- Includes all wiring accessories
- Details of wire size, material, conduit/casing capping, colour of insulation as in SoQ

2.1.3 OTHER WIRING WORKS:

As per the details given in the SoQ.

2.1.4 SYSTEM OF DISTRIBUTION AND WIRING:

i. Control at the point of entry of supply:

There shall be a circuit breaker on each live conductor of the supply mains at the point of entry.

ii. Distribution:

The wiring shall be done on a distribution system through main and/or branch (sub-main) distribution boards. The system design as well as the locations of boards shall be as indicated in BOQ/drawings or as specified by the OIL Engineer-in-charge. Main distribution board (VTPN) shall be controlled by a circuit breaker. Each outgoing circuit shall also be controlled by a circuit breaker. The branch distribution board shall be controlled by a circuit breaker. Each outgoing circuit shall be provided with a miniature circuit breaker (MCB) of specified rating on the phase or live conductor. The loads of the circuits shall be divided, as far as possible, evenly between the number of ways of the distribution boards, leaving at least one spare circuit for future extension.

The neutral conductors (incoming and outgoing) shall be connected to a common link (multilayer connector) in the distribution board and be capable of being disconnected individually for testing purposes.

'Power' wiring shall be kept separate and distinct from 'Lighting' wiring beyond the branch distribution boards.

iii. Balancing of Circuits:

The balancing of circuits in three wire or poly phase installations shall be arranged beforehand to the satisfaction of the OIL Engineer-in-charge.

2.1.5 Wiring System:

i. Wiring shall be measured only as per "point wiring" or “linear basis ", as explained above.
ii. Lights, fans and call bells shall be wired in the 'lighting' circuits.
iii. 5A/6A Socket outlet shall be wired in the light plug point circuit.
iv. 6/16A combined socket outlets and other power outlets shall be wired in the 'Power' circuits.
v. The wiring throughout the system shall be such that there is no break in the neutral wire except in the form of linked MCCB's, MCB's, RCBO's etc.

2.1.6 Run of Wiring:

The wiring shall be in concealed conduit/surface casing/capping as per SoQ. Due consideration shall be given for neatness, good appearance and safety.

2.1.7 JOINTS IN WIRING:

No bare conductor in phase and / or neutral or twisted joints in phase, neutral, and / or protective conductors in wiring shall be permitted. There shall be no joints in the through-runs of wires. There shall be no looping of earth wires and neutral wires between points. All light points, plug points etc. shall have their individual neutral and earth wires laid up to the switchboard or distribution board as the case may be.

2.1.8 RATINGS OF OUTLETS:

MCBs / switches / controllers for devices like light fittings, ceiling fans, exhaust fan etc. shall be rated according to the corresponding device capacity.

RCCBs for household circuits and similar installations should be rated for 100 mA tripping current.

Socket Outlets shall be rated according to their intended use only.

2.1.9 CAPACITY OF CIRCUITS:

'Lighting' circuit shall not have more than a total of 10 points of light, fan and socket outlets, or a total connected load of 800W per circuit, whichever is less. 'Power' circuit shall have only one outlet per circuit.

2.2.0 CONFORMITY TO CEA REGULATIONS, 2010 AND STANDARDS:

All electrical works shall be carried out in accordance with the provisions of CEA (Measures relating to safety and electric supply) Regulations 2010, National Electric code and National Building Code. The works shall also conform to relevant Indian Standards. In all electrical installation works, relevant safety codes of practice shall be followed.

2.2.1 TESTING OF WIRING / INSTALLATION:

Before/after and in stages, wherever required, OIL's engineer-in-charge shall inspect drawing of wires through conduits for correct size, quality, colour and continuity (absence of loops) from points to switchboards and other wiring items. Inspection will be done in stages, as work progresses.

In case of casing/capping type wiring or as per SoQ, wherever required by OIL's engineer-in-charge, capping shall not be fixed on the casing till the work has been inspected with the wires in position and approved. Inspection will be done in stages, as work progresses.

On completion of an electrical installation (or extension thereof) OIL's engineer-in-charge may require a test certificate for the installation/wiring job before energizing the circuits. In such instances, contractor shall issue a test certificate, countersigned by certified supervisor under whose supervision the job was carried out.

The following tests should be carried out:

i) Insulation resistance test
ii) Earth continuity test
iii) Earth electrode resistance test

All necessary test instruments shall be arranged by the contractor.

2.3.0 GENERAL REQUIREMENTS OF COMPONENTS:

2.3.1 Quality of materials:

All materials shall be of such design, size, material and make as to satisfactorily function under the rated conditions of operation and satisfy BoQ requirement.

2.3.2 Ratings of components:

All components in a wiring installation, conductors, switches and accessories shall be of appropriate ratings of voltage, current, and frequency, as indicated in BOQ.

2.3.3 Conformity to Standards:

All components shall conform to relevant Indian Standard Specification, including amendments or revisions there of up to the date of tender acceptance.

2.3.4 General Notes:

a) Items shall be procured from the manufacturer or their authorized dealers only.
b) All the items shall be brand new and shall bear BIS monogram, wherever specified.
c) Item shall be guaranteed for a period of one year from the date of installation of materials against any manufacturing defect or workmanship.

2.4.0 WIRES AND CABLES:

2.4.1 Wiring:

a) Conductors of wiring cables shall be of copper. The smallest size of conductor for various circuits including earthing shall be not less than as follows:

i. 'Lighting': 1.5 sq. mm,
ii. 'Light Plug Point': 1.5 sq. mm,
iii. 'Circuit Wiring': 2.5 sq. mm (from MCB DB to switchboard),
iv. 'Power': 4 sq. mm,
v. Circuit (Sub-Main): 10 sq. mm (from VTPN DB to SPN DB),

b) All wiring cables shall be FRLS, single core, multi-stranded, PVC insulated, unsheathed, 1100 V grade, BIS marked & FIA & TAC approved, with flexible conductor.

2.4.2 Cables:

Cables shall be armoured, PVC insulated and PVC sheathed power cables of 1100 V grade. They shall be fitted on wall surface/ Tray/False ceiling/False floor as required, clamping shall be with 1 mm thick saddle, wherever required.

2.5.0 PVC CONDUITS:

2.5.1 All rigid conduit pipes shall be of medium (or heavy) duty PVC conduit of good quality and be BIS marked.

2.5.2 The conduit wiring system shall be complete in all respects, including their accessories. Where a large number of control switches and/or fan regulators are required to be installed at one place, these shall be installed in more than one outlet box adjacent to each other for ease of maintenance.

2.5.3 Bunching of cables:

Cables shall always be bunched so that the outgoing and return cables are drawn into the same conduit. Where the distribution is for three phase loads only, conductors for all the three phases and neutral wire shall be drawn in one conduit.

Wiring shall be so designed such that individual conduits are not filled beyond 40% of their capacity.

2.6.0 WIRING ACCESSORIES:

2.6.1 Control switches for points:

Control switches (single pole switches) carrying not more than 16A shall be modular type complete with plate, as specified, and the switch shall be “ON” when the knob is down. Control switch shall be placed only in the live conductor of the circuit. No single pole switch or fuse shall be inserted in the protective (earth) conductor, or earthed neutral conductor of the circuit.

2.6.2 Socket outlets:

6/16 pin Socket outlets shall be of shutter type modular complete with plate. These shall be rated either for 6A, or 6/16A combined. Combined 6 pin (6A/16A) socket outlet shall be provided in 'power' circuits wherever specified. 6A Socket outlets shall only be of 5 pin type; the earth pin shall be connected to earth through protective (loop earthing) conductor. The control switches for 6A and 16A socket outlets shall be kept along with the socket outlets. Generally socket outlet shall be installed at a height of above 30 cm but below 130 cm from the floor level.

The layout of wiring shall be as approved by Engineer in Charge.

2.6.3 Switch box covers:

These shall be modular type of suitable size.

2.6.4 Ceiling rose – Only one flexible cord shall be connected per ceiling rose. For multiple pendants, each pendant shall have its own rose, or a specially designed rose shall be used.

2.7.0 FITTINGS:

Indoor type fittings specification (as appearing in BoQ):

Suspension mount and batten mount LED luminaire with all accessories and lamps, ready for installation as per the following description.

i) Optical system should provide all round glare and beam control.

ii) Luminaire shall be as follows:

a) 4 feet long (1200 mm) LED batten luminaire for room/passage/corridor as detailed in SoQ

b) 2 feet long (600 mm) LED batten luminaire for toilet/bathroom as detailed in SoQ

c) 12 W LED downlighter for room/passage as detailed in the SoQ

d) 2W LED Night lamp as detailed in the SoQ

e) Flood light (50 W) LED luminaire for area light as detailed in the SoQ

f) 10W LED Bollard as detailed in the SoQ

g) 10W LED under water light as detailed in the SoQ

h) 40W LED Street light as detailed in the SOQ

iii) Luminaires shall be pre-wired up to the terminal block and fitted with High Performance driver (THD<10%) as standard, PF> 0.95; driver to conform to IS/IEC for safety/ performance.
iv) Luminaires shall be supplied with all standard accessories (including chains, brackets, mounting clamps etc.) for suspension and/or wall mounting.
v) Power supply: 230/240 V, 50 Hz, single phase
vi) The type of fittings shall be as specified in SOQ.

2.8.0 PRE-WIRED MCB DISTRIBUTION BOARDS AND ACCL:

A. Pre wired MCB DB's shall be provided where specified.
The complete board shall be factory fabricated and shall be duly pre-wired, ready for installation at site.
The board shall be of wall mounted, cubicle type construction, fabricated out of 1.6mm thick sheet steel, with stove enameled paint finish. The board shall be provided with a hinged cover of 1.6mm thick sheet steel on the front. Only the knob/dolly of the MCB's shall protrude out of the front covers through openings neatly machine made for the purpose. Knock out holes at the bottom, and detachable plate with knock out holes at the top of the board shall be provided.
VTPN and TPN DB shall also be provided with two nos. loose wire box and SPN DB shall be provided with one no. loose wire box as a compartment for the complete width and depth of the board, and of minimum height of 125mm in case of VTPN/TPN DB's, and 100 mm in case of SPN DB's.
Each distribution board shall be provided with a circuit list giving details of each circuit which it controls and the current rating of the circuit, and the size of the MCB. The board shall be complete with the following accessories:

a) 100 A copper bus bar(s) for MCB DBs
b) 250 A copper busbar for VTPN DB (fitted with 160A MCCB)
c) Neutral link
d) Common earth bar
e) DIN bar for mounting MCB's
f) Screw type terminal connectors suitable for incoming and outgoing cables.
g) Earthing stud(s)

The board shall be fully pre-wired with single core PVC insulated copper conductors/insulated solid copper links, and terminated on to extended type terminal connectors, suitable for connections to the sizes of the respective conductors. All incoming and outgoing wiring to the pre wired MCB DB's shall be terminated only in extended terminal connectors to be provided within the DB. The terminal connectors shall therefore be so provided as to facilitate easy cable connections and subsequent maintenance. Connectors (Terminal blocks) are to be provided. A common copper earth bar shall be provided within the loose wire box. The common neutral bar as well as the terminal connectors shall, however, be provided within the main compartment just below the loose wire box.

B. The Electric transfer switch that switches the load between Mains and Gen. and limit current at Gen. end shall be connected to MCB DBs of Each Flat. The Circuit should work to limit load current during main power failure and when power supply from DG set is fed through AMF panel. The Circuit should be such that it should protect over load and shall be available only at the time of Mains power failure only.
Max load=800W.
Range: Mains 30 A/Gen 5A max

2.9.0 MINIATURE CIRCUIT BREAKERS (MCB's):

'C' series MCB's shall be invariably used for all loads. Ratings (A), number of poles, type as MCB or isolator, etc. shall be as specified in the SOQ. The MCB's shall be of minimum 10KA rupturing capacity.

2.10.0 SWITCH BOARD LOCATIONS:
Switch boards shall be located as indicated on the drawings or as instructed by OIL's engineer. Switchboards should not be installed in places likely to be exposed to the weather. However exact location will be as per suitable available spaces.
Unless otherwise specified, a switch board shall be installed so that its bottom is 1.30 m from the floor level. Switchboards shall be well clear of door openings and with an open (unimpeded) space in front of the switchboard for easy access.
Where it is required to terminate a number of casing capping or conduits on a board, it may be convenient to provide a suitable PVC adapter box for the purpose. Such boxes shall be provided with the prior approval of the Engineer-in-charge (Electrical) and this will not be paid for separately. No apparatus shall project beyond any edge of the panel.

2.11.0 FANS, REGULATORS AND CLAMPS:
Fan Regulators:
Electronic modular type fan regulator shall be of approved makes. The fans, regulators etc., are to be procured from authorized dealer to ensure genuineness of the material.

2.12.0 EARTHING:
Whenever earth electrode is to be supplied and installed, only readymade, maintenance free, CPRI approved earthing electrodes with the proper dimensions (as per BOQ) shall be used. This shall be complete with excavation of earth pit and construction of brick earth chamber to proper specifications as in BOQ.
GI Earth strap shall be supplied with the earth electrode for connecting the earth electrode to the equipment. Earth strap shall be terminated in the electrode/equipment with proper size of zinc coated nuts and bolts.

2.13.0 WORKMANSHIP:
Good workmanship is an essential requirement to be complied with. The entire work of manufacture/fabrication, assembly and installation shall conform to sound Engineering practice. The work shall be carried out under the direct supervision of a person holding a valid supervisor's certificate of competency issued by the State Govt. for the type of work involved, employed by the contractor, who shall rectify then and there the defects pointed out by the Engineer-in-charge (Electrical) during the progress of work.
2.14.0 Approval for all Electrical items are required to be taken from the concerned Engineer in charge of OIL prior to supply.
2.15.0 COMMISSIONING ON COMPLETION:
After the entire wiring is completed, a joint inspection shall be carried out. The contractor shall rectify the defects pointed out by OIL during inspection. The works shall be tested by the contractor and contractor shall submit the test certificates duly signed by the competent persons. The system shall be energized only after OIL approves the work done and submission of test certificate.

3.0 LT PANEL SPECIFICATIONS (LT panel-1 to 8, APFC panel, Substation main LT panel)

3.0.1 Scope of work:

This specification covers supply, installation and commissioning of 415 V AC, 50Hz indoor type panel with ACBs/MCCBs as incomer and MCCBs as outgoing feeders(as specified in the BoQ), ready for operation on being installed in a fixed position. The panel shall be placed on a suitable raised foundation to take the load of Panel.

3.0.2 Standards:
All components used in the manufacture of the Panels shall confirm to the relevant IEC/BIS standard specification and especially to the followings:

i. IS: 13947-1993/IEC: 60947- General arrangement for switchgear and control gear for voltage not exceeding 1000 V
ii. IS: 12063-1987/IEC: 60529 Degrees of Protection provided by enclosures of electrical Equipment
iii. IS: 5/2004 Colour for ready mixed paints and enamel
iv. IS: 732/1989 Code of Practice for Electrical Wiring Installations
v. IS: 5039/1983 Distribution pillars for voltage not exceeding 1000 V
vi. IS/IEC: 127-1994 Miniature Fuses- Fuse Holders for Miniature Cartridge Fuse Links - Specification
vii. IS: 2551-1982 Danger Notice Plates
viii. IEC: 60664 Insulation co-ordination within low voltage system including clearance creepage distances for equipment

3.0.3 Technical Requirements:

3.0.4 Details of components: Type of Panel: Indoor Type

3.1.0 Feeder Pillar (LT panel-1), Common Panel

3.1.1 Panel incomer shall have the following:

a) 250 A, 4 Pole, MCCB, 36 KA with microprocessor base Trip Unit Ics=Icu =100% , adjustable over load settings -0.1-1.0 X In, adjustable short circuit settings 2-10XIr, with spreader links, rotary operating mechanism: 01 No.
b) The panel shall have:
(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No
(ii) Current Transformer 250/5 , 15VA, Class 1 to IS:2705, Cast resin type: 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.

3.1.2 6A SP MCB 10 KA C CURVE-3 nos.

3.1.3 Busbar :

400A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1 amp/mm^2

3.1.4 Panel Outgoing shall have the followings:

a) Each Panel shall have
(i)125 A, 4P MCCB, 25 KA with Thermal Magnetic Trip Unit, Ics=Icu=100%, Adjustable Thermal Settings-0.7-1.0XIn ,Fixed Short circuit Settings, With spreader Links, Rotary Operating Mechanism: 6 Nos.
(ii) 63A, 4P, 16kA, MCCB with Thermal Magnetic Trip Unit, Ics=Icu=100%, Adjustable Thermal Settings-0.7-1.0XIn ,Fixed Short circuit Settings, With spreader Links, Rotary Operating Mechanism : 3 Nos.
(ii) LED Indication lights(R,Y,B) for indication of 'Supply On': 27Nos.

3.2.0 Feeder Pillar (LT panel-2), Block Common Service Panel

3.2.1 Panel incomer shall have the following:
a) 125 A, 4P MCCB, 25 KA with Thermal Magnetic Trip Unit, Ics=Icu=100%, Adjustable Thermal Settings-0.7-1.0XIn ,Fixed Short circuit Settings, With spreader Links, Rotary Operating Mechanism: 1 No.
b) The panel shall have:

(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No
(ii) Current Transformer 150/5 , 15VA, Class 1 to IS:2705, Cast resin type: 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.

3.2.2 Busbar
200A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1.0 amp/mm^2

3.2.3 Panel Outgoing shall have the followings:

a) Each Panel shall have
(i) 63 A, 3P MCCB, 16 KA with Thermal Magnetic Trip Unit, Ics=Icu=100%, Adjustable Thermal Settings-0.7-1.0XIn ,Fixed Short circuit Settings, With spreader Links, Rotary Operating Mechanism: 3Nos.
(ii) 40 A, 4P MCCB, 16 KA with Thermal Magnetic Trip Unit, Ics=Icu=100%, Adjustable Thermal Settings-0.7-1.0XIn ,Fixed Short circuit Settings, With spreader Links, Rotary Operating Mechanism: 3Nos.
(iii) 40A DP MCB 10 KA C CURVE. Qty= 4 Nos.
(iv) LED Indication lights(R,Y,B) for indication of 'Supply On': 30 Nos.

3.3.0 Feeder Pillar (LT panel-3), Block Utility Panel

3.3.1 Panel incomer shall have the following:
a) 125 A, 4P MCCB, 25 KA with Thermal Magnetic Trip Unit, Ics=Icu=100%, Adjustable Thermal Settings-0.7-1.0XIn ,Fixed Short circuit Settings, With spreader Links, Rotary Operating Mechanism: 1 No.
b) The panel shall have:
(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No
(ii) Current Transformer 150/5 , 15VA, Class 1 to IS:2705, Cast resin type: 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.

3.3.2 Busbar
200A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1.0 amp/mm^2

3.3.3 Outgoing

a) Each out going Panel shall have
(i) 40 A, 4P MCCB, 16 KA with Thermal Magnetic Trip Unit, Ics=Icu=100%, Adjustable Thermal Settings-0.7-1.0XIn ,Fixed Short circuit Settings, With spreader Links, Rotary Operating Mechanism: 4Nos.
(ii) 25A, 4P, MCB 10 KA C CURVE. Qty=2 Nos. 25A FP MCB 10 KA C CURVE. Qty=2 Nos.
(iii) LED Indication lights(R,Y,B) for indication of 'Supply On': 20 Nos.
(iv) Electronic Timer Operating voltage of 160V to 500V, Time delay range of 3-30 Sec.: 1 No
(v) 40A, 4P, AC operated Contactor with suitable 2 NO+2 NC with interlocking DG: 1 No

b) Sub Outgoing feeder shall have
(i) 10A, SP, MCB, 10 KA, C CURVE: 15 Nos.

3.4.0 Feeder Pillar (LT panel-4), External Feeder

3.4.1. Panel Incomer shall have

(i) 40 A, 4P, 10 KA, C curve MCB: 1 No.
(ii) Electronic Timer Operating voltage of 160V to 500V, Time delay range of 3-30 Sec.: 1 No
(iii) 40A 4P AC operated Contactor with suitable 2 NO+2 NC with interlocking DG: 1 No
(iv) LED Indication lights(R,Y,B) for indication of 'Supply On': 5Nos.

3.4.2. Busbar
200A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1.0 amp/mm^2

3.4.3. Outgoing
a) Outgoing panels shall have
(i) 10A SP MCB 10 KA C CURVE: 15 Nos.

3.5.0 Feeder Pillar (LT panel-5), Water Panel

3.5.1. Panel Incomer shall have

(i) 125 A, 4P, MCCB, 25 kA with thermal magnetic trip unit Ics=Icu =100% , adjustable thermal settings -0.7-1.0 X In, fixed short circuit current settings, spreader links, rotary operating mechanism. Qty.=1 No.
(ii) LED Indication lights(R,Y,B) for indication of 'Supply On': 3 Nos.
(iii) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No
(iv) 150/5A Current Transformer, Bus Bar type, Class insulation (1200C) as per IEC/ EN 60044-1 accuracy class 1.0, rated secondary output-5A, Burden-5VA, Resin cast Ring type CT. Qty.=3 Nos.
(v) Multifunction Meter With Accuracy class .5/1 with support of Modbus RTU on RS 485 shown accurate reading , favorite page can be selected reverse polarity indication manage active power, reactive power, apparent power ,power factor, voltage, current, frequency & power indication on display as well as unbalance phase angle power quality measurement with calibration led pulse output. Qty=1 No.
3.5.2. Busbar
200A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1.0 amp/mm2

3.5.3. Outgoing
(i) 32A, 3P, MCB, 10 KA, D CURVE: 11 Nos.
(ii) LED Indication Lamp (R, Y, B): 33 Nos.

3.6.0 Feeder Pillar (LT panel-6, Block Energy Meter Panels)

3.6.1 Panel incomer shall have the following:

a) 250 A, 4 Pole, MCCB 36 KA with microprocessor base Trip Unit Ics=Icu =100% , adjustable over load settings -0.1-1.0 X In, adjustable short circuit settings 2-10XIr, with spreader links, rotary operating mechanism: 01 No.
b) The panel shall have:
(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No
(ii) 250/5A Current Transformer 400/5, 15VA, Class 1 to IS:2705, Cast resin type: 3 Nos.
(iii) LED Indication lights for indication of 'Supply On'(R,Y,B): 3Nos.

3.6.2 Busbar :

300A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1 amp/mm2

3.6.3 Panel Outgoing shall have the followings:

a) Each Panel shall have
i) 63 A, 4P MCB, 10 KA, C Curve: 10 Nos.
ii) The panel shall be fitted with (Duel source) Energy meter, 3 phase, 4 wire, accuracy class-0.5, Direct reading 10-65 Amps with ACCL provision: 08 Nos.

3.7.0 Feeder Pillar (LT panel-7), Club House Main Panel

3.7.1 Panel incomer shall have the following:

a) 400 A, 4 Pole, MCCB 36 KA with microprocessor base Trip Unit Ics=Icu =100%, adjustable over load settings -0.1-1.0 X In, adjustable short circuit settings 2-10XIr, with spreader links, rotary operating mechanism: 01 No.
b) The panel shall have:
(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No
(ii) Bus bar type Current Transformer, 400/5, 15VA, Class 1 to IS:2705, Cast resin type: 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.

3.7.2 Incomer 6A, SP, MCB, 10 KA, C CURVE: 3 Nos.

3.7.3 Busbar :

480A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1 amp/mm2

3.7.4 Panel Outgoing shall have the followings:

a) Each Panel shall have
i) 100 A, 4 Pole, MCCB, 25 KA with Thermal Magnetic Trip Unit Ics=Icu =100% , adjustable thermal settings -0.7-1.0 X In, fixed short circuit settings, with spreader links, rotary operating mechanism: 01 No.
ii) 63 A, 3P MCCB, 16 KA with thermal magnetic trip unit, Ics=Icu =100% , Adjustable thermal settings-0.7-1.0XIn, fixed short circuit settings, with spreader links, rotary operating mechanism: 02 No.
iii) 63 A, 4P, MCCB, 16 KA with thermal magnetic trip unit, Ics=Icu =100% , Adjustable thermal settings-0.7-1.0XIn, fixed short circuit settings, with spreader links, rotary operating mechanism: 11 Nos.
iv) 63A, DP, MCB, 10 KA, C Curve: 2 Nos
b) LED Indication Lamp, 230V, (R,Y,B): 42 Nos

3.8.0 Feeder Pillar (LT panel-8), Club House Utility Panel

3.8.1 Panel Incomer shall have

(i)) 63 A, 4P, MCCB, 16 KA with thermal magnetic trip unit, Ics=Icu =100% , Adjustable thermal settings-0.7-1.0XIn, fixed short circuit settings, with spreader links, rotary operating mechanism: 1 No
b) The panel shall have:
(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No

(ii) 75/5A Current Transformer, Bus bar type, class E Insulation(120^{0}C), as per IEC/EN 60044-1, accuracy class 5, Rated secondary output -5A Burden - 5 VA Circular Moided Current Transformer (CMCT):6 Nos.
(iii) LED Indication lights for indication of 'Supply On'(R,Y,B): 3Nos.

3.8.2 Busbar
75 A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1.0 amp/mm^2

3.8.3 Outgoing
a) Outgoing panels shall have

(i) 40 A, 4P, MCCB, 16 KA with thermal magnetic unit Ics=Icu =100% , adjustable thermal settings -0.7-1.0 X In, Fixed short circuit settings, with spreader links, rotary operating mechanism: 3 Nos.
(ii) 32A, TP, MCB, 10 KA, D Curve: 2 Nos
(iii) 25A, TP, MCB, 10 KA, D Curve: 2 Nos.
(iv) LED Indication lights(R,Y,B) for indication of 'Supply On' for each panel: 21 Nos.
(v) Electronic Timer Operating voltage of 160V to 500V, Time delay range of 3-30 Sec.: 1 No
(vi) 40A, 4P, AC operated Contactor with suitable 2 NO+2 NC with interlocking DG: 1 No

3.8.4 Busbar
(i) 50A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1 amp/mm2

3.8.5 Sub outgoing
(i) 10A SP MCB 10 KA C CURVE: 15 Nos.

3.9.0 500 KVAR APFC Panel
3.9.1 The APFC panel shall have the followings:
i) 1250 A, TP, ACB, 50 KA with Microprocessor based trip unit, Ics=Icu =100%, having overload settings, short circuit settings-Instantaneous & Earth fault protection, with spreader links: 1 No.
ii) 6A SP MCB 10 KA C CURVE: 3 Nos.

3.9.2. Busbar
The Busbar shall be 1300A, 3 Phase, 4 wire, 50Hz ALUMINIUM with PVC sleeves indicated with four colors with current Density not more than 1.0 amp/mm$^{2:}$ 1 Set

3.9.3 The panel shall have:
(i) Multifunction meter with Accuracy class 0.5/1 with support of Modbus RTU on RS 485 shown accurate reading, favorite page can be selected, reverse polarity indication manage active power, reactive power, apparent power, power factor, voltage, current, frequency & power indication on display as well as unbalance phase angle power quality measurement with calibration led pulse output: 1 No.
(ii) 1000/5 A Current Transformer, Busbar type, class E insulation as per IEC/ EN 60044-1, accuracy class 1.0 Rated secondary output -5A Burden - 15 VA Resin cast rectangular type: 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.

3.9.4 Outgoing
a) The outgoing feeder shall have

i) 125 A, TP MCCB, 25 KA with thermal magnetic unit Ics=Icu=100%, Adjustable thermal settings -0.8-1.0 X In, Fixed short circuit current settings, with spreader links, rotary operating mechanism: 8 Nos.
ii) 63 A TP MCB 10 KA C Curve: 4 Nos.
iii) 14 stage low sensitivity APFC relay 3 CT sensing: 1 No.
iv) A/M Switch: 28 Nos.
v) LED Type Indicating Light ("ON SINGNAL") 230 V, GREEN WITH SMOOTH LENS: 28 nos.
vi) LED Type Indicating Light ("OFF SINGNAL")230 V RED WITH SMOOTH LENS: 28 Nos.
vii) Extended type Non-illuminated Push button to "ON"(GREEN): 28 Nos.
viii) Extended type Non-illuminated Push button to "OFF" (RED): 28 Nos.
ix) 50 KVAR Capacitor Duty contactor with damping Resistors and early make poles for 50 KVAR, 3Ø Capacitor, 440 V ,1NO+2NC AUX contacts: 8 Nos.
x) 25 KVAR TP Capacitor Duty contactor with damping Resistors and early make poles for 25 KVAr 3Ø Capacitor, 440 V ,1NO+1NC AUX Contacts: 4 Nos
xi) Capacitor Bank, 50 KVAR, Resin filled box type heavy duty Capacitor with operating losses, 0 .35W/KVAR: 8 Nos.
xii) Capacitor Bank, 25 KVAR Cylindrical type normal duty operating losses-0.45W/KVAR, 440V: 4 Nos.

3.10.0 Substation Main LT panel

3.10.1 Panel Incomer-1 shall have
a) 2000A, 4 Pole, Icu 50 kA, up to 500V AC, 50Hz,draw-out type, ,Air Circuit Breaker with O/C, S/C, & E/F protection, electrically and manually operated , spring charging shall be motorized and manual. The feeder shall have brought out terminals for terminating 6 run 3.5core, 240sqmm XLPE Aluminium Cables: 1 No.
The panel shall have:
(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No.
(ii) Current transformer, 2000/5, 15VA, Class 1 to IS: 2705, Cast resin type. : 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.
(iv) LED Indication lights for indication of OFF/ON/TRIP CB: 3Nos.
(v) Trip-neutral-Close selector Switch, 25 Amp: 1 Nos.
(vi) Moulded HRC Fuse Holders with HRC Fuses for control circuit protection: 6 Nos.

3.10.2 Panel Incomer-2 shall have:
a) 630A, 4 Pole, Icu 50 kA, conforming to IS 60947 p-2 up to 500V AC, 50Hz,draw-out type, ,Air Circuit Breaker with O/C, S/C, & E/F protection, electrically and manually operated , spring charging shall be motorized and manual. The feeder shall have brought out terminals for terminating 2 run 3.5core, 240sqmm XLPE Aluminium Cables: 1 No.
The panel shall have:
(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No.
(ii) Current transformer, 400/5, 15VA, Class 1 to IS: 2705, Cast resin type. : 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.
(iv) LED Indication lights for indication of OFF/ON/TRIP CB: 3Nos.
(v) Trip-neutral-Close selector Switch, 25 Amp: 1 Nos.
(vi) Moulded HRC Fuse Holders with HRC Fuses for control circuit protection: 6 Nos.
B. Panel Incomer-spare shall have:
a) 400 A, 4 Pole, MCCB 36 KA with microprocessor base Trip Unit Ics=Icu =100% , adjustable over load settings -0.1-1.0 X In, adjustable short circuit settings 2-10XIr, with spreader links, rotary operating mechanism: 01 No.
b) The panel shall have:

i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No
(ii) 400/5A Current Transformer 400/5 , 15VA, Class 1 to IS:2705, Cast resin type: 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.
3.10.3 Incomer 6A SP MCB 10 KA C CURVE: 6 Nos.
3.10.4 AMF panel complete with M/F meter, CT 2000/5A, Cl 1.0, CT 400/5A, Cl 1.0 Indication lamp, Battery charger 24V, Relay card, DC Ammeter, SP MCB, 6A, 10kA- 6 nos., APFC relay card, 14 stage, AMF controller etc. Qty= 1 No.

3.10.5 Panel Outgoing ACB Feeder shall have the followings:

a) 1250 A, TP ACB, 50 KA with Microprocessor based Trip Unit Ics=Icu =100% , provide overload settings, , short circuit setting- instantaneous & earth fault protection with spreader links, rotary operating mechanism. The feeder shall have brought out terminals for terminating 4 run 3.5core, 240sqmm XLPE Aluminium Cables. Qty=1 No.

a) 1000A, 4 Pole, Icu 50 kA, up to 500V AC, 50Hz,draw-out type, ,Air Circuit Breaker with O/C, S/C, & E/F protection, electrically and manually operated , spring charging shall be motorized and manual. The feeder shall have brought out terminals for terminating 3 run 3.5core, 240sqmm XLPE Aluminium Cables. Qty= 2 Nos.
b) Each ACB Feeder shall have
CBCT in all the outgoing along with Digital Multi Function Meter.
(i) Digital multifunction meter with accuracy class 0.5 and with RS-485 port with MODBUS protocol for data logging/downloading. The meter shall preferably be of size 96mm x 96mm and shall measure the following electrical parameters: Voltage, Current, Frequency, KVA, KVAr, PF, KWH, and KVArh. The multifunction meter shall have inbuilt memory to store data for minimum 75 days.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.
(iv) LED Indication lights for indication of OFF/ON/TRIP CB: 3Nos
(v) Trip-neutral-Close selector Switch, 25 Amp: 1 Nos.
(vi) Moulded HRC Fuse Holders with HRC Fuses for control circuit protection: 6 Nos

3.10.6 Panel outgoing MCCB Feeder shall have the followings:

a) Rating of outgoing feeders:

(i) 630A, 4 pole, Moulded case circuit Breaker, 36 kA, 415V AC, 50Hz : 2 Nos.
(ii) 400A, 4 pole, Moulded case circuit Breaker, minimum 36kA, 50Hz, 415VAC: 1 no.
(iii) 250A, 4 pole, Moulded case circuit Breaker, 36kA, 415V AC, 50Hz: 9 Nos.

b) Each outgoing MCCB shall have inbuilt microprocessor release mechanism and shall have following protection:

1) O/L protection
2) Short Circuit protection
3) E/F protection
Settings: i) Over Current: Ir=0.8 to 1×In; ii) Short Circuit: Im= 5 to 10×Ir; iii) Instantaneous
protection against short Circuit with fixed threshold If=5kA
Earth leakage protection (CBCT & ELR): Current Settings: 30mA to 30A; Time Settings: 0.15Sec to 5 Sec:

c) Each outgoing feeder shall have CBCT with MFM with following details:
(i) Digital multifunction meter with accuracy class 0.5 and with RS-485 port with MODBUS protocol for data logging/downloading. The meter shall preferably be of size

96mm x 96mm and shall measure the following electrical parameters: Voltage, Current, Frequency, KVA, KVAr, PF, KWH, and KVArh. The multifunction meter shall have inbuilt memory to store data for minimum 75 days.
ii) Core balance current transformer (CBCT) with earth leakage relay (ELR) for providing Earth leakage protection; current settings: 30mA to 30A; Time Settings: 0.15 Sec to 5 Sec: 1 set
iii) MCCBs shall be actuated by a handle that clearly indicates the three position ON/ OFF/ TRIP.
iv) LED for R, Y, B phases shall be provided showing availability of power: 3 Nos.
v) Moulded HRC Fuse Holders with HRC Fuses for control circuit protection: 3 Nos.
vi) Pad locking arrangement in OFF position with pad lock: 1no.
vii) LED Indication lights for 'Feeder ON', 'Feeder OFF' & 'TRIP': 03 nos.

3.10.7 Bus-bar:

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 aluminium bus-bars, conforming to BIS. Current rating of bus bar sections 2000 A, suitable for 415 V AC, 50 Hz system. The bus-bar shall be insulated with heat shrinkable PVC sleeves, make Raychem RPG, equivalent reputed make 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 carried out 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's prototype panel must have type test certificate from CPRI/equivalent testing lab of national reputed for short circuit withstand capacity of 50kA for one second on minimum 2000 Amps Bus Bars and Temperature rise test. All necessary interconnection shall be duly tested as per IS: 8623.

3.10.8 The panel shall be fitted with (Duel source) Energy meter, 3 phase, 4 wire, accuracy class-0.5, Direct reading 10-65 Amps with ACCL provision.

3.11.0 Constructional Details of All panels:

3.11.1 General Requirement:

i. Panel shall be self-supporting, Indoor Type, dust, vermin/rodent proof, suitable for placing on a RCC foundation. Any left holes/cable entries shall be blocked by using detachable metallic sheets to prevent entry of rodent/reptiles.
ii. The structure of Panel shall be made with 2mm thick CRCA sheet and (75x40x6) mm base channel as required.
iii. Heavy duty Lifting hooks (4 No's heavy duty lifting hooks) shall be provided for lifting of Panel.
iv. The door shall be in parts and shall have locking arrangement with special type Knob type key. Danger Plate fitted on both sides.
v. For cooling of the component louver arrangement shall be made in the Panel
vi. Panel shall have a heavy duty base framework. The frame design shall be such that the height between bottom cable entry plate and the connection hole of brought out link of incoming, outgoing MCCBs shall be minimum 450mm.
vii. The entire sheet-work shall be given minimum ten tank anti-rust treatment as per IS and then powder coated (min 50 micron thick) in light grey shade no 631 as per IS:631.

viii. The design should be as per IS-8623, 13947, 13703, 4237 and IEC-61439 and suitable for ambient-50°C (Max)/ 2°C (Min), humidity-60% (Max). All components used must be suitable for the environment as mentioned.
ix. All hardware should be of high tensile steel & Zinc passivated. Size of spring washers & flat washers should be as per relevant IS for individual bolt.
x. All the components shall be mounted on separate steel plate with necessary stiffeners or suitable channels so that all the components can be checked and replaced from front side after opening the door.
xi. All items will be labelled using riveted engraved metallic or mica labels.
xii. All incoming and outgoing cables shall enter the enclosure from bottom side. Bottom plate shall have individual detachable gland plates for all cables. These detachable plates shall be accessible and removable from inside. All cable entry plates shall have knockouts.

3.11.2 General Technical Requirements:
i. All connection links between bus-bar and MCCBs & brought out links shall be made with rectangular sections of Aluminium confirming to IS 5082. Current rating of links shall be minimum 1.5 times (rating for unassembled sections) the device rating. Spreader bars supplied by MCCB manufacturer shall be used for all incoming and outgoing terminations for all MCCBs.
ii. All control wiring shall be done with single core 2.5sqmm, FRLS PVC insulated, 1100v grade, IS approved stranded copper cable.
iii. All control cable ends shall have crimped copper lugs for proper termination and ferrules for identification of wiring. All the control circuit wiring shall be connected with terminals blocks, ferrules for easy identification
iv. All panel doors shall be earthed.
v. No bimetallic joints shall be permitted in the links of connections.
vi. Special non-deteriorating Neoprene rubber gaskets shall be provided at panel doors.
vii. Sufficient space should be provided for proper glanding, dressing, connecting up and maintenance of all cables. Sufficient nos. of cable entry holes shall be provided in the bottom plate.
viii. All items shall be duly fixed with zinc passivated high tension hard-wares. DIN channel shall be used for components having facility to mount on DIN channel.
ix. All items of the Panel must be approved by ISI or IEC (with latest amendments) for performance and safety. 3 nos fuse carrier and base of 16 Amp of SM type with 4 Amp HRC fuses and fuse link shall be provided for power supply of multifunction meter. The auxiliary power supply of multifunction meter shall be 230 VAC.
x. Current transformer shall be cast resin type, with accuracy class 0.5 and suitable specification. 2 No's passivated heavy duty type nuts and bolts shall be provided for connection of earthing on two opposite side.
xi. For all incoming and outgoing cable connection, brought out terminals shall be provided. Suitable size of single compression M.S cable gland of size mentioned in the point no.
xii. For all incoming and outgoing cables along with Panel. Suitable size of holes shall be made into detachable gland plate for incoming and outgoing feeders. The cable gland is to be supplied and fitted in the Panel by bidder as per requirement of incoming and outgoing feeders.
xiii. The Panel shall have provision for,
a) Cable entries for 2000A ACB: suitable for terminating 6 run, 3.5×240 sqmm PVCA Al cable
b) Cable entries for 1000A ACB: suitable for terminating 3 run, 3.5×240 sqmm PVCA Al cable
c) Cable entries for 630 A MCCB/ACB:suitable for terminating 2 run, 3.5×240 sqmm PVCA Al cable

d) Cable entries for 400 A MCCB:suitable for terminating 1 run, 3.5×240 sqmm PVCA Al cable
e) Cable entries for 250 A MCCB:suitable for terminating 1run, 3.5×240 sqmm PVCA Al cable
f) Cable entries for 125 A MCCB:suitable for terminating 1 run, 3.5×120 sqmm PVCA Al cable
g) Cable entries for 63 A MCCB:suitable for terminating 1 no, 3.5×70 sqmm PVCA Al cable

xiv. Higher version of components with same feature as mentioned in make list of components having proven track records of components shall be acceptable to OIL with prior approval. All cable entries shall be done from bottom side. Separate detachable type gland plates shall be provided for all cables. One additional cable entry gland plate shall be provided

3.11.3 Plate and Marking:

3.11.4 Panel shall be provided with Aluminum /Stainless steel / Brass nameplate showing the following information indelibly marked in English:
i) Manufacturer's Name
ii) OIL's Purchase Order No. & date
iii) Manufacturer's Serial Number
iv) Year of Manufacture
v) Rated Voltage Rating
vi) No. of circuits (incoming & outgoing)
vii) Rated Current of incoming circuit
viii) Rated Current of outgoing circuit
ix) Degree of protection

3.11.5 Danger Notice Plates:
Danger Notice plate shall be provided at the front of the Panel using M5 hot dipped galvanized /stainless steel / brass fasteners not removable type / accessible from the front i.e. without opening the door / front cover.

3.11.6 Tests:
The following routine tests shall be carried out in accordance with the relevant IS/IEC standards for all the LT panels:
A. Routine Tests:
The following routine tests shall be carried out at manufacturers' works during inspection:
i) Overall Dimensions Checking.
ii) Insulation Resistance Tests.
iii) High Voltage Test at 2500 V, 50 Hz AC for one minute.
iv) Functional Test and verification of continuity of protective circuits
v) Verification of clearances & creepage distances

3.11.7 Test Certificates:
Copy of type test conducted on similar type panel by NABL accredited laboratories for the following shall be submitted after the award of the order and before supply.
a) Short time current withstand test
b) Temperature rise test

3.11.8 Drawing & Documents:

A. The following drawings & documents shall be prepared based on NIT's specifications and statutory requirements with complete BOM and shall be submitted after the award of the order and before supply for approval.

i. Completely filled-in technical parameters
ii. SLD of Panels
iii. Bill of Materials (BOM)
iv. GA drawing of the Panels showing dimensional details
iv. Type Test certificates for tests conducted earlier on similar equipment shall be furnished

B. Documents/drawings to be submitted for approval after the award of the order:

The following drawings & documents shall be submitted for approval: GA drawing, SLD, termination details, wiring diagram and complete bill of material of the Panel shall be submitted to OIL for approval within 45 days after placement of the order. The drawing shall be approved by OIL within 30 Days of submission of drawing. Delay in drawing approval due to error correction in drawings submitted will to be parties account.
Any delay is submission of drawing for approval shall be to parties account.

C. Documents/drawings to be submitted along with the supply

Three sets of the following documents shall be submitted with the supply

i. Approved GA drawing showing all details, including constructional detail and component layout for panels
ii. Approved SLD & Schematic Diagram
iii. Technical specification of all equipment including Manual/Catalogue/installation instructions etc
iv. Installation, testing and commissioning & operation manual of the Panel and Air Circuit Breaker (ACB) and MCCB.
v. Literature of main components like protection & auxiliary relays.
vi. Bill of Materials with technical details
vii. Routine, Acceptance & Type test certificates.
viii. Guarantee/warranty Certificate
ix. List of recommended spares with pricing and part no. for five years operation

3.11.9 Warranty:

The goods/equipment shall be of best quality and workmanship. Panel and all its components shall be guaranteed for twelve (12) months from the date of commissioning against defects arising due to material, workmanship or design. The party shall agree to replace/repair the defective components at site at their cost during guarantee period.

23.1.4 INSPECTION of LT Panels

(i) All the routine tests and special tests as per relevant IS are to be carried out in presence of OIL's Engineer at manufacturer's works. The contractor 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 LT Panels shall be cleared for dispatch only if the test results comply with the specifications and testing results are within the tolerance limits.
(iii) Materials / equipment failed to conform to the specifications/during testing, OIL's representative shall have the right to reject the materials and in that case, the contractor will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs.

4.0 Substation (HT Panel, Transformer, Cable, 2 pole structure, Metering panel)

4.1.0 Description:

These general specifications cover the details of substation building and Substation Equipment (Transformers, HT Panels, HT and LT cables, Cable termination kits, 2 pole

structure, Metering Panel, other related items, Chemical earth electrodes, Cable marking etc.) to be supplied, inspected as may be necessary before dispatch, delivery at site, installation, testing, commissioning, putting into operation and handing over in working condition all the equipment of the substation of working voltage 11000/415 volts.

4.1.1 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 drawings 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.

4.1.2 A sub-station installation work shall generally comprise of supply, installation, testing and commissioning of the following:
a) D.P. Structure With AIR BREAK SWITCH
b) HT metering cubicle panel
c) HT Panels.
d) Dry type Transformers complete with associated auxiliaries as specified.
e) HT and LT cables.
f) LT Panels.
g) Earthing system.
h) Safety Equipment.
i) Miscellaneous items.

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

i) Indian Electricity Act
ii) CEA (Measures relating to Safety & Electricity supply) Regulations, 2010
iii) Relevant Indian Standards
iv) Any other Act or Rules in force.

Safety Codes and Labour regulations
In respect of all labour employed directly or indirectly on the work, the bidder, hereinafter 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, BIS recommendations and OIL's practices.
The contractor shall provide necessary barrier 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.

4.1.4 DRAWING AND DOCUMENTS:

A. SPECIFICATION

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 DP structure with Air break switch, HT metering cubicle, HT panel, Transformer and LT panel.

Drawings to be submitted after order and before supply:

i) General arrangement drawing of DP structure with Air break switch, HT metering cubicle, HT panel, Transformer and LT panels.

ii) Drawings to be submitted for approval:

The contractor shall submit the following drawings within 45 days of award of work which shall be approved by OIL:
(a) Details of foundations for the equipment

(b) General arrangement drawing of HT Panel, Transformers, LT panels, Earthing system, Cable route etc. including details of grouting of channels / bolts of various equipment.

(c) All panels' schematics & wiring diagram including control wiring.

(d) Cable layout between HT panel boards, transformers & LT panel etc.

(e) Any other drawing or data that may be necessary for the job along with complete bill of material must be submitted to OIL for approval.

The manufacture of panel should start after approval of the drawings by OIL.

B. Drawings to be submitted while handing over installation:

Three Sets of as built drawings comprising the following shall be submitted by the contractor while handing over the installation:
i) Equipment layout drawing(s) giving complete details of the entire equipment.

(ii) Electrical drawings for the entire electrical equipment showing cable sizes, equipment capacities, switch-gear's ratings, control components, control wiring etc.

(iii) Schematic diagram of the entire sub-station installation.

4.1.5 DOCUMENTS TO BE SUBMITTED:

The following documents are required to be submitted after the award of the order and before supply.

4.1.6 HT(VCB) Panel:

i) Detail as per technical specification mentioned in SOQ.

ii) Copy of Type test report done on similar panel & VCB at NABL accredited laboratories or STL approved laboratories as per relevant IS.

4.1.7 LT Panel:

i) Detail as per technical specification mentioned in Point no.3.10.0 and in SoQ.

ii) Copy of Type test report done on similar panel at NABL accredited laboratories or STL approved laboratories as per relevant IS.

4.1.8 Transformer:

i) Detail as per technical specification mentioned in SOQ.

ii) Copy of Type test report done on similar transformer at NABL accredited laboratories or STL approved laboratories as per relevant IS.

4.1.9 Deviation of offer from tender specifications with justification and backup documents from principal wherever required shall be submitted with offer. All deviations shall be subjected to acceptance by OIL in writing.
The successful bidder shall obtain approval for drawings and documents. All electrical details shall be submitted within 45 days of award of work. OIL shall require minimum 30 days' time for approval of drawings. The approval time may increase depending upon clarifications required from the contractor.
Recommended list of spares with part no. & price for maintenance of panels shall be provided with the supply (not considered for evaluation).

4.2.0 Documents to be submitted with supply:

A. HT Panel:

i) Two sets of installation, testing and commissioning & operation manual of the Panel and Vacuum Circuit Breaker (VCB).

ii) Two sets of literature of main components like protection & auxiliary relays.

iii) Two copies of as built general arrangement, schematic diagram and wiring diagrams.

iv) Two copies of foundation drawings.

v). Two sets of test report containing result of tests done at manufacture's work during inspection as per relevant IS.

vi) Recommended list of spares with part no. & price for maintenance of panel (not considered for evaluation).

C. Transformer:

i) Thre sets of Manufacture's test certificates for all the components & assemblies as required by IS-11171 should be submitted to OIL along with dispatch of the materials.

ii) Three sets of General arrangement drawing of all the components & assemblies and wiring drawing.

iii) Three sets of Instruction manual for installation, operation, maintenance repairs and circuit diagram.

iv) Recommended list of spares with part no. & price for maintenance of transformer (not for evaluation).

4.2.1 Type test certificate for dry type Voltage transformer & cast resin type current transformer from NABL accredited laboratories or STL approved laboratories as per relevant IS shall be submitted with the supply.

4.2.2 Documents to be submitted during handing over of Substations:

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 equipment installed & used in the sub stations, their drawings, test certificates, copies of all documents for routine, acceptance and type test certificates of the equipment carried out at the manufacturers premise, type test certificate from NABL accredited laboratories or STL approved laboratories for design and performance of Circuit breaker and cubicle as per standards, 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.

5.0 SCHEDULE OF WORK:
OIL shall supply an indicative single line diagram and a schedule of work as per SOQ detailing the equipment, 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 before start of work.

5.1.0 WORKS TO BE DONE:

In addition to supply, installation, testing and commissioning of all equipment 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 equipment foundation if required cutting and making holes, grouting of channel belts as required.
(ii) Provision of supports / clamps for equipment, 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 equipment for commissioning of the panel.
(vii) Watch and Ward of materials and/or installation and equipment till their handing over to OIL.

5.1.1 INSPECTION OF SITE AND COLLECTION OF DATA:

The HT and LT cable length given in the SOQ are approximate length. The contractor shall be deemed to have examined the tender documents, detailed specification, cable length, necessary data etc. and to have visited the site or ascertained all relevant details for offering suitable equipment/installation.

5.1.2 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 equipment 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.

5.1.3 COMPLETENESS OF TENDER:

All fittings, unit assemblies' accessories, hardware foundation bolts, terminal 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.

5.1.4 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.

The entire work of fabrication, assembly and installation shall conform to sound engineering practice. 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.

5.1.5 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 OIL.

5.1.6 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 OIL for such technical cooperation. 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 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.

5.1.7 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.

5.1.8 PAINTING AND PROTECTION:

All damages to painting during transport and installation shall be set right to the satisfaction of OIL before handing over. All structural frame work for support of various items of equipment shall be given the final coat of paint of shade as per standard at site after erection is complete.
The major equipment 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. The following has to be incorporated during installation and commissioning:
a) Neutral earth pit cover to be painted yellow.
b) Body earth pit cover to be painted green.
c) Surge arrestor earth pit cover to be painted black
d) Available earth pit resistance values should be written on the earth pit cover (Both Individual and combined).

5.1.9 TRAINING OF DEPARTMENTAL PERSONNEL:

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

5.2.0 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 inspected by 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) 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.
Approval from State DISCOM/any other state/central bodies and payment of associated fees, if any, for completion of all above jobs including testing/certification/approval, if needed, shall be under the scope of the Contractor. No payment shall be paid by OIL in this regard.

5.2.1 DATE OF ACCEPTANCE:

The contractor shall monitor the operation of the substation for a period of one month after it is energized. The date of acceptance by OIL shall be after successful completion of continuous trouble free operation of the substation for a period of **one month**. In case of unsatisfactory performance or break down due to defective design, manufacture or installation during this one-month trial run, the substation shall be accepted only on completion of one-month trouble free operation.

5.2.2 GUARANTEE:

The contractor shall guarantee the entire sub-station installation as per specifications. All equipment shall be guaranteed for one year from the date of acceptance of the substation by OIL. The installation shall be covered by the conditions that whole installation or any part is found defective within one year from the date of acceptance shall be replaced or repaired by the contractor free of charge as decided by OIL. The warranty shall cover the following:

- 璨姦vdy, 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.

6.0. TECHNICAL SPECIFICATIONS OF ELECTRICAL EQUIPMENT:

6.1.0 Technical specifications of Earthing System:

6.1.1 Scope:

This section covers the general requirements of the earthing system for Sub-station installation. G.I. Pipe earthing with G.I. Plate and G.I. strip and single core insulated cable shall be used for sub-station of 1X1250KVA capacity.

6.1.2 Earthing Systems:

Earthing system shall comprise of earth electrode of 40 mm diameter of G.I pipe of 3 mtrs length shall be used as an individual electrode and fixed with 600mmX600mmX6mm thick G.I. earth plate. For each transformer, 2 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 earth electrodes.

Note: For one transformer sub- station total number of earth electrodes shall be 9 (2 for neutral earthing of transformer, 2 for body earthing of the transformer, 1 for surge suppressor, 2 for connection to VCB panel & 2no. for PCC panel of common earth bus for body earthing). The no. of earth electrodes shall be more depending upon soil resistivity and the value of earth resistance which shall be less than 1 ohm when connected together.

6.1.3 Location of Earth Electrodes:

Preferably an earth electrode shall not be situated less than 1.5 m from the building (subjected to availability of space). 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 6.1.3 Electrodes:

Supply and burying Earth electrode with G.I. earth pipe, 3 metre long, 40 mm dia and 100mm dia including 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.
Distance between two earth electrodes shall be twice of minimum length of electrode or as per relevant IS.

6.1.4 Size of Earth 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

7.0 Installation, Testing and Commissioning

7.1.0 HT Panel

7.1.1 Installation of VCB panel:
(i) The installation work shall comprise of placing and fixing of VCB panel
(ii) All protection, indications & metering connections and wirings shall be completed.

(iii) The trip supply battery installed 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.

7.1.2 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.
(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 tester for Insulation between poles and poles to earth. Insulation test of Secondary of CTs and VT to earth shall be conducted using 500V insulation tester.
(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.

8.0 LT Panel:

8.1.0 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.

8.1.1 Testing and Commissioning of LT panel:

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 Insulation tests. Checks and tests shall include the following: -
(i) Operation checks and lubrication of all moving parts.
(ii) Interlock function checks.
(iii) Continuity checks of wiring, fuses etc. as required.
(iv) Insulation test: When measured with 500V Insulation tester the insulation Resistance shall not be less than 100 mega ohms.
(v) Trip tests and protection gear test

9.0 Transformer

9.1.0 Installation and Commissioning of Transformer:

(i) The transformer shall be installed in accordance with IS 10028 (with latest amendment)-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 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.

9.1.1 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 sq.mm., XLPE, Al cable and 3.5x240Sqmm XLPE AL Cable.

(ii) The scope of work also includes laying of above cables in pre constructed pucca cable trench.

(iii) 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.

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

9.1.2 Transportation, Storage and Handling:
9.1.3 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 it requires replacement of damaged cable, the bidder has to replace the damaged cable with new cable at free of cost.
9.1.4 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.

9.1.5 Handling:

(i) When the cable drums have to be moved over
(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.

9.1.6 Installation:
A. General:

While laying cables in pucca cable trench, cables shall be placed on cable trays. HT and LT cables shall be placed separately.

9.1.7 Cable type: Cross linked polyethylene (XLPE), armoured

i) Shelf life: Minimum 5 years.
Note: The package shall contain the following information/ documents:
a. Make.
b. Batch no.
c. Date of manufacture.
d. Date of expiry.
e. Shelf life of the kit.
f. Guarantee certificate.
g. Installation manual.

9.1.8 Heat Shrinkable indoor and outdoor type end termination kit:

A. 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:
i. Heat Shrinkable end termination kit for following cable and having the following features:
a) Size of cable: 3 core, 240 sq.mm, Aluminium and 3.5 Core 240 Sq.mm. Al
b) Voltage grade: 11,000 V, AC (UE)
c) Cable type: Cross linked polyethylene (XLPE), armored
d) Type of kit: Indoor and outdoor type
e) Shelf life: Minimum 5 years.
B. Note: The package shall contain the following information/ documents:
a. Make.
b. Batch no.
c. Date of manufacture.
d. Date of expiry.
e. Shelf life of the kit.
f. Guarantee certificate.
g. Installation manual

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

9.1.9 Testing

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

9.2.0 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 hydraulic

heavy duty crimping tool kit of reputed make of size 16 sq.mm.to 400Sq.mm. including complete set of suitable dies.

9.2.1 Technical specifications for 1.1KV grade LT Cable**:**

9.2.2 Scope of work:

The above cable shall be supplied, laid and commissioned from transformers to LT panel incomers & substation LT panel MCCBs to LT Feeder panels and other sub panels

(i) The scope of work includes supply, laying, termination, testing and commissioning of all 1.1 kV, XLPE/PVC insulated(as per specs in the SOQ), PVC sheathed, Al conductor and Cu conductor cables in a pucca cable trench.

(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-inch GI pipes at road crossings, across trenches, drainages and wherever necessary.

(vi) Any other items that are not included but are 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.

9.2.3 Installation, testing and commissioning of cable:

A. 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.

B. Route of cable:

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

9.2.4 Testing of cable before laying:

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

9.2.5 Termination & crimping of Cables:

The cable supplied by bidder is required to terminated and crimped. For termination and crimping of cable sweating Socket of required sizes are to be provided by the bidder

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 contractor. For crimping of cable, crimping tool is to be brought by the contractor. The cost of above items shall be included in the offer.

9.2.6 Testing:

A. 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.

B. 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.

9.2.7 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.

(iii) All the cable laying works shall be supervised by experienced supervisor having certificate of competency for carrying out 1.1KV works.

(iv) Before laying of the cable, Insulation resistance and continuity test to be carried out.

(v) 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 12 hours.

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

(ii) The bidder shall give 15 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) All cable laying and termination works shall be carried out by persons having experienced and valid workman permit for cable jointing for LT cable.

(v) The cable manufacturer shall have routine test facilities to carry out testing of 1.1 kV grade, 3.5Cx240Sq.mm. XLPE, Al cable as per IS 7098 (with latest amendments) at manufacturer's works.

9.2.9 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 hydraulic heavy duty

crimping tool kit of reputed make of size 10sqmm to 240Sqmm including complete set of suitable dies.

10.0 Technical specs of HT metering panel and DP structure

10.1.0 Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following:
(i)Provision for fixing Trivector Meter (To be supplied by DISCOMs)
(ii)Provision for fixing of combined CT PT Set (To be supplied by DISCOMs),
(iii)TT Block,
(iv) 6mm Bakelite sheet on all sides,
(V) 3/6 core copper cable for interconnections etc. as required.

10.1.1 DP :double pole structure on 2 no ISMB 125 x 70 mm, 10 mtr high using 7 no MS channel each of size 100 mm x 50 mm x 2500 mm complete in all respect with nuts, springs washers, clamps as required.
10.1.2 GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3-ø, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 nos pin insulator ,GI pipe of suitable length for operation.
10.1.3 DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators
10.1.4 LA: 3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv Overhead line with rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required.
10.1.5 JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. 10.1.6 GENERAL:The GO shall be operated by hand operated liver properly earthed with provision for locking mounted at 3'

10.1.7 Scope of work

A. The scope of work consists of the followings:
i) Supply and errection of DP structure as per the specs in SoQ.
ii) Supply and fixing of GO and all accessories required as per SoQ
iii) Supply and fixing of DO with all accessories as per SoQ
iv) Supply and fixing of Lightning Arrestors with all accessories as per SoQ
v) Supply and fixing of Jumpers as required
vi) SITC of HT metering cubicle.
vii) Connection of power supply from DISCOM power Line to DP Structure by taking necessary shut down.
viii) SITC of HT cable (Supply, Laying, Connection and Testing) from HT Meter to VCB panel.

B. The contractor has to arrange for taking necessary permission from DISCOM (or Competent authority) for connection of HT metering panel to the HT line.

11.0 DG Set

11.1.0 Supply, Installation, Testing and Commissioning of Silent DG Set complete with 1500 RPM Diesel Engine of suitable BHP & AC Brush less SPDP Alternator mounted on a common base Frame & coupled through a flexible coupling or close coupled for feeding loads like Lights, ACs, Computers, Fans, Motors, Lifts etc. on continuous basis.
Alternator shall be self regulated with standard Alternator Protection(Over voltage , over speed & under voltage).

11.1.1 Technical specification of DG set

11.1.2 ALTERNATOR:
a) Type : Brushless
b) Actual power 320 KVA at 50 degree celsius
c) Frequency : 50 Cycles/sec, Frequency variation-± 1%
d) Supply system :3 phases & neutral
e) Connection: Star
f) Rated voltage: 415 Volts, Variation of voltage from No load to full load-± 2 % of rated voltage.
g) Rated rpm. : 1500 rpm. max
h) Enclosure : IP-23
i) Insulation : Class 'H'
j) Voltage Regulation: Automatic voltage regulation grade VG3
k) Maximum permissible time Building up rated voltage From stand still-Less than 20 seconds.

11.1.3 ENGINE:
Engine shall have residential silencer, up to 10 M exhaust piping , electronic / Mechanical governor, Manual & electric Start ,Batteries, Fuel tank (with Stand) & piping , control panel (16 G) with MCCB (4P; 25 KA), Ammeter, Voltmeter, Frequency Meter, Energy Meter & Hour Meter, Engine instruments panel, AVM and with Weatherproof, powder coated Acoustic enclosure for DG set for sound attenuation fabricated from 2.0 mm CRCA sheet steel (structure) with side wall fabricated from 2.0 mm CRCA sheet & filled with 100mm thick glass wool(96Kg/m3) as per IS 8183 the doors of 100 mm thick and fabricated from 1.6mm CRCA sheet packed with acoustic material, floor of MS chequered plate 5.0mm thick, canopy fixed with axial flow fan of Alstom,/Almonard make.

11.1.4 DIESEL ENGINE:
a) Type: Multi-cylinder with direct radiator, Turbo charged with Heat Exchanger with oil cooler.
b) No. of strokes·: 4
c) No of Cylinder: 6
c) Fuel injection :Direct
d) Maximum speed : 1500 RPM
e) Rated power: 380 BHP (minimum)
f) Cooling of: Liquid cooled
g) Cylinders with Oil cooled remote Radiator
h) Type of Governor: Electronic, Mechanical or higher
i) Class of Governor: A1 or higher
j) Overload capacity for one hour for every 11hours continuous running at full load (%): 10
k) Engine : Battery starting.
l) Starting voltage: 24 V
m) Efficiency at rated power factor and 75% of Full load: 90.25
i) Starting : Universal. Auto/Manual position
j) Engine shall be at least BS-VI or latest standard complied.
k) Battery type: Low Maintenance free to IS: 14257 for high cranking performance

11.1.5 The Auto main failure (AMF) Panel shall be fabricated from CRCA sheet steel 2 mm Thick , Powder coated finish , Engine Start & Stop commands, control Relays , selector switches for Ammeter & Voltmeter, Ammeter & Voltmeter , Control & Power Contactors, Timers, Electronic Hooter ,Visual & Alarm indication for faults, UPS, operator interface panel complete in all respect suitable for 320 KVA capacity DG sets:

The panel shall also have:
a) 630A, 4 Pole, Icu 50 kA, conforming to IS 60947 p-2 up to 500V AC, 50Hz,draw-out type, ,Air Circuit Breaker with O/C, S/C, & E/F protection, electrically and manually operated , spring charging shall be motorized and manual. The feeder shall have brought out terminals for terminating 2 run 3.5core, 240sqmm XLPE Aluminium Cables: 1 No.
The panel shall have:
(i) Digital Multifunction Meter, V+A+Hz,KW+PF+KWh+Maximum Demand with RS-485 : 1 No.
(ii) Current transformer, 400/5, 15VA, Class 1 to IS: 2705, Cast resin type. : 3 Nos.
(iii) LED Indication lights for indication of 'Supply On': 3Nos.
(iv) LED Indication lights for indication of OFF/ON/TRIP CB: 3Nos.
(v) Trip-neutral-Close selector Switch, 25 Amp: 1 Nos.
(vi) Moulded HRC Fuse Holders with HRC Fuses for control circuit protection: 6 Nos.

11.1.6 General requirement
All doors/ opening are sealed with neoprene/EPDN gaskets. The control panel shall be of IP 53. The enclosure has built in fuel tank, residential silencer (isolated from main DG chamber) with protection and tripping of DG set against temperature of more than 50 degree centigrade. All controls for operation of DG set are from outside the enclosure with DG control panel mounted inside enclosure , visible and accessible from outside. The enclosure should be suitable for following capacity DG sets and alternator. Noise level shall be less than 75 db(A) at a distance of 1 mtrs. duly certified by authorized agency etc. complete in all respect of following capacity :

11.1.7 ACCESSORIES:
The Diesel Engine shall be equipped with minimum following/ as indicated in the specifications, devices/accessories built-in type including all standard fillings:
a) Fuel supply pump with manual venting pump.
b) Radiator
c) Turbo charger with air filter (dry/oil bath type) and damper.
d) Charge oil cooler
e) Suction fuel filter
f) Lube oil filter
g) Electronic lsochronus Governor of suitable class
h) Hour meter and RPM indicator
i) Battery Starting Mechanism.
j) AMF Panel having the complete with following:
1)Starting Switch incorporated in touch panel/push button
2)Lub. Oil Temp. gauge
3)Lub. Oil pressure gauge
4)Water Temp. gauge
5)Control devices for safety and monitoring along with indicators.
a) Common base/foundation frame
b) Fly wheel and flexible coupling
c) Automatic voltage regulator (A VR)
d) Lube oil filter
e) Fuel oil filter
f) Fully insulated and suitably supported class '8' MS Exhaust pipe of required size minimum 3.25m above the highest point of the terrace
g) Day storage tank for not less than 650 ltr capacity fabricated out of 3mm thick MS sheet, with M.S. fuel pipe line, high & low level indicator and alarm contacts.
h) Residential type silencer
i) Anti vibration pads
j) Necessary batteries (minimum 2 of 180 AH capacity) with leads and mounting frame etc.

k) The lubricants, coolant, to be filled to the fullest & fuel (day storage tank) sufficient for testing.
l) All the above housed in a suitable Sound attenuated enclosure as per specifications and required Set.
11.1.7 Other special features:

i) Mode of operation-Auto Start

ii) Capacity of largest rating Motor starting-To be furnished
iii) Radiator cooled and Turbo charged
iv) Alternator, 320 KVA at 50 degree Celsius, at 0.8 pf (lag), 415V, 50Hz, 3-Ø

11.1.8 Scope of work
A.
i) Proper foundation to be made for installation of the DG Set
ii) Laying and Connection of power and other control cables from DG set to LT panel and AMF panel
iii) Two nos. of Earth Electrode to be provided for Neutral earthing and two nos. of electrode for Body earthing.
iv. The neutral should be earthed with two separate insulated earth wire up to the Electrodes.
v) The DG auto start to be tested during main supply failure.
vi) The DG shall be tested up to optimum load
vii) Exhaust to be extended to take the smokes outside of the building if necessary.
viii) The DG shall be tested with AMF panel

B. General evacuation Plan for Diesel Generator(DG) Set Supply during DISCOM power failure:
The 320KVA DG set shall be used for the following purposes on a larger note:

1. Housing part all blocks common lighting to be made available from DG.
2. Housing part all houses supply to be restricted to 700/800W per flat (total 48 flats right now)in case of DG supply. For this if any necessary circuitry/device is to be put than, same shall be wired directly to the individual flat DBs for DG load restriction purpose in the flats. This shall be on bidder's part only.
3. All street lights (both housing & club house part) shall be also be supplied power from DG.
4. All essential supplies like all block lifts, CCTVs, all water pumps, SCADA control room, Electrical Substation etc.
5. All Club House Lighting (including auditorium) requirements, Fans, kitchen exhausts & ACs of some critical areas (on discretion of OIL) shall be made available through DG.
6. All guest house room loads restricted to max. 700/800W per room. For this if any necessary circuitry is to be put than, same shall be wired directly to the individual flat DBs for DG load restriction purpose in the flats. This shall be on bidder's part only.
7. All the above shall be in the scope of the bidder.

11.1.9 Documents to be submitted after award of order and before supply:

i) Detail technical literature and catalogue of:

a) Diesel Engine
b) Alternator

11.2.0 Inspection of DG Set with AMF Panel

(i) All the routine tests and special tests as per relevant IS are to be carried out in presence of OIL's Engineer at manufacturer's works. The contractor 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 DG set with AMF panel shall be cleared for dispatch only if the test results comply with the specifications and testing results are within the tolerance limits.
(iii) Materials / equipment failed to conform to the specifications/during testing, OIL's representative shall have the right to reject the materials and in that case, the contractor will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs.

12.0 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.

12.1.0 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 type with 2nos. lifting hooks suitable for brickwork enclosure.

13.0 TECHNICAL & OTHER DEVIATIONS:
The work shall be carried out as per technical Specifications for Electrical works relevant to CEA regulations 2010, Indian Standard, IEC, IE rules, and as per directions of Engineer-in-charge.
Note: Any deviations from Technical Specifications due to design considerations, for Electrical works as given in NIT shall be subject to express acceptance by OIL. In case there is no deviation, "NO DEVIATIONS" should be mentioned in the offer.

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

15.0 POWER SUPPLY:
The contractor has to arrange for power supply requirement of their own.

16.0. COMPLIANCE WITH REGULATIONS AND INDIAN STANDARDS:

(i) 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.

(ii) 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 State Licensing Board.

16.1.0 After completion of the installation (Substation), 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 their own cost. The final completion report will be accepted only after getting clearance from CEA.

16.1.1 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.

16.1.2 Successful bidder shall arrange for compliance with statutory provisions of safety regulations and OIL's 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, OIL will be at liberty to make arrangement for the safety requirements at the cost of bidder and recover the cost thereof from him.

17.0 ERECTION TOOLS:
No tools and tackles required for testing, installation and commissioning purposes would be made available by OIL.

18.0 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 equipment at site have to be stored securely by the contractor till handed over to OIL. The necessary arrangement to prevent theft/pilferage has to be made by the contractor.

19.0 VERIFICATION OF CORRECTNESS OF EQUIPMENT AT DESTINATION:
The contractor shall have to produce all the relevant records to certify that the genuine equipment from the manufacturers has been supplied and erected.

20.0 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.

21.0 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.

Safety provisions shall be generally in conformity with CEA regulations 2010. In particular following items shall be provided:

i) Insulation mats conforming to IS: 15652:2006 shall be provided in front of main HT and LT switch boards as per CEA (Measures Relating to Safety and Electric Supply) regulations 2010, chapter III, 19 (5).

ii) 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.

iv) Danger Plates shall be provided on all HV and LV equipment. LV danger plate shall be 200 mm x 150 mm and HV danger plate shall be size 250 mm x 200mm. The danger plate shall be made of mild steel of at least 2mm thick 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.

v) Sufficient number of caution boards such as "Man on Line" 'Don't Switch on' 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

22.0 11KV VCB panel

22.1.0 Supply, installation, testing and commissioning of 11 KV VCB Panels: 1 No.

22.1.1 Supply of 11KV 630/800A VCB Indoor type panel HT board, freestanding motor operated & withdrawal type fabricated from 2 mm thick CRCA sheet steel , With Ammeter, Voltmeter, PF Meter, KWH Meter, MDI Meter, Selector Switches as required, CRT-CT (protection-200/ 5A 15VA ; Cl-1.0 & Measuring 400/5A 15VA Cl-1.0) , PT (11 KV /110V/√3) , Fuses , IP42 Protection Cl 4-window Annunciation Panel , AC/ DC Control voltage 24/48/ 110/230V , LED Indication lamps , S/C, O/C & E/F Protection (IDMT) Relays Alarm & trip contacts for Transformer protection (high winding temperature)etc. complete in all respect in order to ready to use.

22.1.2 This specification covers 3-pole, 50HZ, 11KV vacuum circuit breaker for indoor type:

22.1.3 APPLICABLE STANDARDS:·

Unless otherwise modified in this specification, the vacuum circuit breakers shall comply with the following Indian standards as amended from time to time:

IS-2516: Circuit Breakers
IS-3156: Voltage Transformers
IS-2705: Current Transformers

22.1.4 RATED VOLTAGE:

The rated voltage for the circuit breaker shall be 12KV. This represents the highest system voltage corresponding to the nominal system voltage of 11 KV.

22.1.5 RATED CURRENT:

The standard rated normal current shall be 630A.
The bus-bar rating of the indoor type VCB shall be 800A.

22.1.6 RATED SHORT-CIRCUIT BREAKING CAPACITY:

The effective value of the rated short-circuit breaking current shall be 32KA.
The value of D.C component shall be calculated in accordance with the recommendations contained in IS 2516

22.1.7 RATED SHORT-CIRCUIT MAKING CAPACITY:
The rated short-circuit making current of the circuit breakers shall be taken as 2.5 times the rms value of the AC component of the rated short-circuits breaking current.

22.1.8 TECHNICAL SPECIFICATION OF 11 KV SINGLE PANEL VCB

i) CUBICLE AND CIRCUIT BREAKER DETAILS:
Cubicle & breaker and their accessories for 11KV, indoor VCB panel should be fully factory built and assembled for direct installation. Designed, manufactured and tested in accordance with Is-123118, 14658, 2071 3427 & IEC-60056/60298 and having following specifications. Circuit breaker & cubicle must have CPRI test certificate for design and performance as per above standards.

22.1.9 CUBICLE:
The horizontal draw out and horizontal isolation type circuit breaker cubicles should be fabricated using high quality sheet steel of minimum thickness 2.5mm as per IS. The sheet metal should be given minimum seven tank anti corrosion treatment & then powder coated.
Colour- SIEMENS GREY.
The totally metal enclosed panel shall be compartmentalized with internal positioning of insulated material of epoxy reinforced fiber glass to provide the following:
a) Bus bar compartment.
b) Circuit Breaker Compartment.
c) CT and Cable Compartment.
d) Relay & Metering. compartment (L T Chamber).

22.2.0 The L.T chamber of suitable height shall be separated and suitably mounted on frame for ease of testing and· maintenance. Auxiliary controls, protective relay and measuring equipment 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 tom 135 Degree (approx.). All devices in the L T box are to be marked with permanent labels. Panel rating plate shall be provided on the door.
22.2.1 Bus bar shall be rectangular in cross section and made from electrolytic grade electro tinned copper having 99.99% conductivity. Busbar current rating shall be 2000 Amp and Fault rating-32kA (Breaking). Heat shrinkable sleeve insulation of 11 KV voltage grade should be provided on busbar and its risers. Busbar arrangement should be such that in future similar cubicles can be connected sidewise with this cubicle.
22.2.2 Cast epoxy insulator supports for busbar & cable termination links designed to withstand full short circuit current at specified fault level for minimum 3 seconds shall be provided.
22.2.3 The circuit breakers shall be mounted on horizontal draw out truck. The circuit breaker truck should have horizontal isolating system.
22.2.4 The front door shall have view glass to facilitate observation of mechanical ON/OFF indication and operation counter.
22.2.5 The draw out truck shall have the following positions
a) Isolated
b) Test
c) Service
22.2.6 The CT and the incoming cable compartment shall be in the rear. The outgoing cable compartment shall be provided on the back side. The L T control cable terminal arrangement shall be provided in the rear side and in a separate box so as to have

isolation from high voltage terminals. All the cable entry plates shall have removable gland plates.
22.2.7 The CT required for metering and protection shall be as per IS-2705 & shall be sized adequately and its insulation will be epoxy cast type. Metering CT 15V A, Class-5P10, ratio 30-60/5. Protection CT, 15VA, Class-5P1O, Ratio- 30-60/5. Short time rating -32KA for minimum 1 sec.
22.2.8 PT shall be epoxy cast resin type & as per IS-3156. PT should be horizontal draw out type Ratio 11 kv/ 11OV (phase to phase), 1OOVA & protected with HRC fuse on both HT & L T side.
22.2.9 Panel shall have proper protective earthing terminals for connection to external earth straps.
22.3.0 Earthing connection between truck and cubicle shall be provided by means of sliding contact. The truck earthing should 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.
22.3.1 The following minimum safety interlocks shall be provided.
a) The truck cannot be moved from test to service position or vice versa, when the CB is ON.
b) The CB cannot be switched ON when the truck is in any position between test and service.
22.3.2 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) Front door/panel sides to be pressure tested to withstand arc faults.
c) CB and metal enclosure earthed in accordance with latest IS published by BIS(IS-251 6, part- 1, section-I)
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.
22.3.3 Control wiring and CT wiring shall be done using single core, PVC insulated, stranded copper cable of 11 OOV grade and 2.5 sq. mm. 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 L T box. Colour coding of control cables shall be followed as required by ISI. Control cables shall be approved by IS-694.
22.3.4 Panel shall be provided with space heaters and adjustable thermostats of suitable rating along with protective HRC fuses and ON/OFF switch.
22.3.5 Lifting hooks shall be provided for the panel.
22.3.6 The switchgear panels shall have the following identification markings in a proper way in permanent manner:
a)Panel name in front and rear.
b)Caution and danger board in front & rear.
c) CT specification name plate on CT and at panel cover at rear.
d) Incoming & outgoing cable box.

22.3.7 Insulation system of the cubicles should withstand extreme humid condition and suitable for use under site condition mentioned in para 2.1.

22.4.0 PANEL EQUIPMENT AND ACCESSORIES:
1. MC type Ammeter 144 x 144 mm size dual scale 0-30/60A for line current measurement.

Accuracy- 1%.
2. MC type Voltmeter 144 x 144 mm size., scale O-l5kV for line Voltage measurement. Accuracy- 1%.
3. Digital type KWH Meter with additional facility for showing current, voltage, PF, MDL Meter approved by IS or IEC for performance and safety. Meter shall be suitable for operation in tropicalized environment with 40 deg C temp and 90o/o humidity. Make:

4. Ammeter and Voltmeter Selector switch : I no. each
5. Trip circuit check push button.
6. LED type Indication lamp for:
i) CB Close,
ii) CB open,
iii) Trip on fault,
iv) Trip circuit healthy.
v) Spring Charged. LEDs to be LVGP.
7. Breaker closing and tripping switch: For closing and tripping through 110V DC closing and 110V DC shunt trip coil.
8. Control supply shall be taken from the PT through suitably rated Power Pack having following specifications: .
a. 11OV AC input supply to the power pack shall be taken from PT output.
b. 3 phase rectifier with 800 PIV shall be used in power pack.
c. Surge suppressor suitable for numeric relays shall be provided in the power pack.
d. Power pack shall be protected through suitable input HRC fuses.
e. Battery shall be provided in the power pack to provide DC power for 30 minutes after incoming power failure·
f. Suitable filters should be provided in the power pack to give ripple free DC output for reliable relay operation.
9. One no. combined Numeric relay for overload, short circuit and earth fault protection of transformer.
Type : Micom 122 of Schneider make.
10 . Auxiliary relays for sounding alarm and tripping of VCB panel in case of transformer fault. One buzzer type alarm shall be provided in the panel.
11 . Trip circuit supervisory relay- 1 No. Schneider make.
12. One set of operating handles for manual spring charging and breaker racking in/out.
13. The handle should have Auto, Manual, Off & Trip positions clearly indicated.

22.5.0 SITE CONDITION:
1. a) Maximum Ambient air temperature - 50°C
   b) Minimum Ambient air temperature - 2°C
2. Maximum humidity at site (at 40 °C) - 60%
3. Surrounding atmospheric condition - Dry
4. Site altitude (above sea level) - 231Metre (approx.)
5. Seismic design co-efficient - As per 1983
6. Rainfall: 360mm annually (approx.)

22.6.0 CIRCUIT BREAKER:
The breaker used shall be three pole VACUUM CIRCUIT BREAKER having the following features:
a. 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 in para 2.1.
e. Bushings shall have suitable silver coated, flower contacts for firm connection.
f. Manual & motor operated spring charging system.
g. 11 kV, Three pole, 800A continuous rating, 32kA fault level.

h. Auxiliary contacts (6 NO + 6NC).
i. Operation counter of 5 digits.
j. Mechanical endurance of 50,000 (minimum) operations.
k. Mechanical ON/OFF indication.
l. Spring FREE/ CHARGED indication.
m. Position indicator : SERVICE/ TEST/ ISOLATE.
n. Low maintenance:
o. Manual ON and TRIP button.
p. Operating sequence: 0: 0.3 min ; CO : 3 min ; CO.
q. Shunt trip coil, closing coil: 110V DC rated.

22.7.0 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 one no. of incoming cable and should have suitable terminal links for safe termination of incoming cable. One no. outgoing cable will be terminated in the cable box mounted on side. Size for incoming and outgoing cables, 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.

22.8.0 Ratings:
a) Rated voltage - 12kv
b) Rated current - 1250A
c)Withstand voltage - 75 kv
d) Withstand current - 32 ka
e) IP Rating - IP33

22.9.0 CONTROL SUPPLY OF VCB PANEL

22.10.0 Control power supply shall be taken from 1 No battery bank for 24 V DC with battery charger.

22.10.1 The control power supply system shall consist of the following:

A. BATTERIES
i) Type of battery: Sealed Maintenance Free (SMF) cells
ii) Voltage of each battery: 2.0 V, 200 AH,
ii) 12 Nos. batteries shall be connected in series to give 24 V DC output
iii)The batteries shall be kept on insulated type rack and interconnected with silicon insulated Cable with terminal

B. BATTERY CHARGER
i) Charging current: 20 A or as required
ii) Float and boost charging facility shall be available.
iii) Incomer to battery charger shall have single-phase supply with 20 Amps DP MCB with overload and short circuit protection.
iv) Outgoing shall be double pole 20A MCBs-3 Nos
v) Protection for control circuit shall be provided.
vi) Float and Boost charging ammeters to be provided

The battery bank and charger shall be located in the same room as the VCB HT Panels. Interconnection to be done from LT panel to Battery charger / Battery.
Make of battery and charger shall be as per acceptable make list of annexure -III

22.10.2 Warranty:
The goods/ equipment shall be of best quality and workmanship. The equipment shall be guaranteed for 12 (Twelve) months from the date of acceptance against defects arising due to material, workmanship or design. Relay will also be included in this guarantee.

22.10.3 Inspection and Testing of VCB at Manufacturer's Works.
(i) All the routine tests and special tests as per relevant IS are to be carried out in presence of OIL's Engineer at manufacturer's works. The contractor 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 VCB shall be cleared for dispatch only if the test results comply with the specifications and testing results are within the tolerance limits.
(iii) Materials / equipment failed to conform to the specifications/during testing, OIL's representative shall have the right to reject the materials and in that case, the contractor will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs.

23.0 1215 KVA Transformer
23.1.0 Supply of 1 no cast resin type dry type Transformer with confirming to IS 11171& Losses as per Discom's CTL (CTL Test certificate to be attached) of rating 11/0.433KV Delta-Star Connected, Vector Group Dyn 11, Off -LTC (+5% to -7.5% in steps of 2.5%) ambient air temperature for operation is 50°/55° C, ISI marked Epoxy based paint, including 1nos. set thermometer in winding for all 3-phases and core to maintain the winding temperature. carrying of pre-commission Testing & Charging of Transformer. specifications are given below:-

A. GENERAL:
1. Applicable Indian Standard: IS: 11171 with latest amendments.
2. Service duty : Continuous.
3. Installation : Indoor.
4. Auxiliary power supply : 240V AC ± 10 o/o
5. Control Voltage : 240V AC ± 10 %

B. SITE CONDITION:
1. a) Maximum Ambient air temperature - 50°C
   b) Minimum Ambient air temperature - 2°C
2. Maximum humidity at site (at 40 °C) - 60%
3. Surrounding atmospheric condition - Dry
4. Site altitude(above sea level) - 231Metre (approx)
5. Seismic design co-efficient - As per 1983
6. Rainfall: 360mm annually (approx)

C. RATING AND GENERAL DATA:
1. Rating: 1250kVA, continuously rated.
2. No. of phases: 3
3. Frequency : 50 ± 3 %
4. Type of Insulation : Cast Resin winding, Class-F. Temp. rise-90^{0}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% (or as per IS-2026)

10. Nominal voltage ratio: 11kV/433V
11. Type of neutral earthing : Solidly grounded Neutral.
12. Symmetric short circuit withstand capacity : As per IS- 11171.
13. Rated short duration power frequency withstand voltage : As per IS 11171.
14. Rated lightning impulse withstand voltage: As per IS-11171.
15. TAP CHANGER:
Type: OFF Circuit.
Total tapping range: ± 5.0%
Tapping steps: In steps of 2.5 %
16. TERMINAL ARRANGEMENT: .
HV winding line end : Cable box with bushings.
LV winding line end : Cable box with bushings.
One LV Neutral bushing inside the cable box and one (additional) outside the cable box.
17. BUSHING:
Made from non-hygroscopic epoxy resin cast material suitable for site condition mention in para- B & confirming to IS-2099.
18. CABLE BOX:
a) HV cable box should be suitable for termination of 1 no. 3 C, 240sq. mm XLPE, armoured, aluminium conductor cable with heat shrink type cable termination. Bottom plate should be detachable. Cable Box as per IP-54. Suitable non hygroscopic bushings are required for supporting the cable connection.
b) LV cable box should have brought out electro-tinned copper busbars of suitable rating &
size for termination of 6 nos. of 3.5 core, 240 sq. mm PVCA/XLPE Aluminium cable. The busbar should have suitable holes (two nos. for each cable lug as lug with double hole will be used for termination) and provided with hardware for termination of 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 for busbar in LV cable
box should be made from FRP/SMC non hygroscopic material. Cable Box as per IP-54. Supports should be able to withstand the short circuit stress. All openings in enclosure should be guarded with suitable screen to guard against entry of rodents and reptiles.
c) Terminals should be marked as per IS: 2026.
19. TRANSFORMER CORE:
a) Material: High grade cold rolled grain oriented silicon steel for very low iron loss.
b) Structure : Grounded and sharp corners avoided.
c) Lamination: Treated and coated with suitable insulations. The core limbs & yokes are banded by means of resiglass tape to reduce vibration & noise.
20. 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 fiberglass. 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.
Joints in the winding should be as under:
a) Permanent joints : Welded/ brazed.
b) Bolted connection : Provided with locking devices
21.ENCLOSURE:
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 & should have suitably designed louvers for circulation of cooling air. All the gaskets should be Of neoprene rubber. Enclosure should be powder coated with DA Grey paint after surface treatment for corrosion protection. All openings in enclosure should be guarded with suitable screen to guard against entry of rodents and reptiles.

22. LIST OF FITTNGS AND ACCESSORIES:
a) HV bushings :
Inside HV cable box : 3 nos.
b) LV bushings -
Inside LV cable box : 4 nos.
Outside LV cable box : 1 no. for neutral earthing.
c) 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 upto the
scanner terminals. Suitable hole with gland is required for control cable connecting scanner
alarm/ trip contacts to HT Breaker.
d) Lifting lugs.
e) Earthing terminals # 2 nos.
f) Jacking lugs.
g) Inspection .cover
h) Base channels with bi-direction rollers.
i) Any other accessories which bidders think essential & required as per IS may also be included.
included.

D. Winding Material - Copper
E. Off load tap changing on LT side - +5% to -5%
F. Maximum air temperature - 50°C
23.1.1 NAME PLATE
Transformer shall be furnished with a non-corrosive diagrammatic name plate permanently attached with non-corrosive hardware with following information:
(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) Tap configuration
(x) Insulation system and rated maximum temperature rise.
(xi) Year of manufacture
(xii) Design impedance.
(xiii) Manufacturer's name
(xiv) Net weight.
(xv) IS standard.
(xvi) OIL's P.O. no. and date.

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

23.1.3 INSPECTION
(i) All the 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 contractor 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 transformers shall be cleared for dispatch only if the test results comply with the specifications and testing results are within the tolerance limits.
(iii) Materials / equipment failed to conform to the specifications/during testing, OIL's representative shall have the right to reject the materials and in that case, the contractor will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs.

23.1.4 GENERAL TERMS AND CONDITIONS
i. Transformer winding shall be specially braced to withstand to thermal and mechanical stresses of harmonic current and voltage.
ii. Temperature rise test shall be carried out on transformer for full load current and up to 90 degree centigrade temperature. It takes nearly 8-12 hrs to complete test.
viii. Partial discharge test is to be carried out on transformer.
ix. Party should get the detail transformer drawings approved from OIL prior to manufacturing of the transformer.

23.1.5 TEST
The following tests shall be carried out on the transformers

A. TYPE TEST
The transformer shall be type tested at CPRI/NABL or any government approved laboratory
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.

B. SPECIAL TESTS
(i) Partial discharge test as per IS: 6209-1982 and with Appendix A of IS: 2026 (Part 3)-1981.
(ii) Measurement of acoustic sound

C. DOCUMENTS TO BE SUBMITTED BY THE PARTY
i. Manufacture's test certificates for all the components & assemblies as required by IS-11171 with latest amendments should be submitted to us along with the materials.

D. TECHNICAL PARTICULARS
The following Technical Particulars with relevant test certificates to be furnished by the party along with the supply.
i. Type of transformer:
ii. Rating of transformer:
iii. Primary Winding Details:
iv. Secondary Winding Details:
v. Reference standards:
vi. No of Phases:
vii. Rated Frequency:
viii. Vector Group
ix. Type of Cooling:

x. Impedance Voltages:
xi. Tapping on HV:
xii. Enclosure type (IP):
xiii. No Load losses at rated voltage:
xiv. No load current at rated voltage:
xv. Total losses (Cu+ Iron) at rated load:
xvi. Insulation class:
xvii. Insulation level:
xviii. Average temp rise of windings over ambient temp (50 Degree):
xix. Dimension (L X B X H):
xx. Winding material:
xxi. Efficiency at unity PF at full load:
xxii. Efficiency at unity PF at half load:
xxiii. Percentage Regulation at unity PF:
xxiv. Percentage Regulations at 0.8 PF (Lag) 25: 25. Sound level:

24.0 Installation and Commissioning of 1250 KVA Transformer

A. GENERAL NOTES ON COMMISSIONING:
1. The party shall confirm that the I&C jobs shall be carried out under the direct supervision of an Engineer/an electrical supervisor holding a valid Electrical Supervisor's Certificate of Competency. The copy of certificate of competency should be submitted prior to the commencement of the commissioning jobs.
2. The party shall obtain permit to work from OIL's Engr.-in-charge before taking up commissioning works.
3. All tools & instruments for commissioning shall be arranged / provided by the party.
4. The party shall depute their commissioning team and commission the transformer within 30 days after getting the Commissioning call from OIL.
5. Testing & Commissioning of transformers shall be carried out by specialist /engineer from manufacturer. All pre commissioning testing of transformer like magnetic balance test, vector group test, IR test etc. are required to be carried out by party at site before energization of the transformer.
6. The commissioning of the transformer shall be considered as complete with the submission of the commissioning test records, operating & maintenance manuals, spares list of the transformer etc. to OIL.
7. Please note that whenever any reference to Indian Standard/International Standard is made in the above requirements / specifications, it shall be taken to mean the latest version, iteration or revision of the standard.

B. TECHNICAL NOTES ON COMMISSIONING:

1. Commissioning

Any material / spare not specified in the NIT but required for commissioning, item shall be supplied by party.

2. PRE-COMMISSIONING CHECKS:
After completion of installation of the transformer at the specified site, prior to energizing of the transformer, the following checks and tests shall be carried out on transformer:

i) Assembly, check as per manufacturer's drawings and instructions.
ii) Physical inspection for damages, external defects and remedial actions, if any.
iii) Check for proper fixing on foundation, levelling and tightness of foundation bolts.
iv) Check for proper tightness of transformer & its control devices, accessories, cables and earth connections.

v) Check meters, if any.

C. Earthing:
The Earthing shall be as described in the point nos. 6.1.0, 6.1.1, 6.1.2 and 6.1.3 of the Annexure-I

24.1.1 The commissioning of the Transformer shall be considered as complete only after the submission of the commissioning test records, operating & maintenance manuals, spares list of the Panel etc. to Oil India Limited.

24.1.2. It is to be noted that whenever any reference to Indian Standard/International Standard is made in the above requirements / specifications, it shall be taken to mean the latest version, iteration or revision of the standard.

25.0 Air Conditioner

25.1.0 SITC of 1.5 TR, 5 Star AC
i. SITC of Air Cooled split type 1.5 TR, 5 star rating BEE Air conditioners complete with Indoor unit(IDU), Outdoor unit (ODU), surface / concealed copper Refrigerant piping with insulation (EP foam pipe section) upto 3 Mtr (IDU to ODU), copper power cable upto 4 Mtr (IDU to ODU), R-410 Refrigerant or latest, Remote, suitable for 400/230V +10% of 50 Hz ,1 /3 phase AC supply capable of performing cooling, dehumidification, air circulation of following capacity with Scroll /reciprocating / rotary compressor as specified. Qty: 01 No.

25.1.1 SITC of 2.0 TR 5 Star AC:

i. SITC of Air Cooled split type 2 TR, 5 star rating BEE Air conditioners complete with Indoor unit(IDU), Outdoor unit (ODU), surface / concealed copper Refrigerant piping with insulation (EP foam pipe section) upto 3 Mtr (IDU to ODU), copper power cable upto 4 Mtr (IDU to ODU), R-410 Refrigerant or latest, Remote, suitable for 400/230V +10% of 50 Hz ,1 /3 phase AC supply capable of performing cooling, dehumidification, air circulation of following capacity with Scroll /reciprocating / rotary compressor as specified. Qty= 44 Nos.

25.1.2 SITC of Air cooled Floor Standing (Tower Type) 4.2 TR AC:

i. SITC of Air Cooled Floor Standing(Tower Type) 4.2 TR Air conditioners complete with Indoor unit(IDU), Outdoor unit (ODU), surface / concealed copper Refrigerant piping with insulation (EP foam pipe section) upto 5 Mtr (IDU to ODU), copper power cable upto 5 Mtr (IDU to ODU), R-410 or latest Eco-friendly Refrigerant, Remote, suitable for 400/230V +10% of 50 Hz ,1 /3 phase AC supply capable of performing cooling, dehumidification, air circulation of following capacity with Scroll / reciprocating / rotary compressor as specified. Qty: 16 No.

25.1.3 Installation and Commissioning of Air conditioners.

All Air conditioners are to be installed as per the Standard installation and commissioning procedure. All required accessories and items are to be provided by the contractor.

25.1.4 Warranty/ Guarantee

All the Air conditioners should have minimum 1 year standard Warranty/ Guarantee.

26.0 **TECHNICAL SPECIFICATIONS FOR GRID INTERACTIVE ROOFTOP MOUNTED SOLAR PHOTO-VOLTAIC SYSTEM**

26.1.0 Setup of a 250 KWp grid interactive solar photovoltaic power plant (without battery back-up) at the Rooftop of OIL Townhsip, Oil India Limited (OIL), Jodhpur, Rajasthan, India.

The Grid Interactive Rooftop Mounted Solar Photovoltaic (PV) plant shall consist mainly of the following components:

A) Solar PV Modules- Waree/Adani/TATA Power/Vikram Solar

Specification-
SPV Mono/Poly crystalline modules to be supplied shall be of conforming to Tier -1. SPV modules shall contain high power mono/poly crystalline silicon solar cells.

Stabilized output of the Solar Power Plant shall not be less than 250 KWp under Standard Test Condition after one year of operation from date of Commissioning of solar plant.

The plant should be put under stabilization period for 3 months from the date of commissioning.

Stabilized output of the Solar Power Plant shall not be less than 250 KWp under Standard Test Condition after one year of operation from date of Commissioning of solar plant.
Peak power point voltage and the peak power point current of any supplied module and / or any module string (series connected module) shall not be more than 3% from the respective arithmetic means for all modules and / or for all module strings, as the case may be.
The solar cell shall have surface anti-reflective coating to help in absorbing more light in all weather conditions.
Each module shall have low iron tempered glass front for strength & superior light transmission. It shall also have tough multi-layered polymer back sheet for environmental protection against moisture with high electrical insulation.
The module frame shall be made of aluminium or corrosion resistant material that shall be electrically & mechanically compatible with the structural material to be used for mounting the modules.
The solar modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with the thermal expansion properties of the Silicon cells and the module framing arrangement / material. The encapsulation arrangement shall ensure complete moisture proofing during life of the solar modules.
Solar module shall be laminated using lamination technology using established polymer (EVA) and Pedlar / Polyester laminate.
The PV modules used must qualify to the latest edition of IEC 61215 & IEC 61730 (Edition I and II) for safety qualification testing, Salt Mist Corrosion Resistant (IEC 61701, IEC 62716), Sand Storm Test (IEC 60068-2), Fire Resistance (EN 13501-1 class E, IEC 61730 class C) & Ammonia Corrosion Resistant: IEC 62716. 2.1.16 Modules shall be PID-free
Photo conversion efficiency of SPV Module shall not be less than 16%. Module shall be made of high transmittance glass front surface giving high encapsulation gain.

The PV modules should have lowest temperature coefficient and positive power tolerance. Negative power tolerance shall not be accepted.

Module rating is considered under standard test conditions; however Solar Modules shall be designed to operate and perform under site conditions.
All materials to be used shall have a proven history of reliability, light weight and stable operation in external outdoor applications and shall have service life of at least 25 years
Solar PV Module design shall conform to following requirement:
a. Weather proof DC rated MC connector and a lead cable coming out as a part of the module, making connections easier and secure, not allowing any loose connections.
b. Resistant to water ingress abrasion, hail impact, humidity & other harsh environmental factors for the worst situation at site.

PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 12 years and 80% at the end of 25 years.

The fill factor of module shall not be less than 0.70 (typical).
The V-I curve of each PV module with Sl. Nos. shall be submitted along with Modules meeting the required specifications.
Identification and Traceability:
Each PV module shall have RF identification tag. The following information must be mentioned in the RFID used on each module. This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions.
i) Name of the manufacturer of PV module
ii) Name of the manufacturer of Solar cells
iii) Month and year of the manufacturer (Separately for Solar cell and module)
iv) Country of origin (Separately for Solar cell and module)
v) I-V curve for the module
vi) Wattage, Im, Vm and FF for the module
vii) Unique Serial No and Model No of the module
viii) Date and year of obtaining IEC PV module qualification certificate
ix) Name of the test lab issuing IEC certificate
x) Other relevant information on traceability of Solar cell and module as per ISO 9000 series.

Marking:

Each PV module used in any solar power project must use a RF identification tag. The following information must be mentioned in the RF ID used on each module
(This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions.) and also in clear and indelible markings:
- Name, monogram or symbol of manufacturer of PV module;
- Name, monogram or symbol of manufacturer of Solar cells;
- Unique Serial number and model number of the module;
- Polarity of terminals or leads (colour coding is permissible)
- Maximum system voltage for which the module is suitable;
- Date & place (country of origin) of manufacture (separately for PV module and solar cell)
- I-V Curve for the module;
- Wattage, Im, Vm & FF for the module;
- Name of the test lab issuing IEC certificate;
- Other relevant information on traceability of solar cells and module as per ISO 9000;

The 250 KWp Solar PV power plants shall continuously measure solar radiation, ambient temperature, wind speed and other weather parameters, generation of DC power as well as AC power generated from the plant. Each PV module shall be of minimum 300Wp.
PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 12 years and 80% at the end of 25 years.

B) Module Mounting Structures

PV Array / String Configurations: The Solar array/string shall be configured in multiple numbers of sub-arrays / string, providing optimum DC power to auditable number of sub arrays / string. The contractor shall submit their own design indicating configuration of Inverters respective sub arrays/string and bill of material.

The Module structure design shall be appropriate and innovative with a factor of safety of not less than 1.5. The contractor may choose to offer module mounting structure as per their design / economics.

The structure shall be designed to allow easy replacement of any module and shall be in line with site requirement

The mounting structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the base properly.

The mounting steel structure shall be as per relevant BIS & same shall be vetted by OIL's Civil Engineer-In-Charge. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time.

Nut & bolts, supporting structures including Module Mounting Structures shall have to be adequately protected from atmosphere and weather prevailing in the area.

All fasteners shall be of stainless steel of grade SS 304.

The Mounting structure shall be grounded properly using maintenance free earthing kit.

The support structure & foundation shall be so designed to withstand speed for wind zone of the location as given in relevant Indian wind load codes/ standards.

Relevant BIS shall be followed for structural design. Contractor shall submit the DBR and STADD calculations along with the structural design within 10 days for approval of OIL's Civil Engineer-In-Charge.

SPV module mounting structure

a. Type: Fixed

b. Azimuth: 0 degree True south

c. Tilt Angle: At altitude or as per site requirement.

Hot dipped Galvanized 80 Microns Steel Structure must be considered for all type of structural steel proposed for the power plant. Minimum thickness of galvanization should be at least 80 microns.

Design drawings with material selected shall be submitted for prior approval of OIL India within 10 days of detailed order. The manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagram and drawings. The drawings along with detailed structure design and material selected and their standards shall be submitted in four sets to Oil India Ltd for approval before starting the execution work. The work will be carried out as per design approved by Oil India Ltd.

C) INVERTER(S): MAKE: SMA/ABB/MEDHA/LUMINOUS

The inverter(s) must be able to cater to the need of 250KWp roof top solar power plant.

Inverter, grid interactive in nature, shall consist of MPPT controller, inverter of suitable aggregate rating in array design/suitable rating in case of string design, associated control and protection devices etc all integrated into inverter. It shall provide necessary protections for Grid Synchronization and Data Logging/Monitoring. The Inverters should convert DC power produced by SPV modules in to AC power and must synchronize automatically its AC output to the exact AC Voltage and frequency of Grid. The contractor may choose the inverter as string/Central as per their Design/ Project Philosophy.

The DC energy produced has to be utilized to maximum and supplied to the bus for inverting to AC voltage to extract maximum energy from solar array and provides 3-ph, 433V AC/ (+15% to – 10%), 50+/-1.5 Hz with total harmonic voltage distortion less

than3% to synchronize with local grid. DC voltage ripple content shall be not more than 3%.

Each inverter shall be compliant with IEEE standard 929-200 or equivalent and IEC 60068-2 standards for Environmental Testing.

The Inverters shall be of very high quality having efficiency not less than 98% and shall be capable of running in integrated mode.

Degree of protection of the indoor Inverters shall be at least IP-31 and that of outdoor at least IP-65.

Built in with data logging to remotely monitor plant performance through external PC.

The Inverters shall be designed for continuous, reliable power supply as per specification.

The Inverters should be designed to be completely compatible with the SPV array voltage and Grid supply voltage.

The dimension, weight, foundation details etc. of the Inverter shall be clearly indicated in the detailed technical specification.

The system should be capable of providing all the data including that of meter and Inverter to the central software on IEC-104 protocol. All the equipment's /hardware /software for complying to the same will be in the contractor's scope.

The Inverter shall be capable of complete automatic operation, including wake-up, synchronization & shut down independently& automatically.

Both AC & DC lines shall have suitable fuses, Metal Oxide Arrestors/surge arrestors and contactors to allow safe start up and shut down of the system. Fuses used in the DC circuit should be DC rated.

Inverters shall operate in sleeping mode when there will no power connected.

Protections:

- Over voltage both at input & output.
- Over current both at input & output.
- Over / under grid frequency.
- Heat sink over temperature.
- Short circuit.
- Protection against lightening.
- Surge arrestors to protect against Surge voltage induced at output due to external source.
- Any other protection.
- Anti- Islanding Protection

It should have user friendly 4X40 LED/LCD display for programming and view on line parameters such as:

- Inverter per phase Voltage, current, kW, kVA and frequency,
- Grid Voltage and frequency,
- Inverter (Grid) on Line status,
- PV panel voltage,
- Solar charge current and ambient temperature,
- Individual power stage heat sink and cabinet temperature,
- Solar Radiation (with external pyronometer with in scope)
- Inverter Import export kWh summation
- Solar kWh summation
- Inverter on
- Grid on
- Inverter under voltage/over voltage

-Inverter over load
- Inverter over temperature.

The Inverters shall have arrangement for adjusting DC input current and should trip against sustainable fault downstream and shall not start till the fault is rectified.

The 3 phase Inverters shall be from internationally reputed firms, which will incorporate latest Technological advance to provide highly reliable and efficient energy conversion from DC to AC.
Inverter shall be capable to synchronize independently & automatically with OIL's System grid power line frequency to attain synchronization and export power generated by solar plant to the internal electrical system.
The Inverter shall be capable of complete automatic operation, including wake-up, synchronization & shut down.
The Inverter shall be capable of operating in parallel with the grid utility service and shall be capable of interrupting line fault currents and line to ground fault currents.
The Inverter shall be able to withstand an unbalanced load conforming to IEC standard and relevant Indian electricity condition. The Inverter shall include appropriate self-protective and self-diagnostic features to protect itself and the PV array from damage in the event of Inverter component failure or from parameters – beyond the Inverter's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the Inverter front panel to cause the inverter to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the Inverter, including commutation feature, shall be cleared by the Inverter protective devices and not by the existing site utility grid service circuit breaker.
The Inverter shall go to shut down/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay.

- When the power available from the PV array is insufficient to supply the losses of the Inverter, the Inverter shall go to standby/shutdown mode.
- The Inverter control shall prevent excessive cycling of shut down during insufficient solar radiance.

Operation outside the limits of power quality as described in the technical data sheet should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnection are
i. Neutral voltage displacement
ii. Over current
iii. Earth fault and
iv. Reverse power

In each of the above cases, tripping time should be very less.

Following Technical documents of Inverter shall be supplied for approval after placement of order.

- Detailed technical description of the complete unit
- Instructions for installation and operation
- Electrical diagrams of all internal cabling, necessary for installation, maintenance and fault finding.
- Description of electrical and mechanical characteristics of units.
- Maintenance and fault-finding procedures.
- Safety precautions.
- Software for data monitoring with detailed description.
- Details of data acquisition
- Factory test reports in details on various parameters.
- Trouble shooting procedures.
- All maintenance requirements and their schedules, including detailed instructions on how to perform each task.
- Detailed schematics of all power instrumentation and control equipment and subsystems along with their interconnection diagrams. Schematics shall indicate

wiring diagrams, their numbers and quantities, type and ratings of alt components and subsystems.

- A detailed bill of materials which shall list components model numbers, quantities and manufacturer of each supplied item.
- All documents and write ups shall be in English. They shall be clean and legible, and must be checked, signed, approved and dated by a competent representative of the contractor.

D) PV Cable

Specification: Single-pole, double insulated EBXL, XLPO (Strings) solar cable of adequate rating with fine-wire copper strand. The robust, flexible and space-saving design ensures constant electrical and mechanical properties during the whole life of the PV installation. TÜV certified according to the latest regulations. -40°C to +120°C (permanent) UV, ozone and hydrolysis resistant 1.1KV, Copper Armoured XLPE insulated.
Make: Polycab, Havells, Finolex

E) MC4 Connector (Pair Male-Female)

Specification: With safety clip that requires a tool to unlock (NEC2008 compliant) Certified for applications with modules according to IEC61730, Safety class II, Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment -with Minimal voltage drop, High current-carrying capacity, Minimal power loss, Minimal contact resistance, High durability contacts withstand up to 1 million mating cycles, Operating temperatures up to 350°C.
Make: Reputed Make

F) Junction Boxes

Specification: Dust, vermin and water proof made from FRP
Make: Reputed Make

G) AC Cable

Specification: Adequate rating Power Cable shall be 1.1 kV, multi-core, stranded Copper conductor, XLPE insulated galvanized steel wire/strip armoured, flame retardant low smoke (FRLS) with PVC outer sheath made on PVC compound, conformity to IS:7098& other relevant standards.
Make: Polycab/ Havells/Finolex

H) Distribution Boxes, cables and accessories

Specification: An ACDB shall be provided in between PCU and Load/grid interface of suitable rating of connection and disconnection of PCU from load Class 0.5 Energy Meter for solar power monitoring.
All the cables shall be supplied conforming to IS standard as per requirement.
Make: Reputed Make

I)LT Panel

Specification: LT Panel with MCCBs at incomers and outgoing with proper rating Auto synchronization facility having reverse power and other protection relays. The Components shall be from the Make as specified. Having 2 Separate Compartments for Protective items and Power Distribution/ Collection. This LT panel shall be installed in OIL Housing main sub-station and shall be fed from an adequate capacity feeder (already designated under sub-station design consideration)
Make: Reputed Make

J) Monitoring System

Specification: This Monitoring System should be able to show and log all the major parameters from the Inverters and AC system and should be able to generate reports (generation, other operation parameters etc.) with errors and faults. This system should be accessible through web portal for remote monitoring. It can store historical data. It must be industrial grade only.
Make: MEDHA/SMA/LUMINOUS/ABB

K) Earthing System
Specification: As per relevant IS

L) Lightning Arrester
Specification: As per relevant IS, ESE Type
Make: Reputed Make

M) MEASUREMENT OF ENERGY AND METERING

Main Net meter (0.5 class minimum) along with suitable CT-PT (0.5 class minimum) to be installed at OIL Housing Main Substation (Metering Cubicle). A suitable outgoing feeder from OIL's substation shall provide power supply to the LT panel & the Solar/Check (Net) Metering Set with suitable CT- PT Set (if required) having accuracy of 0.5 class minimum shall installed in the LT panel. The incomer to the LT panel shall be termed as connection point. The necessary connections to the Solar Meter shall be made in such a way that is can monitor accurately the units generated or consumed by the roof top solar power plant.
This reading of the solar meter may be tallied from time to time with the data available with web-portal of Weather Monitoring System (shall record all data related to the roof top solar power plant).
Note: Connection point is the place where the DISCOM supply and the Solar Plant supply integrates.

Make: As per standard approved makes of JdVVNL.

MEASUREMENT OF ENERGY AND METERING

Metering Systems:
The Operator shall maintain the Metering System (which shall include NET / TOD IEGC compliant meter, current and potential transformers and metering equipment). The Metering System will be designed and installed conforming to prudent practice so as to measure outgoing energy and power delivered by the Solar plant to the OIL's domestic sub-station at the delivery point, i.e. point of inter connection and also for the import of energy for any purpose. Metering equipment shall comply with the requirements of Grid Code but shall not be inferior to 0.5 accuracy Class minimum.

The Owner shall have the right to carry out inspections of the Metering Systems from time to time to check their accuracy.

Sealing and Maintenance of Meters
The Metering System shall be sealed in the presence of both parties
When the Metering System and/or any component thereof is found to be outside the acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, re-calibrated or replaced by the Operator on priority.
Breaking of meter seals shall not be done except in case of any requirement by testing / calibration. Even in such case the Operator shall immediately inform the Owner of such requirement to enable Owner for deputing its representative. All testing / calibration of metering system shall be done by accredited agency.

All testing and metering equipment shall conform to the relevant IS
Solar Meter means meter for measurement power and energy as per **IEGC**
Whereas Main(net) Meter with all necessary CT-PT shall be installed at the main sub-station/meter room only.
All the above shall be in scope of the contractor only.

Approval from State DISCOM/any other state/central government bodies and payment of fees, if any, for integration of supply from the proposed Solar Power plant including testing/certification of NET/Solar meters/CT-PTs etc., if needed, shall be under the scope of the Contractor. No payment shall be paid by OIL in this regard.

N) Surge protection devices in both DC power side and AC power side
Standard make only.

O) Any other item not mentioned but required for proper installation and commissioning of the plant shall have to be provided by the contractor as per standard.

26.1.1 LOCATION:
Location Details
Name of State: Rajasthan
District: Jodhpur
Location: OIL Township of Oil India Limited (rooftop)
Latitude: 26°14'12.39"N
Longitude: 73° 3'2.23"E
Roof top area of installation: 30,000 sq. feet (or usable area available at top of all buildings of OIL Housing)

26.1.2 OPERATING CONDITIONS:
a. Operating Environment: 10 to 50 Deg. C
b. Operating Relative Humidity: 0 to 80%
c. Storage temp.: 15 to 45 Deg. C
d. Elevation: 221 m above MSL

26.1.3 SCOPE OF SPECIFICATION:

a) The scope of these specifications shall cover design, engineering, manufacture, quality surveillance, testing at manufacturer's works, packing and supply, erection, testing and commissioning and performance testing of 250KWp (estimated) grid interactive Rooftop mounted solar photovoltaic system with associated components for installation at Oil India Limited Township, Jodhpur

b) The systems shall be complete with PV modules, inverter, metering, junction boxes, AC, DC distribution boards and cables, communication interface, and any other equipment necessary for safe and efficient operation of the system.

c) The work shall also include interconnection of PV system with the designed OIL grid supplying power to all the buildings.

d) The civil works for installation of complete system shall also be in scope of contractor.

e) The equipment offered shall conform in all respects to high standards of engineering, design and workmanship and be capable of performing in commercial operation up to Contractor's guarantee in a manner acceptable to OIL, who will interpret the meaning of drawings and specifications and shall have the power to reject any work or materials, which in his judgment are not in full accordance therewith.

f) It shall be the responsibility of the Contractor to ensure that all the works as per scope of the specification are completed for safe and efficient working of the system.

g) All the necessary co-ordination with regard to sub-contracted items shall be carried out by the Contractor. The customer (OIL) will communicate only with the Contractor for all matters pertaining to this contract.

h) Considering the reliability of the grid, no electrical storage batteries are envisaged as excess electricity generated by the solar panels which is not required by the equipment/devices in the building premises shall be exported to the grid.

26.1.4 CODES AND STANDARDS

a) All Equipment and accessories shall comply with requirement of standards published by Bureau of Indian Standards (BIS). In-case no BIS codes exist the equipment shall meet the requirement of international standard including IEEE for design and installation of grid connected PV system.

b) The SPV Module must be provided with acceptable Test & Certified documents.

c) The quality of equipment supplied shall be generally controlled to meet the guidelines for engineering design included in the standards and codes listed in the relevant ISI and other standards, such as:

• IEEE 928: Recommended Criteria for terrestrial PV power systems.
• IEEE 929: Recommended practice for utility interface of residential and intermediate PV systems.
• IEEE519: Guide for harmonic control and reactive compensation of Static Power Controllers.
• National Electrical NFPA 70-1990 (USA) or Equipment National standard.
• National Electrical Safety Code ANSIC2 (USA) or equipment national standard.
• IEC: 61215 (2005) - Crystalline silicon terrestrial photovoltaic (PV)modules–Design qualification and type approval
• IEC 61683 / IS 61683 - Efficiency Measurements of Power Conditioners/Inverters including MPPT and Protections
• IEC: 61730 -1, -2 Photovoltaic (PV) module safety qualification Part 2: Requirements for testing
• IEC: 60904-1(2006) Photovoltaic Devices-Part-I: Measurement of Photovoltaic current-Voltage Characteristic
• IEC: 62446 (2009)- Grid-Connected Photovoltaic Systems— Minimum Requirements for System Documentation, Commissioning Tests and Inspection:
• IS 9000: Basic environmental testing procedure for Electronic and electrical items.

26.1.5 SPECIFIC TECHNICAL REQUIREMENTS:

a) The Solar PV power system shall be rooftop mounted, grid connected without battery back-up.

b) The PV Array shall consist of a number of individual PV modules or panels that have been wired together in a series and/ or parallel combination and shall meet the generation power capacity of 250KWpeak (estimated).

c) The DC power generated from SPV array shall be converted to AC power with Power Conditioning Unit /Inverter, consisting of grid-tied Inverter and the associated control and protection devices. The voltage level shall match the grid voltage.

d) Output from Power Conditioning Unit shall be connected to an existing LT power distribution panel, wherein continuous synchronization with grid power shall be automatically active through static circuitry mechanism & devices.

e) Maximum available power of Solar PV Plant will be drawn during the daytime and during any shortfall in power generated by Solar PV Plant during time then extra power required shall be drawn from the Utility Source/without interruption to serve the load requirement. In case of any failure of grid power supply, PV Solar power supply will also automatically get disconnected immediately and the same will be restored automatically at restoration of grid power.

f) DUTY CYCLE: Average Hours of Operation/day: 8-11 hours per day, as per the solar insolation levels of the site.

25.1.6 SUPPLY & INSTALLATION OF DC COMBINER BOX /ARRAY JUNCTION BOX:

a) Enclosure: The array junction boxes shall be made of PC-GFS Polycarbonate-Glass fibre substance) thermoplastic having minimum IP65/66 protection in accordance with IEC 60 529 with the help of internally embedded polyurethane gasket.

b) The enclosure should be double insulated with protection class II. In view of the same, IEC60439/IEC61439 (new revision) comes as an important standard as it fulfils this requirement of enclosure to be double insulated. (Test certification is required for IP65/ IP 66 degree of protection.) The lid shall be of transparent poly-carbonate.

c) Fuse Protection on Strings: DC fuses rated from 2A to 25A from leading manufacturers to be used in the combiner box to provide over-current protection.

d) Surge Protection Device: Surge Protection devices or SPD to be provided to protect the combiner/junction box from any power surge and voltage spike. SPD to be used should meet Type 2 regulations, and to be typically rated between 600 to 1000V.

e) Input Glands/Connectors: The combiner/array junction box offered is to be provided with IP67rated Cable Glands or MC 4 connectors at the input side to lead the array strings into the box. Suitable markings should be provided for easy identification and cable ferrules shall be fitted at the cable termination points for identification.

f) Degree of protection against mechanical load: IK 08 (5 Joule)

g) Toxic behaviour: Halogen/Silicon free, conform to RoHS directive 2002/95/EC

h) Temperature Tolerance range: -40 deg C to +120 deg C

i) Chemical Resistance: Acid, Lye, Petrol, Mineral Oil & partially resistant from Benzene.

j) UV behaviour: UV stabilized, even after many years there should be no sign of brittleness.

26.1.7 METERING SCHEME

a) Metering is required to measure the Solar Gross Generation on continuous basis and register cumulative energy based on 15-minute interval basis, daily, monthly and yearly energy generation.

b) The average voltage and power factor based on 15-minute interval must also be recorded.

c) Meter must also display on demand, instantaneous, AC system voltages and currents, frequency, reactive power with sign, total harmonics current and voltage distortion etc.

d) Meters shall comply with the requirements of CEA Regulations on "Installation and Operation of Meters" and in conformity with IS 13779 or IS 14679.

e) An integrating pyranometer (class II or better) is to be provided with the sensor mounted in the plane of the array. Readout shall be integrated with data logging.

26.1.8 POWER QUALITY REQUIREMENTS:

a) DC Injection in to the grid: The injection of DC power into the grid shall be avoided by proper technology at the output of the inverter. It is proposed to limit DC injection within 1% of the rated current of the inverter as per IEC 61727.

b) The limits for harmonics shall be as stipulated in the CEA Regulations on grid connectivity which are as follows:

• Total Voltage Harmonic Distortion= 5%
• Individual Voltage Harmonic Distortion=3%
• Total Current Harmonic Distortion=8%

c) Voltage Unbalance-The Voltage Unbalance in the grid shall not exceed 3.0%.

d) Voltage Fluctuations: The permissible limit of voltage fluctuation for step changes which may occur repetitively is 1.5%. For occasional fluctuations other than step changes the maximum permissible limits is 3%.

26.1.9 COMMUNICATION INTERFACE:

a) The project envisages a communication interface which shall be able to support
• Real time data logging
• Event logging
• Supervisory control
• Operational modes
• Set point editing

b) The following parameters shall also be measured and displayed continuously.
• Solar system temperature
• Ambient temperature
• Solar irradiation/insolation
• DC current and Voltages
• DC injection into the grid (one-time measurement at
• Efficiency of the inverter
• Solar system efficiency
• Display of I-V curve of the solar system
• Any other parameter considered necessary by contractor of the solar PV system based on prudent practice.

c) Data logger/PC based monitoring system must record these parameters for study of effect of various environmental & grid parameters on energy generated by the solar system and various analysis would be required to be provided through bar charts, curves, tables, which shall be finalized during approval of drawings.

d) The communication interface shall be an integral part of inverter and shall be suitable to be connected to local computer/SCADA and also remotely via the Web using either a standard modem or a GSM/WIFI modem or using any communication interface.

26.2.0 WEATHER MONITORING STATION:

a) An integrating PYRANOMETER(s) for measuring the Solar Irradiance is to be provided, with the sensor mounted in the plane of the array. Readout is to be integrated with the data logging system.

b) In addition, wind vanes for wind speed data, temperature probes for recording the Solar panel temperature and ambient temperature are to be provided.

26.2.1 LIGHTNING PROTECTION AND EARTHING:

a) Required numbers of suitable lightning arrestors should be installed in the array area. Lightning protection shall be provided by the use of suitable earthing conductors and electrodes so that any lightning strike may find an alternate route to earth. Protection shall meet requirements of Central Electricity Regulations, 2010, and IS 2309:1969 (Protection of Buildings and allied structures from lighting).

b) Each array structure of the PV system should be grounded properly as per IS: 3043-1987.Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with CEA Regulation-2010. Earth resistance should be tested in a dry weather in presence of the representative of customer, after earthing work is complete, with a calibrated earth tester and should have a value not more than the value specified in the relevant Code/Rules.

c) In case the SPV Array cannot be installed close to the equipment to be powered & a separate earth has been provided for SPV System, it shall be ensured that all the earth connections are bonded together to prevent the development of potential difference between any two earths.

26.2.2 CIVIL WORKS:
a) Necessary approval shall be taken from concerned civil engineer of OIL before starting or executing civil works.

b) Embedment of structures suitable for mounting PV modules.

c) All the machinery such as hydra, JCBs, fork-lifts, for unloading of materials at site, movement of materials, foundation, erection of structures, module mounting, etc. shall be in the scope of Vendor.

Please note that mounting structure for Rootop solar Power plant may be mounted only on to the RCC columns projected above terrace which transfers load directly into the foundation. Any kind of piercing or resting on roof slab may not be permitted due to following reasons:

- The RCC slab diaphragm (12.5cm thick) is not designed for taking heavy concentration load.
- Resting of module mounting structure on terrace slab may endanger the integrity of terrace Water proofing and over-deck insulation system.

26.2.3 SYSTEM DOCUMENTATION:

Complete documentation on the system must be provided to OIL. System documentation should include an owner's manual and copies of relevant drawings for whatever system maintenance might be required in the future.

26.2.4 TESTS AND TEST REPORTS:

Final acceptance tests for the PV plant shall include, but not limited to, the following:

a) Visual inspection
b) Verification that all required system and equipment labels, markings and placards are correct and in the proper locations. This includes ensuring that all equipment is properly listed, identified and labelled, suitable for the conditions of use, and installed according to the listed product instructions.
c) Wiring & cabling
d) Earthing connections
e) Mounting and support structures
f) Modules
g) Lightning protection including surge protection
h) Insulation Resistance Measurement
i) Importance of PV system wire insulation for safety and performance
j) Measurement methods for AC and DC circuits
k) Interpretation of insulation test data and application of the results
l) Test equipment selection
m) Array Performance Measurement

- Electrical measurement, including calculating circuit voltages and currents to verify that the PV array and system operating parameters are within specifications.
- I-V Curve Tracing and discrete voltage and current measurement
- PV system performance verification, correction and measurement using capacity test
- Interpreting I-V curves for performance troubleshooting
- Power performance Index and Energy performance index
- Calculations of energy yield
- Power rating, inverter efficiency, module temperature, array yield, system losses, etc.

26.2.5 MAINTENANCE REQUIREMENT:

a) Easy access shall be provided for all components in the SPV plant and grid connecting equipment. Maintenance platform shall be provided for easy inspection of all the equipment.

b) If special tools are required for installation and maintenance, the contractor shall indicate the same and to be supplied free of cost.

c) The Contractor shall furnish operating and maintenance instruction manual to enable the purchaser to carry out maintenance of equipment effectively and safely.

d) Washing / cleaning of SPV panels would be carried out as per the prudent practice of the contractor.

26.2.6 LAYOUT REQUIREMENT:

The overall dimensions of the SPV Plant shall suit the Rooftop space provided for the layout requirements. The arrangement to suit this space shall be intimated at the time of approving the general arrangement drawing of the equipment.

26.2.7 INSTRUCTIONS, O&M MANUALS & DOCUMENTS TO BE SUBMITTED AFTER SUCCESSFUL COMPLETION OF THE ROOF TOP SOLAR PV PLANT:

a) Two copies of Instruction and Operation and Maintenance Manual in English should be provided with the system.

b) The manual shall be furnished at the time of dispatch of the equipment and shall include the following aspects:

• Erection drawings with written assembly instructions.
• Detailed instructions and procedures for the installation operation and maintenance.
• About solar PV system– its components and expected performance.
• Clear instructions about mounting of PV module (s)
• About the electronics
• DO's and DONT's
• Principle of Operation of various equipment
• Safety and reliability aspects
• Metering scheme
• About power conditioning unit's software and controls
• Clear instructions on regular maintenance and troubleshooting of solar power plant
• Name and address of the person or service centre to be contacted in case of failure or complaint.
• Rated voltages, current and all other technical information which may be necessary for correct operation of the SPV plant.
• Catalogue numbers of all the components which are liable to be replaced during life of the SV plant and all the component parts.
• Trouble shooting and diagnostic procedure

26.2.8 **AC DISTRIBUTION BOARD (ACDB)**

Inverters installed in a control room converts DC energy produced by the solar array to AC energy. The AC power output of the inverters shall be fed to a local ACDB & then in a combined manner to be fed to the main ACDB (in LT panel) which also houses energy/solar meter. The 415V/433V AC output from main LT panel shall be exported by cable of required capacity to OIL domestic sub-station.
All the power cables shall be taken through top / bottom of the panel or as per site requirement.
The ACDBs shall fitted with suitable rating & size copper bus, MCCB, HRC fuses/circuit breaker/isolator, indicators for all incomer and outgoing terminals, LED voltmeter & Ammeter with suitable selector switches to monitor & measure the power to be evacuated.
Nut & bolts including metallic shall have to be adequately protected against atmosphere and weather prevailing in the area.
The overall dimension, weight, sheet thickness, painting etc. should be indicated by the Contractor.

26.2.9 MINIMUM TECHNICAL REQUIREMENT / STANDARD FOR SOLAR PHOTOVOLTAIC (PV) PLANT

PV MODULES:

The PV modules must conform to the latest edition of any of the following IEC/equivalent BIS Standards for PV module design qualification and type approval:
Crystalline Silicon Terrestrial PV Modules IEC 61215 / IS14286
Thin film PV modules IEC
Concentrator PV Modules & Assemblies IEC 62108

In addition, the modules must conform to IEC 61730 Part 1- requirements for construction & Part 2 - requirements for testing, for safety qualification.
PV modules to be used in a highly corrosive atmosphere (coastal areas, etc.) Must qualify Salt Mist Corrosion Testing as per IEC 61701.
BALANCE OF Plant (BoP) ITEMS/ COMPONENTS:
The BoP items / components of the SPV power plants/ systems deployed Under the Mission must conform to the latest edition of IEC/ equivalent BIS Standards as specified below:

BoP item / component		Applicable IEC / equivalent BIS Standard
	Standard Description	Standard Number
Inverter(s)*	Efficiency Measurements	IEC 61683
	Environmental Testing	IEC 60068 2
Charge controller/ MPPT units*	Design Qualification Environmental Testing	IEC 62093 IEC 60068 2 (6,21,27,30,75,78)
Storage Batteries	General Requirements & Methods of Test Tubular Lead Acid	IEC 61427 IS 1651/IS 133369
Cables	General Test and	IEC 60189
Measuring Methods PVC insulated cables for working Voltages up to and including 1100 V-Do-, UV resistant for outdoor installation		IS 694/ IS 1554 IS/IEC 69947
Junction Boxes / Enclosures	General	Requirements IP 65 (for outdoor) / IP 21 (for indoor) IEC 62208
SPV System	Design PV Stand-alone System design verification	IEC 62124
Installation Practices	Electrical installation of buildings Requirements for SPV power supply systems	IEC 60364-7-712

* Must additionally conform to the relevant national/international Electrical Safety Standards.

26.3.0 WARRANTY

The mechanical structures, electrical works including power conditioners / inverters / charge controllers/ maximum power point tracker units/Transformer, ACDB, LT DB, distribution boards / digital meters / switchgear / storage batteries, all equipment etc. and overall workmanship of the SPV power plants/ systems must be warranted against any manufacturing/ design/ installation defects for a minimum period of 5 years.

PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 12 years and 80% at the end of 25 years.

System warranty certificate for the entire system is to be strictly issued by contractor of whole plant for 5 years from the date of commissioning.

26.3.1 NOTE:

a) General arrangement drawing of the plant to be approved by OIL prior to supply and installation.

27.0 **INSTRUCTIONS FOR INSTALLATION AND COMMISSIONING:**

i. The contractor shall execute the jobs as per specifications and OEM guidelines

ii. Contractor shall issue his/her work persons with all the safety gadgets.

iii. Quality of jobs carried out by the Contractor shall be of high standard and should be as per the norms of Central Electricity Authority Regulations, 2010, NEC and other electrical standards recognized by the company.

iv. Installation & commissioning shall be considered as complete only if it meets the requirement of OIL.

vi. OIL shall reserve the right to ask the contractor to re-do poor quality job at no extra cost to OIL.

28.0 MANPOWER

i. All personnel deputed by the Contractor shall be competent for the job.

ii. All workers shall be medically fit and able to carry out the various jobs assigned to them.

iii. Job shall have to be carried out in consultation with OIL.

iv. The boarding/lodging, transportation to site, including transportation of materials at site and related costs shall be under the scope of the contractor.

v. Loading and unloading of materials/ machines shall be the scope of the Contractor.

29.0 General HSE points to be adopted by the Contractor:

a) It will be solely the Contractor's responsibility to fulfil all the legal formalities with respect to the Health, Safety and Environmental aspects of the entire job (namely, the persons employed by him, the equipment used, the environment etc.) under the jurisdiction of the district of that state where it is operating. The Contractor has to ensure that all sub-Contractors hired by him/her comply with the same requirement as the Contractor himself/herself and shall be liable for ensuring compliance all HSE laws by the sub- Contractors.

b) The number of work persons hired/engaged by the Contractor shall depend on the quantum and/or exigency of jobs. Company engineer/ company supervisor may direct the Contractor/Contractor's supervisor to hire more persons if considered essential.

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

d) Any issues regarding compensation arising out of the job carried out by the Contractor whether related to pollution, Safety or Health will be solely under the scope of the contractor and contractor cannot make OIL liable for the same.

e) Any compensation arising due to accident of the Contractor's personnel while carrying out the job will be solely the responsibility of the Contractor and contractor cannot make OIL liable for the same.

30.0 TOOLS AND TACKLES:

a) All tools and tackles shall be of standard make and must conform to IS or relevant standard.

b) Whenever OIL wishes to inspect, Contractor shall produce the tools and tackles for inspection. Items must be replaced suitably whenever found defective.

c) All tools & tackles required for carrying out the job shall have to be arranged by the contractor.

31.0 CUSTOMER'S ON SITE INSTRUCTION:

a) Contractor shall provide necessary onsite instruction and demonstration on the system related today to day operation & maintenance of the system including basic troubleshooting.

b) On-site instruction shall be considered by the Vendors and costs towards this, if any, shall be deemed to have been included in the overall quoted costs of the system. No additional costs towards to & fro travel, boarding & lodging shall be made on this account.

32.0 COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (CAMC)

32.1.0 Comprehensive Annual Maintenance Contract:

32.1.1 Contractor of the solar PV plant has to take over the annual maintenance of the plant for 10 years once the plant is successfully handed over to OIL after successful installation & commissioning and completion of defect liability period of the entire contract.

32.1.2 Successful Handover: After successful commissioning of the plant.

32.1.3 Date of Commissioning: The day whole plant is commissioned and successfully connected/synchronized to the Grid (DISCOM-JdVVNL). After which a completion certificate shall be provided by the contractor with all relevant supporting documents.

Note: All pre commissioning testing of the roof top solar power plant shall be carried out as per OEM requirement. And the same shall be done in presence of OIL's Engineer-In-Charge.

32.1.4 . BRIEF POINTS REGARDING THE COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT

a) The contractor shall ensure trouble free operation of the complete solar PV plant system.

b) The contractor shall carry out maintenance of the installation as per the guidelines of the scope of work of CAMC given below during the entire contract period. During the inspection/maintenance schedule, the equipment in the solar

PV plant will be thoroughly checked for proper operation, cleaned and serviced. However, contractor shall submit a detailed PM schedule once PO is placed. PM schedule shall be approved by OIL before signing of contract.

c) The contractor shall also make any additional visits during the contract period, if required, in case of breakdown or if called by OIL's personnel. The same will be intimated by OIL. During any visit in the contract period, boarding/lodging, transportation of the contractor's personnel and materials required shall have to be arranged by the contractor.

d) The contractor shall also undertake replacement/repair of any defective part of the solar PV plant system free of cost during the contract period.

e) The contractor has to sign separate agreement with OIL for a period 10 years CAMC for 250kwp roof top Solar PV plant before the start of the CMC.

f) The price mentioned in the Purchase Order shall be firm and binding, for entire 10 years. Contractor shall have to provide an undertaking to this effect along with supply of materials.

g) At the end of the contractual period, the solar PV plant system shall be handed over to OIL in excellent working condition. If any equipment/part/component of the solar PV system is found to be defective due to improper maintenance, it shall be replaced by the contractor free of cost.

32.1.5 CONTRACT GUIDELINES: It is the responsibility of the contractor to ensure maximum output from the plant by cleaning/maintaining the equipment on a regular basis during the whole contract period (O&M) as per OEM recommendation. The contractor shall maintain the plant along with spares for 10 years.

The Comprehensive AMC, therefore, shall be of duration of 10 years as follows:

- Comprehensive annual maintenance contract for 10 years after handing over the plant to OIL after successful installation & commissioning and completion of defect liability period of the entire contract.

The CAMC shall include overall supervision of maintenance activities that are required to ensure optimum performance of the Solar PV system as per the performance guarantee parameters submitted and established by the contractor at site and accepted by OIL.
The contractor shall submit a Detailed Annual Maintenance schedule to OIL within 15 days of the placement of the purchase order and award of contract for comprehensive AMC.

32.1.6 The scope of maintenance of the plant shall cover two parts:

a) Scheduled/ Preventive/ predictive maintenance including cleaning/washing of solar panels

b) Unscheduled/ Breakdown maintenance

a) Scheduled/ Preventive maintenance
The contractor shall have to carry out scheduled and preventive maintenance of the solar PV plant for 10 years (to be carried out after successful commissioning of the completed plant to satisfaction of OIL), which includes maintenance of the plant including regular maintenance.

The contractor shall also submit a detailed report every month to OIL about the maintenance carried out in the concerned period.

For ongoing cleaning and maintenance, the contractor shall provide sufficient manpower to carry out routine maintenance in line with OEM's recommendation. All tools/tackles and consumable materials shall be to contractor's account. However, water for cleaning can be provided from OIL's source.

b) Unscheduled/ Breakdown maintenance
In case of malfunction/breakdown in the plant, the contractor shall have to troubleshoot and rectify the failure/breakdown themselves. Any spares/replacement parts required to put the plant back into service shall have to be supplied by the contractor without any cost to OIL.

32.1.7 Spares required during AMC
The contractor shall supply all spares required during the AMC period. This includes spares/consumables for scheduled as well as unscheduled/breakdown maintenance.

32.1.8 Warranty

The Contractor shall be liable to replace any parts/components that have failed, may fail or show signs of defects during operation or due to poor workmanship of contractor's personnel or from any act or omission by the vendors/contractor for a period of 5 years from the date of handing over and acceptance by OIL of the complete Plant, free of cost during the currency of the contract period.

The contractor will have to hand over the plant to OIL in excellent working condition. After completion of AMC period, the final certificate shall be given by OIL's incharge. If there is any defect found in the component/equipment, the same shall have to be replaced by the contractor within one month, if contractor fails to do so, the same will be repaired/replaced by OIL and the cost shall have to be borne by the contractor.

The above includes, but not limited to, replacement/repair of any defective part (all components including PV modules, arrays, power supply unit, converter, inverter, all electronic cards, modules, fuses, fans, switches, wires and cables, lamps, transformers, cables etc.), civil structurers for supporting the panels, metallic structures, cable mounting system etc. of the solar PV plant.

32.1.9 <u>Compensation Calculation</u>:
Agreed Performance Ratio in Percentage (as per successful bidder's submission after award of order): A
Achieved Performance Ratio in Percentage: B
B= Achieved Annual Energy Production / Nominal Annual Energy Production in kWh*
*Nominal Annual Energy Production in kWh = Annual Cumulative Solar Irradiation intensity (KWHr/m^2) for the that year X Generator area of the PV plant (m^2) X Efficiency of the PV modules
Difference = A-B
Compensation = *Calculated AEP for the Year X (A-B) X Unit Rate X 25
*Calculated AEP for the Year = Nominal AEP for the Year X Guaranteed PR
Unit rate = (Tariff @ LT Commercial rate of corresponding year)
Calculation:
<u>First Year:</u>
At the end of the first year, if the plant failed to achieve the PR (A above) than
a) The contractor shall compensate as follows:
Guaranteed PR: A
Achieved PR: B1

Difference: A-B1
Compensation: (Calculated AEP with the Guaranteed PR) X (A-B1) X 25 Years
Second Year onwards:
b) If the PR as per your submission after award of order in the Table-1 for the second year is equal or more than the achieved PR of first year then no compensation will be levied.
If the achieved PR for the second Year is less than the achieved PR of the first Year but equal to the Guaranteed PR for second year as per successful bidder's submission after award of order in Table-1, then no compensation will be levied.
If the achieved PR is less than the Guaranteed PR for the second year as per successful bidder's submission in Table-1 and less than the achieved PR of first Year then compensation will be calculated as follows:
Achieved PR of First Year: B1
Second Year Guaranteed PR (Table-1): A2
Second Year achieved PR: B2
Difference: (B1/A2 whichever is less)-B2
Compensation: (Calculated AEP with the Guaranteed PR for the second Year) X Difference X 24 Years.
This will continue for the remaining years of O&M.
Note:
1. Compensation at the end of year, if arises, may be deducted from the last quarter against O & M charges and the balance, if applicable, can be deducted from the first quarter of the next year and so on till the full compensation is recovered. If, any other additional amount remains to be recovered, the same shall be recovered from contractor's pending payment / PBG.
2. The successful bidder must compulsorily submit the PR as per TABLE-1 after award of the order/contract.

32.2.0 PERFORMANCE RATIO GUARANTEE TEST
32.2.1 The test to prove the Performance Guarantee shall be conducted at site by the contractor in presence of Owner's/Consultant representative. The PG test procedure shall be submitted by successful vendor after the award of the contract for review and approval by OIL/Consultant. This test shall be binding on both the parties of the Contract. Any special equipment, instrumentation tools and tackles required for successful completion of the Performance Guarantee Test shall be provided by the Contractor free of cost.
32.2.2 The procedure for PG demonstration test shall be as follows:
i) A calibrated pyranometer shall be installed by the contractor at the location mutually agreed by the Contractor and Owner/Consultant. The test report for the calibration shall be submitted by the contractor for approval by the Owner/Consultant. The output of this pyranometer for three months of the PG test shall be made available at SCADA.
ii) "Achieved energy production" exported from the plant shall be noted for three months. For this purpose, the energy recorded in the incoming feeder meter from the solar plant shall be taken into account.
iii) This recorded energy shall be compared with the "Nominal Energy Production" as mentioned in 32.1.9 above for 3 months.
32.2.3 Following factors shall be considered for computing the "Nominal Energy Production"
i) Generation loss due to grid outage: The measured global solar radiation of the period of the power evacuation system shall be excluded to calculate average global solar radiation for the period of the PG test
32.2.4 In case of non- achievement of the desired performance of the plant, the contractor, in its own interest, take adequate measures, such as providing additional modules etc., to improve the performance of the plant at no additional cost to OIL. Otherwise compensation as per clause no 32.1.9 will be applicable at the end of the year.
32.2.5 Payment against Comprehensive AMC

Against the AMC, the contractor shall raise the bills quarterly and shall be paid against the quarterly bills. If intimated by OIL, the contractor has to visit the site or visit themselves if they want, with their own cost.

Contractor shall submit a monthly certificate/health report/maintenance report to Electrical Engineering department stating the health/condition of the solar PV plant and/or any repair/maintenance job done during their periodic visits to the installation. Bills should be submitted along with the monthly reports. Bills without the accompanying health report/maintenance report will not be entertained.

33.0 SCOPE OF WORK OFCOMPREHENSIVE ANNUAL MAINTENANCE CONTRACT

33.1.0 Scheduled/ Preventive maintenance

33.1.1 The contractor shall ensure trouble free operation of the solar PV plant system by undertaking scheduled maintenance of the plant as per the recommendations of the respective OEMs/vendors of component items. The components of the solar PV plant shall be checked for loose connection/heating and the same shall be rectified. Troubleshooting and repair of the solar PV plant shall be done by the contractor.

The contractor shall submit a detailed PM schedule of the plant within 15 days of placement of PO. The schedule shall be approved by OIL before signing the contract.

33.1.2 During the inspection/maintenance schedule, the equipment in the solar PV plant will be thoroughly checked for proper operation, cleaned and serviced.

33.1.3 Scope of regular maintenance work:

a) Periodicity of maintenance: Every month

b) Maintenance work to be carried out

i) Cleaning of solar PV modules/arrays monthly with water*

ii) Checking and tightening all wiring connections in PV arrays and electrical cables in PCU, earthing and lightning protection system

iii) Checking of proper functioning of PCU and recording all parameters, including any Fault/incipient fault

iv) Measurement of solar irradiation

v) Troubleshoot faults, if any, and rectify the same- if the fault cannot be rectified, the maintenance team will inform OIL and contractor. Contractor will arrange for rectification of the fault with the help of OEM/expert. Spares for regular/breakdown maintenance will be in contractor's scope.

34.0 * Note:

A) If the weather is dusty, cleaning of PV arrays more than twice every month is to be carried out as per instruction of OIL. No extra charge can be claimed for this.

B) Water will be available free of cost from the installation. Any equipment viz. hose pipe, mops, pressure washer etc. will be in contractor's scope.

34.1.0 In case of any faults/ other problems not directly connected to the solar PV plant, (for example, non-functioning of a light fitting in a room supplied with solar power), the same shall be reported to concerned Engineer.

34.1.1 The contractor shall check the solar PV plant for any damage and ingress of water.

34.1.2 Following reports shall be submitted by the contractor in hard copy during the periodic visits:

a) Healthiness/problems of solar PV plant (as per solar PV plant OEM(s)' guidelines)

b) Operation checked status (of all components of the solar PV plant, changeover system etc.)

c) Report attended and action taken (in details) for malfunctioning solar PV plant
d) Any other relevant point
34.1.3 The starting date for annual maintenance service shall be the date on which the plant shall be handed over to OIL to their full satisfaction.
34.1.4 Any other points specifically not mentioned in the supply, installation and commissioning and annual maintenance services, but required for successful operation shall be in the scope of the contractor.

Any spares/serviceable parts/replacement parts required to put the defective plant back into service shall have to be supplied by the contractor without any cost to OIL.

35.0 STATUTORY REQUIREMENT FOR WORK
i. The contractor shall execute the jobs as per specifications in the Annual Maintenance contract.
Ii. Contractor shall issue his/her work persons with all the safety gadgets.
iii. Quality of jobs carried out by the Contractor shall be of high standard and should be as per the norms of Central Electricity Authority Regulations, 2010, NEC and other electrical standards recognized by the company.

36.0 MANPOWER
i. All personnel deputed by the contractor shall be competent for the job.
ii. All workers shall be medically fit and able to carry out the various jobs assigned to them.
iii. Personnel deployed by the contractor shall be changed/replaced by the contractor if it is desired by OIL to do so. OIL shall not be required to give any reason for such request/instruction.

36.1.0 Job shall have to be carried out in consultation with OIL.

37.0 General HSE points to be adopted by the Contractor:

a) It will be solely the Contractor's responsibility to fulfil all the legal formalities with respect to the Health, Safety and Environmental aspects of the entire job (namely, the persons employed by him, the equipment used, the environment etc.) under the jurisdiction of the district of that state where it is operating. The contractor has to ensure that all sub-contractors hired by him/her comply with the same requirement as the contractor himself/herself and shall be liable for ensuring compliance all HSE laws by the sub- contractors.

b) The number of work persons hired/engaged by the contractor shall depend on the quantum and/or exigency of jobs. OIL may direct the contractor/contractor's supervisor to hire more persons if considered essential.

c) It will be entirely the responsibility of the Contractor or his/her Supervisor/representative to ensure strict adherence to all HSE measures and statutory rules during operation in OIL's installation and safety of workers engaged by him/her. The crew members will not refuse to follow any instruction given by company's Official / Supervisor for safe working/ operation.

h) Any issues regarding compensation arising out of the job carried out by the Contractor whether related to pollution, Safety or Health will be settled and payable by the contractor only.

i) Any compensation arising due to accident of the Contractor's personnel while carrying out the job, will be payable by the contractor only.

j) A contractor employee must, while at work, cooperate with his 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.

38.0 FORCE MAJEURE:

a) In the event of either party being rendered unable by force majeure to perform any obligation under the contract, the relative obligation of the party affected by such force majeure shall stand suspended till such time that normal conditions are restored. The term force majeure shall mean act of God, strikes, lockouts or other industrial disturbances, wars (whether declared or not), riots, earth quake, storms, fire etc.

39.0 **MEASUREMENT OF ENERGY AND METERING: Refer to clause no 26.0 (M) above**

40.0 IMPORTANT CLAUSE:

a. Total EPC = Supply + I&C (X+Y) price quoted by bidder as per Price Bid format.
b. Total O&M charges (Z) as per Price Bid format in for 10 years including statutory charges if any quoted by the bidder.
c. The successful bidder on award of contract & before supply shall furnish Annual Estimated Production (AEP) for 25 years based on the Performance Ratio (PR) offered by the bidder for the plant.
d. Successful Bidder shall submit AEP and the Performance Ratio (PR) in TABLE-1.
e. AEP shall be calculated as follows
AEP = Nominal Annual Energy Production in kWh X PR
Nominal Annual Energy Production in kWh = Annual Cumulative Solar Irradiation intensity (KWHr/m2) X Generator area of the PV plant (m2) X Efficiency factor of the PV modules
Note: To calculate Nominal Annual Energy Production (NAEP), Annual Solar Irradiation may be considered as 1500 KWh/m2 (Jodhpur, Rajasthan). The AEP data provided in Table-1 will be used for evaluation purpose only.
f. If there is a discrepancy between the unit price and the total price, which is obtained by multiplying the unit price and quantity, or between sub totals and the total price, (even in case of carry forward of prices) the unit or subtotal price shall prevail and the total price shall be corrected accordingly. If there is a discrepancy between words and figures, the amount in words will prevail. This evaluation criterion is binding on the bidder.
g. Annual Energy Production (AEP) as given in TABLE1 for the first five years shall be considered for calculation cost per KWH. Although, successful bidder has to submit AEP on award of order and PR for 25 years. PR "Performance Ratio" (PR) means the ratio of actual plant output versus Calculated, nominal plant output in kWh annual. PR= Annual Actual Energy output in kWh / Nominal Annual Energy Production in kWh.
Nominal Annual Energy Production (in KWh) means Annual incident solar irradiation at the generator surface of the PV plant x relative efficiency of the PV plant modules. PGT means Performance Ratio Guarantee Test.

41. **AEP and Performance ratio**
41.1.0 The successful bidder is expected to make their own study of solar profile and other related parameters of the area & make sound commercial judgment about Performance Ratio (PR) to determine the Annual power output i.e. Annual Energy Production of the plant. It shall be the responsibility of the bidder to access the corresponding solar insolation values and related factors of solar plant.

41.2.0 The successful bidder shall be required to install energy meters to record the Net Annual Energy Production (AEP) from the Solar Plant (Energy generated and exported from solar plant – Energy Import from OIL system)
41.3.0 Necessary corrections may be carried out by OIL in the AEP furnished by the successful bidder.
41.4.0 The corrected figure for AEP shall be considered for further processing. The same has to be ratified by the successful bidder.
41.5.0 The successful bidder's submitted PR for 25 years shall be adopted for entire O&M period.
41.6.0 The Successful bidder shall be responsible for achieving the Performance Ratio. For any shortfall in achieving the Performance Ratio (PR), the compensation shall be recovered from the successful bidder on annual basis. The successful bidder has to maintain the Solar Plant equipment(s) including its repair, replacement, overhauling, etc., so as to give the agreed Performance Ratio per year, for which OIL shall pay the agreed O&M charges only and no other charge / cost is payable by OIL.
41.7.0 The performance of 250 KWp Solar Power Project shall be evaluated on annual basis. In case of shortfall in successful bidder's submitted Performance Ratio compensation shall be recovered as per compensation clause no 32.1.9 of COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (CAMC) part.
41.8.0 Compensation Calculation: Agreed Performance Ratio in Percentage (As per Table-1): A
Achieved Performance Ratio in Percentage: B
B = Achieved Annual Energy Production / Nominal Annual Energy Production in kWh*
*Nominal Annual Energy Production in kWh = Annual Cumulative Solar Irradiation intensity (KWHr/m2) for the that year X Generator
area of the PV plant (m2) X Efficiency of the PV modules Difference = A-B
Compensation = *Calculated AEP for the Year X (A-B) X 8.35 X 25
*Calculated AEP for the Year = Nominal AEP for the Year X Guaranteed PR
Unit rate = INR 8.35 (Tariff @ LT Commercial rate of corresponding year)
Calculation:
First Year:
At the end of the first year, if the plant failed to achieve the PR (A above) than
a) The bidder shall compensate as follows:
Guaranteed PR: A
Achieved PR: B1
Difference: A-B1
Compensation: (Calculated AEP with the Guaranteed PR) X (A-B1) X 25 Years

Second Year onwards:
b) If the PR as per successful bidder's submission in the Table-1 for the second year is equal or more than the achieved PR of first year then no compensation will be levied.
If the achieved PR for the second Year is less than the achieved PR of the first Year but equal to the Guaranteed PR for second year as per successful bidder's submission in TABLE-1, then no compensation will be levied.
If the achieved PR is less than the Guaranteed PR for the second year as per successful bidder's submission in TABLE-1 and less than the achieved PR of first year, then compensation will be calculated as follows:
Achieved PR of First Year: B1
Second Year Guaranteed PR (TABLE-1): A2
Second Year achieved PR: B2
Difference: (B1/A2 whichever is less)-B2
Compensation: (Calculated AEP with the Guaranteed PR for the second Year) X Difference X 24 Years. This will continue for the remaining years of O&M.
Note: Compensation at the end of year, if arises, may be deducted from the last quarter against O & M charges and the balance, if applicable, can be deducted from the first quarter of the next year.

42. PERFORMANCE RATIO GUARANTEE TEST

42.1.0 The test to prove the Performance Guarantee shall be conducted at site by the contractor in presence of OIL's representative. The PG test procedure shall be submitted by successful vendor after the award of the contract for review and approval by OIL. This test shall be binding on both the parties of the Contract. Any special equipment, instrumentation tools and tackles required for successful completion of the Performance Guarantee Test shall be provided by the Contractor free of cost.

42.2.0 The procedure for PG demonstration test shall be as follows:

i) A calibrated pyranometer shall be installed by the contractor at the location mutually agreed by the Contractor and OIL. The test report for the calibration shall be submitted by the contractor for approval by the OIL. The output of this pyranometer for three months (stabilization period) of the PG test shall be made available at SCADA/Respective communication portal of the Weather Monitoring System.

ii) "Achieve d energy production" exported from the plant shall be noted for three months. For this purpose, the energy recorded in the incoming feeder meter from the solar plant shall be taken into account.

iii) This recorded energy shall be compared with the "Nominal Energy Production" as mentioned in 8.0 above for 3 months (period of stabilization).

42.3.0 Following factors shall be considered for computing the "Nominal Energy Production"

i) Generation loss due to grid outage: The measured global solar radiation of the period of the power evacuation system shall be excluded to calculate average global solar radiation for the period of the PG test

42.4.0 In case of non- achievement of the desired performance of the plant, compensation as per clause no. 32.1.9 of COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (CAMC) part will be applicable at the end of the year.

42.5.0. Cost per KWH shall be calculated for the whole project i.e. 250KWp. For this purpose, cost will be total of Capex and Opex for 10 Years as quoted in price bid format.

42.6.0 Although, successful bidder has to submit AEP and PR for 25 years. **PR** "Performance Ratio" (PR) means the ratio of actual plant output versus Calculated, nominal plant output in kWh annual. PR= Annual Actual Energy output in kWh / Nominal Annual Energy Production in kWh.

Nominal Annual Energy Production (in KWh) means Annual incident solar irradiation at the generator surface of the PV plant x relative efficiency of the PV plant modules.

PGT means Performance Ratio Guarantee Test.

other charge / cost is payable by OIL.

Annual Energy Production (AEP) for 25 Years Period

1. The Successful Bidder on award of the order & before supply shall provide Performance Ratio (PR) considering offered design configuration and all local conditions, solar insolation, wind speed and direction, air temperature & relative humidity, barometric pressure, rainfall, sunshine duration, grid availability and grid related all other factors and losses due to near shading, incidence angle modifier, irradiance level, temperature loss array loss, Module quality loss, Module array mismatch loss, and various inverter losses, etc.
2. Successful Bidder on award of the order & before supply of the roof top solar power plant shall furnish detailed calculations for Nominal Annual Estimated Energy Production (NAEP) FOR 25 YEARS PERIOD of the 250KWp solar power plant based on solar irradiation of 1500 KWHr/m2.
3. Generator Area: _____m2

Table-1

Year	Nominal Annual Energy Production (KWh)	PR Ratio (%)	Annual Energy Production (KWh)	Module Efficiency
	(A)	(B)	(C=AxB)	(D)
1st				
2nd				
3rd				
4th				
5th				
6th				
7th				
8th				
9th				
10th				
11th				
12th				
13th				
14th				
15th				
16th				
17th				
18th				
19th				
20th				
21st				
22nd				
23rd				
24th				
25th				

*********End of PART-I********

ANNEXURE- II

DATA SHEET of Vacuum Circuit Breaker :
(To be filled by the successful bidder after award of the contract and before supply)
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 (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 9.102)
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 :
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 1.1 KV/415V, AC equipment:
Digital Multifunction meter, Current Transformer, LED, HRC fuses, Trip- neutral-close selector switch, Air Circuit Breaker and MCCB are as follows:

1. Digital Multifunction Meter:
Make:
Schneider Power logic PM200 series, HPL -Socomec (Diris A41), Siemens PAC3200, Secure.

2. Digital Ammeter with inbuilt selector switch:
Make:
Schneider electric, HPL, LT, Siemens, IndoAsian.

3. Current Transformer:
Make:
Kappa, Precise Electrical, Pragati Electrical, Siemens, L&T, Schneider electric, IndoAsian, ECS.

4. LED:
Make:
Binay, Tecnic, L&T, Siemens.

5. HRC Fuses:
Make:
GE, Siemens, L&T, Schneider, Cooper Bussman, IndoAsian.

6. Trip-Neutal-Close Selector Switch:
Make:
Kaycee, Salzar, Schneider, L&T, Siemens, IndoAsian.

7. Digital Earth Leakage Relay with CBCT
Make: LEGRAND/SCHNEIDER/GE/PROKDV'S/NIC

8. **Air Circuit Breaker**: ACB with minimum LSIG Protection EDO type, fault level 50 kA or above at 500 V,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/6.0H or above.
ii) Siemens India-WL Series with electronic trip unit ETU 76B release.
iii) GE India- EntelliGuard SL. ACB with electronic trip unit
iv) ABB india- Emax series with electronic trip unit
v) Legrand- model DMX3-N with electronic based protection unit MP4 LSIG.
vi) L&T Air Ciruit Breaker, Type U- Power omega with matrix protection and control unit MTX4.
vii) IndoAsian Optibreak model, EDO with LSIG Protection.

9. **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 250/100 Amps MCCB with LSIG protection
Make:
i) Schneider Electric (Merlin Gerin): model compact NSX with electronic trip unit with micro logic.
ii) ABB - Tmax Series, model-TP5 electronic Trip unit -LSIG.
iii) Siemens India Ltd: Sentron VL MCCB, model VL standard with electronic release and microprocessor based ETU-LSIG/LSING.
iv) Legrand: Model- DPX/DPX3 with LSIG release.
v) GE India: Record Plus, FG with electronic trip unit.

vi) Indoasian Optium Series with LSIG release

10. Stainless steel single compression cable gland:

Make:

Dowell/gland make/Jainson/Baliga/3D

11. Earthing cable

Make: NICCO/ASIAN/CRYSTAL/UNIVERSAL/ CCI/RPG/INCAB/POLYCAB/ANKUR/ NECAB/HAVELLS/KEI

12. 1.1 KV grade XLPE/PVC cable:

Make:

Polycab/ Crystal/ RPG/ Prestige/Havells/Universal

13. **Sweating socket:**

Make: Dowell, 3M

14. Auxiliary contactor:

Make:

Siemens/ ABB/ Schneider electric/IndoAsian

B. 11KV, AC HT equipment:

1. HT Current transformer-

Make:

Kappa/Precise Electricals/ Intrans Electro Components Pvt Ltd/Pragati Electricals, ECS/As per standard approved makes of JdVVNL.

2. Voltage transformer –

Make:

Kappa/Precise Electricals/Intrans Electro Components Pvt Ltd/Pragati Electricals/ As per standard approved makes of JdVVNL.

3. Make of battery:

Make:

Exide/Amco/Amararaja/Amron/Tata Green

4. Make battery charger:

Make:

Exide/Ruttonsha/ HBL/Emerson/Amararaja

5. Directional type Numerical protection relay:

Make:

ABB(Type REF615)/Siemens(Type Siprotec 7SJ80 & 7SD80)/ Siemens-Argus /SEL(Type SEL-751&SEL-311)/Schneider Group,type Micom-P14X series/Merlin-GErin (Schneider Group,typeSepam Series S-84)

6. Non directional type Numerical protection relay

Make:

ABB(Type REF615)/Siemens(Type Siprotec 7SD80)/ Siemens-Argus /SEL(Type SEL-751)/Schneider Group,type Micom-p14x series/Merlin-GErin(Schneider Group, type Sepam Series S-84)

7. 11KV, Vacuum Circuit Breaker

Make:

Siemens/ ABB/ Schneider

8. 11KV Interrupter:

Make:

Siemens/ ABB/ Schneider/ Crompton greaves/L&T

9. 11KV XLPE cable:

Make:

Havells/Nicco/Crystal/Polycab/Raychem RPG

10. Cable termination kit:

Make:
Raychem RPG/ Xicon/3M/ Multishrink
11. MC type Ammeter & Voltmeter:
Make: AE

12. Digital type KWH Meter:
Make: Conserve, L&T,GE.

13. Dry type 1215 KVA Transformer:
Make: Voltamp/ ABB/Raychem RPG/CG/Schneider/BHEL/Siemens

C. DG Set:
i. Engine:
Make: Cummins/VOLVO Penta/Caterpillar/Kirloskar
ii. Alternator:
Make: Stamford/Cummins/Caterpillar/Volvo Penta/Kirloskar

D. SPV Mono/Poly crystalline Module:

Make: Waree/Adani/TATA Power/Vikram Solar

E. Airconditioner:

Make: Daikin, O-General, Mitsubishi, Voltas

E. Make of Items for wiring

1. All Single core BIS marked, copper FRLS PVC insulated stranded flexible 1100 v grade cable (as per IS 694 of size/rating as specified in SOQ)
Make: FINOLEX/HAVELLS /POLYCAB

2. GI Pipe for earthing

Make: JINDAL/TATA

3. Copper lugs
Make: DOWELL/3D-BILLET/JAINEX/SCHNEIDER
4. PVC conduit
Make: RICHA/PLAZA/AKG/PRESTO PLAST/Anchor
5. Metal clad switch-socket unit, 20/25 Amps
Make: LEGRAND/SCHNEIDER/SIEMENS/HAVELLS/ INDO-ASIAN
6. Exhaust fan
Make: USHA/HAVELLS/CROMPTON/BAJAJ
7. Enclosure for MCB
Make: LEGRAND/SCHNEIDER/SIEMENS INDOASIAN/L&T
8. Metal GI Box
Make: LEGRAND/SCHNEIDER/CRABTREE INDOASIAN ELVIRA/HAVELLS
9. Ceiling fan/Wall mounted fan, 1400 mm Sweep, White in Colour
Make: HAVELLS(Pacer)/BAJAJ(Kassels)/ORIENT (PSPO)/USHA/CROMPTON GREAVES
10. Modular Fan regulator 100W
Make: LEGRAND/SCHNEIDER/CRABTREE INDOASIAN ELVIRA/HAVELLS
11. Modular switches/Socket/Box/ Blank plate
Make: Legrand/ Crab tree/L&T/IndoAsian
12. VTPN DB/TPN DB/SPN DB

Note: DB and all components fitted therein have to be of same make.
Make: ABB/INDO-ASIAN/L&T/ SCHNEIDER/ SIEMENS/LEGRAND
14. All RCBO
Note: Make of RCBO, MCBs and box shall be of same make.
Make: ABB/INDO-ASIAN/L&T/ SCHNEIDER/ SIEMENS/LEGRAND

15. LED light fitting

Make: Phillips/ GE/ Crompton greaves/ Bajaj/Havells

16. MCB:
Make:
Siemens/ ABB/ Schneider electric/Legrand/L&T
17. ACCL Load Limiter
Make: Legrand, Havells, Electron, Panasonic, L&T, HPL

18. INVERTER(S): MAKE: SAM/ABB/Medha/Luminous
19. PV Cable: Make: Polycab, Havells, KEI, Finolex
20. Energy Meter: As per JdVNNL approved makes only.
21. Monitoring System: Make: SMA/ABB/Medha/Luminous

ANNEXURE-IV

TECHNICAL DATA SHEET FOR TRANSFORMER
(To be filled in by the successful Bidder after award of the order & before supply)

Sr. No	TECHNICAL PARTICULARS	SPECIFICATIONS
1	Type of Transformer	Cast Resin Dry Type
2	KVA Rating (continuously rated)	
3	Duty	
4	Rated Voltage	
5	(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	
17	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	

Annexure V

CHECKLIST FOR SCOPE OF WORK FOR SUCCESSFUL BIDDER AFTER THE AWARD OF THE ORDER AND BEFORE SUPPLY

SL No.	**Clause no. of SCC of annexure I Tender Document**	**Description**	**Bidders Remarks**
1	3.11.7 (Test Certificates)	Copy of type test conducted on similar type panel by NABL accredited laboratories for the following shall be submitted after the award of the order and before supply (For main LT Panels)	
		a) Short time current withstand test	
		b) Temperature rise test	
2	3.11.8 (Drawing & Documents)	A. Drawings & documents to be submitted after the award of the order and before supply:	
		i. Completely filled-in technical parameters	
		ii. SLD of Panel	
		iii. GA drawing of the Panel showing dimensional details	
		iv. Type Test certificates for tests conducted earlier on similar equipment shall be furnished	
3	**4.1.1. (**DRAWING AND DOCUMENTS)	Drawings to be submitted after the award of the order and before supply: i) General arrangement drawing of DP structure with Air break switch, HT metering cubicle, HT panel, Transformer and LT panel.	
4	**4.1.3** HT(VCB) Panel)	i) Detail as per technical specification mentioned in SOQ.	
		ii) Copy of Type test report done on similar panel & VCB at NABL accredited laboratories or STL approved laboratories as per relevant IS.	
5	4.1.4 LT Panel	i) Detail as per technical specification mentioned in Point no.3.10.0 and in SoQ.	
6	4.1.5 Transformer	i) Detail as per technical specification mentioned in SOQ.	
		ii) Copy of Type test report done on similar transformer at NABL accredited laboratories or STL approved laboratories as per relevant	

		IS.	
7	11.1.9 DG Set	i) Detail technical literature and catalogue of:	
		a) Diesel Engine	
		b) Alternator	

Building Management System: Technical Terms and Condition

1.0 The **OIL Executive Housing Project** referred in the NIT shall have an integrated **Building Management System (BMS)**.

2.0 Scope of Work:

2.1 **Definition of BMS:**

BMS or Building Management System is same as the definition of Building automation and control systems (BACS) in ISO 16484.

2.2 **Objective:**

The BMS is aimed at providing a single-point computer based control and monitoring of facility services/field devices like HVAC, Gas Alarm System, Lighting and illumination, Power Supply, Metering and Management, CCTV, etc that shall be part of the Housing Project.

2.3 **Facility Services/Field Devices:**

The BMS shall control and monitor the following Facility Services/Field Devices:

i) Gas Alarm System
ii) Air Conditioners
iii) Solar Power Generation monitoring
iv) Lighting and illumination sensors
v) Power Supply and metering
vi) Water supply and metering
vii) EPBAX System
viii) Security Surveillance System including intrusion detection
ix) Access Control System
x) Public address system
xi) Fire & Safety (FAS)
xii) Other Field Devices and Facility Services as mentioned in the tender.

2.4 **Phases of BMS project:**

The phases and the method of the BMS project shall be generally guided by the **ISO 16484 (all parts)** which summarily includes the following phases:

i. **Design** (determination of project requirements and production of design documents including technical specifications) and **Engineering** (detailed function and hardware design)
   a. The vendor's design and engineering has to be vetted and approved by OIL before going for execution of the Project.
   b. The vendor's design and engineering has to include a CAD visualisation.
   c. Since OIL already would possess a preliminary design and engineering document, the vendor may base their design and engineering on the former.
   d. This project contains several, individual electrical and mechanical installations. The supplier must therefore be able to offer a comprehensive service concept covering all types of building installations. Possible service offerings must be incorporated into the design.
ii. Installation (installing and commissioning), and
iii. Completion (handover, acceptance and project finalization)

In all the above phases of implementation of the project, the bidder should conform to the requirement of OIL.

2.5 **System Architecture and General System Requirements:**

i. The BMS should be guided by the system architecture as per **ISO 16484-3**. There should be three system levels interconnected via standard communication as following:
   a) Management level
   b) Automation level (automation stations/individual room control)
   c) Field level (field devices)

   Note: The details of these three system levels is discussed in section named "System Architecture: System Levels" in **Details Section below.**

ii. **Interoperability:**
   The BMS system must be able to integrated third party devices via the following interoperability communication protocols:
   a) BACnet (as per ISO-16484)
   b) Modbus
   c) OPC (Open Platform Communications): -The BMS must be OPC Foundation tested and certified and must be able to integrate and process, but also to provide real-time data as OPC data points. The System processing must include Alarming, Trending, Scheduling, and Reporting and allow cross communication with other integrated devices. The System must be support OPC Data Access.

iii. **Communications network: -**
   a) The required communications network is part of the BMS scope of delivery. All control, monitoring, and communications tasks must run on this network. The communications network comprises all three system levels:
      - Management level
      - Automation level
      - Field level
   b) The approved network concept must be documented in full and handed over operational
   c) Note: Details provided in the Details Section below

iv. **Product Life Cycle:**
   a. All equipment/software offered must be contained in the current product portfolio.
   b. All the equipment/software offered shall be preferably have 10 year (from the year of installation and commissioning) support from OEM.

v. **System Time:**
   a. The building automation and control system must have a uniform system time i.e UTC time (coordinated universal time)
   b. To this end, a time master supporting BACnet BIBB DM-UTC-A as per the PICS document must be defined. The time master must receive the DCF77, GPS or Internet NTP signal and provide it synchronized to all remaining system devices.
   c. The automation stations must autonomously run their own time if the time master fails. The building automation and control time must be resynchronized automatically after the time master becomes available again.

vi. **Self-Monitoring and Self-Diagnosis:**
   a. Watchdog: The BMS must monitor itself to always know its latest and current status. It should be enable with a watchdog function that helps

detect and signal failed system devices and restarts them in a defined mode.

b. Self-diagnosis: -Self-diagnosis must be available to quickly detect errors. It must provide information on system function and load. E.g. CPU and memory load must be displayed.

vii. **Power Failure Resilience:**

The data must be saved for extended periods of time in case of power failure or extensions or removal of automation stations. The applications and all vital operating parameters (including set-points, scheduler values, etc.) must not be lost due to a power outage. Other operating values such as alarms, trend data, etc. must be capable of being saved locally on the automation station.

viii. **System Backup**:

Configuration backup, Raid configuration, Ability to easily restore the system in case of hard disk failure or hardware failure of any device. A data backup concept must be presented that provides the current state of a project in a form that is useable and complete to the customer. In includes raw data from plants, applications, engineering data (e.g. DP, labeling, links, parameters), documentation.

ix. **General Plant Operating Modes:**

There shall be generally five higher operating modes for all plants:

a) Local emergency manual operation without automation station functionality (direct via 1/0 module or directly on the control panel as agreed to with owner).
b) Local manual operation with automation station functionality (control panel in the control panel).
c) Local - manual operation via visualization on the management level (all functions on the local automation station are set to Auto).
d) Scheduler program under the condition that all plants are enabled for automatic operation.
e) Automatic detection/operation

x. **Engineering Efficiency:**

a) System and tool platform:- Creating solutions must be as efficient as possible, i.e. programming on construction sites; use of pre-defined application blocks, fast exchange of standard functions, etc. The goal is to achieve the maximum required level of flexibility at as little expense as possible.
b) Preloaded application on devices: Applications portfolio must be prefabricated and tested must be loaded in a fix manner on the devices prior to commissioning. They can be used in the basic functions without the use of additional engineering tools.
c) Harmonized tools and workflows: Uniform data and functions must be used by the building automation and control system in a consistent manner throughout all tools to achieve a high level of data consistency. In other words, all data is only entered once in the system. Consistent tool processes avoid a manual exchange of data (Import/Export)
d) Search & Replace function must allow for Mass Changes in parameters can be done across the entire installed system (eg. Operating hours change, set point etc.).
e) The possibility for free programming of individual system components should be available to individually modify customer-specific requests. The software shall be capable of doing Online engineering i.e. Zero Downtime of software during any modification of Graphics.

f) The technical operator at the customer be able independently make simple changes to the project. Potential training proposals must be appended to the bid.

2.6 **Offering on Installation and Commissioning:**

The contractor shall provide all services to successfully commission the specified plants and systems. This includes:

i. **System Activity:**

a. Create configuration and parameterization lists.
b. Review and ensure working communications across the entire building automation and control system including all devices on the network.
c. Check network load and resulting reaction times.
d. Test the modules and automation stations, all inputs and outputs including associated documentation (cold commissioning).
e. Test the safety functions for control and processing algorithms (e.g. with regard to technical and mechanical installations interaction and simulated operating failure or faults).
f. Unambiguous labeling of all network components, user address, and/or operating materials.
g. Comprehensive data point test including review of all connected sensors and actuators.
h. Check all cabling in the building for adherence to installation guidelines.
i. Check all bus terminators and voltage supply.
j. Setting of required configuration parameters.
k. Commission the connected sensors and/or actuators together with the other mechanical and electrical installations.
l. Review of planned automation functions as per specifications.
m. Log set and measured values.
n. Log required function for energy efficiency
o. Simulation of Alarm and its response system including emergency response system
p. Simulation of all kinds of reporting that is enabled in the BM
q. Simulation of any other services as required and enabled in the BMS
r. Checking for any license violation
s. Any other activity deemed necessary at that time

ii. **Submission of Design Documents:**

A final, comprehensive documentation must be provided following building automation and control system acceptance. To create such documentation, the system must allow for complete and current data export. As a result, the complete data set must be able to be exported any time featuring up-to-date data. This document shall include:

a. High Level and low level System Architecture Diagram
b. The approved communication network concept (with cabling diagrams) must be documented in full and handed over operational
c. Safety Guidelines
d. SOP on emergency response
e. Manual for cleaning of components and equipment
f. List of Components/Devices/Software installed
g. Any other document deemed necessary at that time

iii. **Training:**

The contractor provides all services to train maintenance staff. This includes the following topics.

a. Structure, properties, and functions of the installed building automation and control system
b. Training on all operating options. (Room operation, emergency switch, control switch, operator units, management level, etc.).

c. Detailed operation of all management station functions. (Reports, analyses, trends, interpretation of alarms, alarm handling, data backup, etc.)
d. Troubleshooting and diagnosis on system and plants.
e. Adapt simple functions, implementation of updates, etc.

3.0 DETAILS SECTION:

A. System Architecture: System Levels:

I. Management Level:

i. All information comes together at the management level. The management level is the graphical, interactive interface for the operator to the automation station and the integrated plants and plant parts. The operator can display, query, process, save, or print any plant information via the peripheral units at the management level. System operation must be simple, i.e. dialog-driven. The plants are displayed in synoptic images and the values and states are presented and displayed dynamically. Special programs are used for higher control, optimization functions, maintenance and energy management.

ii. The BMS must take care of recurring tasks to lower the operator's workload. This includes, for example, cyclical report generation triggering, plant release at various conditions, or automatic adjustment of setpoints or alarm limits.

iii. Designed for use with fire life safety systems (UL certified): - The management station must have passed performance and environmental tests by the Underwriters Laboratories (UL). To combine the comfort and fire life safety system, the management station must provide all the relevant functions:

a) Visualize and treat events
b) Graphically monitor and control the life safety system
c) Know where to start as highest priority events are highlighted.
d) Directly navigate to the triggering element of an event.
e) Quickly navigate to custom operator instructions and graphical display of event locations.
f) Store and retrieve fire alarm system activity data.
g) Distribute fire monitoring and control capabilities across the network of the management stations.
h) Provide Operating Procedure checklists to guide the operator, under stress conditions, during the treatment of life safety events.
i) Send out automatic remote notification of responders through email
j) View and schedule automatic history reports.

iv. **Client Server Model:**

a) The BMS shall implement client server model at the management level in all possible platforms (SCADA, integration platform, CAD, etc). Necessary licenses for the servers and the clients shall be provided by the vendor.
b) Access protection: - Different persons maintain and operate the plant. For this reason, passwords must be assigned to authorized persons to guarantee transparency for tracking or authorization purposes. A minimum of four different rights must be assignable.
    1. Administrator.
    2. Program and graphics creation
    3. Operation to change or adjust setpoints.
    4. Guest
c) Windows authentication: - The building automation and control system's password administration must be consistent with the customer's IT guidelines.

d) Client Access should be enabled for remote access over internet

v. **SCADA platform:**

a) The management station must be based on a SCADA platform, which must be fully compliant with the BACnet 8-AWS profile. It must enable the integration of any type of building equipment/facility service.
b) Help functions: The software shall provide an online, context-sensitive help, including an index, glossary of terms, and the capability to search help via keyword or phrase.
c) The SCADA platform shall be based on client server model. Client installation as per requirement.
d) Floating Client License concept: Easy configurable client as the same can be used as Desktop or Web client in Floating configuration. Range shall be minimum 4 client access simultaneously.

vi. User profiles:

a. **Individual view**: - Individual, specific, or own views must be able to be set up to broaden plant overview. These views must cover various electrical and mechanical installations or follow geographic or organizational criteria and must allow personalized hierarchical "tree" views that represent the workstation, control systems, geographical facility layouts, and mechanical equipment relationships.
b. **User :** - The BMS must allow to create and manage users, its privilege, authentication and authorisation in all the possible access platforms (OS level, SCADA platform, Integration Platform, etc)
c. **Related Items:-** Information of any data point available in multiple pages, Access to trend, scheduler, reports, data sheets"
d. Activity log of Users: The BMS system should maintain activity logs of all users including the administrators. For example, to enable pinpointing which user changed which configuration in a given platform in the BMS.

vii. **Graphics**:

a) **Operator interface to CAD system: -** The operator interface shall allow users to access the various system schematics and floor plans via a graphical penetration scheme, menu selection, point alarm association. Graphics software shall permit the importing of CAD symbol, or scanned pictures for use in the system.
b) **Operating messages: -** Operating messages must be able to be displayed and evaluated at the management level. Graphics shall be capable of displaying the status of points that have been overridden by a local priority switch, for points that have been designed to provide a field local priority override capability.
c) **Full graphics mode:** - A fully graphic management level featuring ergonomic images must be available. The system must be designed for operation, monitoring, optimization, and logging of all connected automation stations in real-time.
d) **Graphics creation:** - User shall be able to add/delete/modify system graphics and state text for digital points, from standard user interface without the need of any external or specialized tools.
e) **Navigation:** - The navigation through various graphic screens shall be optionally achieved through a hierarchical "tree" structure. Graphics viewing shall also include dynamic pan zoom capabilities and include the ability to switch between multiple layers with different information on each layer.
f) **Vector Graphics & Multi-layer with Depth support:** - The system must support for AutoCAD import of plan with Zoom In & Zoom Out facility through scroll mouse feature & must Enable simplified and un-

cluttered view of all utilities (FAS, ACS, CCTV etc.) on any typical floor plan.

g) **Dynamic 3D & HD Graphics:** - Must support for Dynamic 30 & HD Graphics symbols for better clarity, aesthetics, effective use of change in display technology

h) **Pictures:** - Graphic symbols and standard: - The plant pictures must satisfy ergonomic needs of operators. The displayed graphic symbols must correspond to the generally valid standard for HVAC symbols (DIN 19227) and ASHRAE guidelines. Symbols must be supported as two or three dimensional graphics. Capability to create color graphic floor plan displays and system schematics for each piece of mechanical equipment, including, but not limited to, air handling units, chilled water systems, hot water boiler systems, and room level terminal units. Associated prints of standard plant pictures must thus be added to the bid.

i) **Object-oriented graphics: -** The building automation and control system must offer dynamic, high resolution graphics. The graphics must be object-oriented. Each symbol must be able to display several states in the same, consistent format. At the same time, several views must be able to be open concurrently, and all views must be updated dynamically.

j) **Continuous update and display:** - Measured values, set points, user settings, and alarms must be displayed immediately and continuously. State changes must be indicated via symbol, e.g. using animation or changing the color, in general, however, graphic presentation, or text.

viii. **Scheduler Program:**

a. At least eight switching times (On/Off) per day must be possible via operator units (local or management level) to achieve reasonable plant control. The following schedules must be supported
    1. Binary: e.g. on/off
    2. Analog: e.g. set point profile.
    3. Multistate: e.g. room operating modes Protection/Economy/Comfort.

b. Special days must be able to be edited at the management level via two different ways:
    1. Via calendar
    2. Via direct special day entry in scheduler program

c. Navigation from plant picture to scheduler program: - Every currently used plant picture must offer user friendly scheduler program operation.

d. Management via central scheduler programs: - Operate all scheduler programs online from the management level to achieve consistent, transparent operation of all integrated systems and subsystems.

ix. **Alarm Handling:**

a. Alarm function: - The automation station contains an image of the physical data points. Each data point must be alarmable. Parameterization via operator units must be possible. The alarms either do not require acknowledgement, i.e. they come and go without acknowledgement, or must be acknowledged or reset and acknowledged.

b. Alarm message: - Alarms from the automation station must be displayed on the operator units within 1 second. Alarms must be acknowledged or acknowledged and reset dependent on access rights. Delay times (e.g. feedback supervision, triggering of differential pressure monitor, filter) must be changeable via operator units.

c. Alarm suppression: - Lower priority messages, undesired reactions from objects or entire plants must be capable of being suppressed during commissioning, plant servicing or automation station start up.
d. System safety
e. High availability: - High availability is required of the building automation and control system. Data availability must be increased and any fail times massively reduced.
f. Alarm generation
g. Message handling:- Both types of alarm management (Intrinsic Reporting/Algorithmic Reporting) are supported as recipients. Alarms from automation stations are received at the management level, but not generated based on a change to Present_ Value or Status_Flags in the automation station. All alarms are displayed when the management level is started.
h. Management Station Alarms must be possible to create Alarms for third party systems.
i. **Alarm routing:**
    i. Media, independence, formats: - Current alarms may need to be routed independent of media at certain times to a central service (Printer, email). To do this, various formats must be available (CSV, XLS, PDF). There shall be no limit to the number of points that can be configured for remote notification of alarm conditions (vial email/over internet) and no limit on the number of remote devices which can receive messages from the system.
    ii. Alarm message escalation list: - System must be configurable to send messages to an individual person or group of people and shall be configurable to send different messages to different remote devices based on alarm message priority level. It must be able to send also to an escalation list so that if the first device/people does not respond, the message is sent on to a second device/people after a configurable time has elapsed.
j. Acknowledgment:
    After user rights are assigned, all alarms (alarms and faults, errors) must be acknowledgeable from all operator units. This helps to trace alarms. A time stamp and assignment (based on user account) is required. This includes:
        i. Local acknowledgement (control panel, automation station).
        ii. Management level.
        iii. Remote operating equipment.
k. Alarm management strategy: - The software shall allow the user to configure the alarm management strategy for each point. The editor shall provide the ability for editing the point database directly online with the Building Controllers. The operator interface software shall also provide the capability to perform bulk modification of point definition attributes to a single or multiple user-selected points.
l. Assisted treatment of alarms: - The system should support for Guided operations for any event so as to reduce the human error while handling the alarms must be possible to configure Predefined & fast intervention steps for faster response.
m. Alarm display
        1. Color display: - Incoming alarms must be colored for quick and easy interpretation. Both order and state as well as alarm priority must be recognizable. The alarm window must be displayed as per operator needs. Alarm window displays must be added to the bid.

2. Alarm message content: - The message texts must contain all information necessary to allocate and resolve the error. This includes at least the following attributes:
    a. Clear text.
    b. Control panel name
    c. Plant name
    d. Priority (min. 16 different priorities).
    e. Time.
    f. Status (acknowledged, unacknowledged).
    g. Instructions on how to resolve the problem must be available in the background.

n. Filter alarms: - The building automation and control system must offer alarm filtering. Filtering must be possible by alarm lists or priorities. Alarms are displayed in popup windows. Step-by-step instructions on handling each alarm help the building automation and control system operator to find a solution.
o. The BMS system should be able to provide log of alarms
p. Alarm Sound: The BMS should have the ability to sound audible alarm (different sounds for different alarm) that can be broadcasted over PAS or local audio system based on the type of alarm.

x. **Event management:**

a) **Event Routing and sorting**: - Event Routing shall allow the user to send event notification to selected printers or workstation location(s) based on event severity, or point type. The List must have the ability to list and sort the events based on event status, point name, ascending or descending activation time.
b) **Event Notification:** - Event Notification shall be presented to each workstation in a tabular format application, and shall include the following information for each event: name, value, event time and date, event status, priority, acknowledgement information, and alarm count. Each event shall have the ability to sound an audible notification based on the category of the event.
c) **Event acknowledge: -** Directly from the Event List, the user shall have the ability to acknowledge, silence the event sound, print, or erase each event. The interface shall also have the option to inhibit the erasing of active acknowledged events, until they have returned to normal status. The user shall also have the ability to navigate to all information related to a selected point in order to command, launch an associated graphic or trended graphical plot, or run a report on a selected point directly from the Event List.

xi. **Report generation**:

a) The system must spontaneously (snapshot) generate predefined reports (real-time and historical data) to provide vital plant data at any time. These reports must be printable or exported to third-party spreadsheet software and as PDF file. The data must be editable in other programs (Microsoft Excel, or Microsoft Access) for further analysis.
b) Standard report templates: - Templates help generate comprehensive reports without much effort. At least three different report templates must be available.
c) Reports to record alarm and fault states.
d) Reports to record logbook entries.
e) Reports to record plant and building panels states
f) List of all points currently in override status
g) List of all disabled points

h) List of alarm strategy definitions
i) Point totalization report
j) Point Trend data listings
k) Initial Values report
l) User activity report
m) Event history reports
n) Customized report templates: - The system must allow for creating specific report templates to meet individual report generation requirements, which also may include plant and trend graphics.

xii. **Remote operation**:

a) Internet access: - The building automation and control system must offer an Internet solution via Microsoft IIS (Internet Information Server). The management level programs must be mapped to APS (Active Server Pages).
b) Terminal server: - Users must be able to remotely operate and engineer plants regardless of location via a terminal server function. This openness, of course, may in no way impact plant safety.
c) General requirement for operating: - The Web based interface shall provide the same functionalities as those available at any other workstation, including operation and configuration capabilities. All operator interface functions must be available in clients running in a browser, installed client console, or Windows desktop app.
d) Via web browser: - Users must be able to remotely operate and engineer plants regardless of location with the same user interface. This openness, of course, may in no way impact plant safety. The client must run in a browser as a Full Trust client application
e) Dedicated Desktop Installed client: - Users must be able to remotely operate and engineer plants regardless of location. This openness, of course, may in no way impact plant safety. The client must run as a fully installed software installation that can lockdown desktop space and prevent the ability for the software to be minimized or covered by other applications.
f) Windows Desktop APP: - Users must be able to remotely operate and engineer plants regardless of location with the same user interface. This openness, of course, may in no way impact plant safety. An app must be downloaded to the client from the server PC that runs like an installed application, and must be automatically updated whenever new apps are available at the server.

xiii. **Trend data**:

a) Simultaneous, multiple trends: - Multiple trend views must be possible simultaneously to provide a comprehensive plant overview. Standard plants from medium to higher complexity (as in this project) require a simultaneous display of up to 10 trend curves on the current page view to assess the plants. Multiple trend curves must thus be recorded at the same time.
b) Decentralized data storage: - None of the trend data may be lost during communications failure to achieve gap-free trend documentation. For this reason, all trend data must be created and saved to the automation station. After communications are restored, all values saved on the management station must be updated automatically.
c) Intermediate storage of history data: - Trend data are collected in the automation station and transferred to the management level after a specific time has expired or specific number of data has been recorded. Trend data may not be lost if the management station is unavailable temporarily.
d) Trend comparison: - To make analysis of changed conditions in different times, the system must provide a time shifted trend view.

II. Automation Level:

Automation station standard: - Automation stations must be intelligent. They must be autonomous. They must be built to go from high decentralization into small units (DOC). Automation stations must be freely programmable and feature graphical programming optimized for building automation and control.
The following functions must be available: Control, measure, signal at various priorities and by event, monitor, alarm, count, calculate, schedule, save trend values, and log as per DIN EN ISO 16484-5. BACnet server (automation stations) certificates must be added to the bid.

System design: - Manufacturer must prove that they have various scalable automation stations to ensure optimal automation station design. Associated system documentation must be added to the bid and included in system evaluation. Documentation must show that the hardware (DOC and 1/0 modules) is designed optimally for the number of the required data points. Delineation, Room automation to management level: - All management level functions must be fully engineered in the room automation station to increase plant availability. Delineation is defined to ensure that no additional engineering is required at the management level (BACnet client).

Specifications: - The DOC controller to be 32-bit controller with BTL certification. The decentralized small units (DOC) to have UIO concept for configuration of inputs & outputs to suite the project specific requirement and the last minute changes at site.
The CPU frequency of 100 for controller upto 22 IO's & 133 MHz for 36 IO's and above with RTC & having BacneULON OR BacneUEthernet IP having SDRAM of16MB to 64MB & Flash Memory for 22 IO's & 36 IO's respectively. 8 MB to 16MB for 22 IO's & 36 IO's respectively. Maximum 10 for small units to support upto 36 IO's.
The DOC to be capable of accepting inputs of 0-10 VDC; PT1000; NTC 10K; LG-Ni1000. The same to have agency compliances like EN 60730-1 ; EN 50491-x; EN 60730-5-2/-5-3; CE 2004/108/EC; CE 2006/95/EC; UL916; FC PART15, CLASS B; ISO 14001 ; ISO 9001 .Each decentralized small units (DOC) should be capable of being operated through room units to a maximum of 5 nos via PPS2 interface for various operations apart from portable operating terminal(POT).

II.2 Operation concept at automation level

Local operation

General: - Local operation with access for the corresponding automation station, or network operation via BACnet to all or selected automation stations, or simple room operation must be available.

Operator and monitoring units

Local operator and monitoring unit: - Local operation must be possible via a locally usable operator unit. All vital operating parameters of the automation station must be displayed in clear text. All current plant values, set points, and parameters must be displayed on the operator units. All operator units must be configured to allow for acknowledging maintenance and fault messages.

Networkable operator and monitoring unit: - Plant operation must be possible both locally and via management level. Local operation must be location-independent and allow for maintenance staff work from any automation station or be integrated in the control panel door. Operation must allow for access to all

values (current values, set points, parameters, maintenance and fault messages) without special engineering as well as plant-specific composition of vital values. Operation must allow for graphic display of weekday and exception programs, heating curves and trends set up individually.

Web operation independent of hardware: - A web interface, independent of hardware, operates the building management system. The entire user interface must be optimized for finger operation. To ensure operation not tied to a location, web operation must also support, for example, off-the-shelf tables (Android, i OS App, Microsoft) or notebooks. It must be capable of operating multiple plants as well as display and acknowledge alarms. At the same time, functions to control the plant must be supported, so that plants must be able to be graphically operated and displayed using select data points, schedulers as well as trend views. User name and password is required to run functions that can change to plant settings in order to protect the plant.

Operation via web browser or mobile clients: - Vital functions must be viewable regardless of plant location. To this end, access is required via mobile clients (mobile phone, pocket PC, PDA, etc.) to all actual values and set points, plants and operating states.
Online trends: - Local operator units must support temporary recording of trend data to allow local operators to record a trend at the control panel for diagnostic purposes.

II.3 I/0 modules
Construction: - As highly flexible I/0 modules are needed for complex and large technical equipment in buildings, they must be composed individually for each plant. To this end, modules must be configurable for various signal types, grouped, labelled per channel with clear text, and distributed or set across several control panels/panels. The entire module electronics must be protected by a stable plastic housing.

Diagnostic function: - A status diagnosis for each channel is required to quickly locate installation or plant errors. The status is displayed by LED or on the module.

LED display: - The colour of the status LED must be configurable to correspond with message type to provide and easy overview in the control panel. Feedback: green, maintenance: yellow, warning: red.

Remote I/0 modules: - Remote I/0 modules must be able to be used for small plants or parts thereof to keep the size and number of control panels/panels as low as possible. The maximum number of data points edited this way may only be limited by the maximum capacity of the automation station.

Isolating terminal functionality: - The electronic modules must have isolating terminals to simplify hardware tests and commissioning. As a result, connected field devices can be measured at the test plug sockets without module electronics influence. At the same time, the connection terminals must act as cabinet panel terminal strips.
Connection
Short-circuit proof: - Field devices and motors must be connected directly without requiring coupling relays or other proprietary hardware. All terminals are protected against short circuit and incorrect wiring using AC/DC 24 V. Field device errors must be recognized and displayed reliably to retain high plant availability.

Broken wire interlock: - Interlocks (hardware) and fault messages must be designed for possible wire breaks or loose terminals under closed-loop rules, i.e. the automation station then has status "1" OK (closed monitoring loop) or no fault, and status "O" (interrupted monitoring loop) or fault.

Connect field devices

Field device standards: - The automation stations or I/0 modules must support all common sensors (e.g. temperature, humidity) and actuators (valves, damper actuators) without requiring additional conversion hardware. The bidder must provide proof that the field devices used for the project were tested under the entire system and documented accordingly.

II.4 Updates and adaptations

Updates

Changes during operation: - Customer-specific plant programs must allow for minor adjustments without having to switch off unrelated plants and without changing set parameters and set points.

Changes to applications during operation: - Minor program changes must be able to be introduced without operational interruptions.

Adaptations

Access via system network: - Operators must be able to enter adapted parameters, set points, times etc. in each automation station via the system network under their password.

III. Field Level:

III.1 Requirements at the field level

Product range

Field level contents: -

The field level comprises all measuring sensors, actuators, transmitters and energy measuring

devices used to control, regulate, monitor, and optimize plants. The bidder is expected to provide all required field devices from own production to the installer to provide a harmonized plant image. The associated field device product range overview must be added to the bid.

III.2 Actuators for ventilation and air conditioning plants

Mechanical strength: - Robust and long-lived actuators are required for reliable operation of ventilating plants.

Connecting cable: - Actuators are required to have colour and number-coded connecting cables to prevent wiring mistakes.

Axis attachment: - The actuators must allow for fast mounting to maintain ventilation plants optimally at reasonable costs.

Damper positioning display: - Damper actuators must be equipped with an easily visible optical position indication for clear and visual check of the damper position.

Auxiliary functions: - Auxiliary functions such as auxiliary switches, position feedback, etc., are supplied mounted in the housing.

Disposal: - Actuators must be easily disposable.

Manual adjustment Actuators are equipped with manual adjuster or disengagement function.

III.3 Actuators for fire dampers

Security

Demand: - Fire dampers are intended to provide protection against plant damage and/or personal injury. Periodic function checks guarantee highest safety. Motorization and position feedback is therefore a must. Fire dampers must guarantee secure closure in emergencies for the entire product life. All fire damper actuators as a rule must have a spring return actuator.

III.4 Field Devices/Sensors

Bidder needs to install the following sensors/Field devices in housing complex/ buildings and same has to be communicate with BMS system for monitoring and controlling.

1. Lux Level Sensor
2. Outside Temp & Humidity Sensor with radiation shield
3. Fire Alarm System (FAS)
4. CCTV
5. Public Address System
6. EPABX System
7. IR Beam Intrusion Detection System
8. RFID based boom barrier system
9. Biometric Reader/Scanner System
10. Energy Meters
11. Water Meters
12. Water Level Sensor
13. Lifts on Modbus RS485 - 12 No.(20 points/unit)
14. LPG Gas Detector-
15. CO2 Gas Detector
16. PIR Sensor (Occupancy Sensor)
17. RFID card Door Locks

Any item/accessories required to install/ interface above sensors shall be on bidder's scope. Bidder has to provide complete list of item/accessories with the bid documents.

B. Communication Network:
B.1 Standard BACnet / AMEV
DIN EN ISO 16484-5 / AMEV
BACnet conformance and BTL logo: - The BACnet servers (automation stations) used must support at least BACnet standard Version 1, Revision 10 (1.10) or higher. In addition, a test must be carried out successfully in a neutral testing laboratory (conformance testing) and the automation stations must have the BTL logo.
B-AWS (management station): - Management stations must match the BACnet Profile B-AWS
(Advanced workstation) as per the BTL Listing.
B-BC (automation station): - Automation stations must match the BACnet Profile B-BC (Building
Controller) as per the BTL Listing.
AMEV AS-A and AS-B (automation station): - Automation stations must meet the AMEV profile AS-A and AS-B as per AMEV guidelines "Bacnet 2011"
B-AWS (management station): - Management stations must match the BACnet Profile B-AWS
(Advanced workstation) as per the BTL Listing and also specified in ANSI / ASHRE 135 guidline. It
must also support the BACnet Life Safety Points and BACnet Life Safety Zones functionality
ONVIF video standard: - The system must be able to implement Video streams of IP cameras. The
presentation in "video wall" modus must be supported.
Conformance declaration
Protocol implementation and conformance declaration (PICS): - Manufacturer self-declaration PICS is required prior to executing work to gain information on the type of communication for the building automation and control system.
Communication via LonTalk
BACnet over LonTalk: - The automation stations must allow for communication via LonTalk and work on simple two-wire cabling in a freely selectable bus topology with a total possible length of 900 m. EtherneUIP must serve as the backbone.

Communication via BACnet / IP
BACneUIP: - The automation stations (room automation stations as well) must support BACneUIP
communication (as per the standards described previously) for later system-independent plant
extensions.
BACneUIP(v4-v6) to BACneUMS/TP: - The automation station must be able to integrate, using a router manufactured by the same vendor, the MS/TP protocol via BACnetIP.
BACnetIP(v4-v6) to BACnet/MS/TP or BACnet/LonTalk: - The automation station must be able to
integrate, using a router manufactured by the same vendor, the BACnetMS/TP protocol via BACnet/lP as well as BACnet/LonTalk.
BACnet/lPv4 to BACnet/lPv6: - The building management system must be able to connected the
BACnet/lPv4 protocol with BACnet/lPv6 protocol using a router manufactured by the same vendor.
BACnet LonTalk to BACnet MS/TP: - The building management system must be able to connected the BACneULonTalk with BACneUMSffP protocol using a router manufactured by the same vendor.

B.2 Physical structure
Network structure
Structure: - The *offered* network must be flexible and allow for all types of networks (line, star, ring, tree, etc.) to satisfy all owner/operator needs.
Cable types: - The manufacturer must add to the bid any requirements for specific types of cable, cable installation, or diameters etc., if the manufacturer or *offered* bus topology require them.
B.3 Building automation and control system - Automation stations
Openness
Extendibility: - Integrating existing technical equipment without additional conversion hardware
(existing, open system, or other standardized bus systems such as BACnet or third-party) in the new environment is a vital task. The same applies to LonTalk, DALI, or KNX integration.
Integration of third-party systems: - If possible, the same communication protocol must be used as for the existing technical equipment in the building to integrate third-party systems (refrigeration machines, lighting and building automation and control systems, etc.). Building automation and control systems not offering this integration as specified must include and clearly declare any additional conversion hardware (gateways) in their price.

Open and neutral communication via BACnet: - Automation stations are connected to the management level via communication bus. System structure must allow open, neutral and manufacturer-independent communication. Communications must take place in principle via BACnet even if proprietary communications would be possible based on the automation stations used. Intermediate OPC servers are not allowed.
Engineering interface via the network or remote: - Access over the network, VPN, or modem is required for maintenance and diagnostics purposes.
B.4 Automation station - Automation station
Standard protocol
Uniform protocol: - Communication must also be standardized even between individual modules and automation stations. All devices must communicate on the same protocol on the entire room level.

B.5 Automation station - Field level
Field device connection.

Connect field devices: - The automation stations or I/0 modules must support all common sensors (e.g. temperature, humidity) and actuators (valves, damper actuators, lighting control, blinds drives) without requiring additional conversion hardware. The bidder must provide proof that the field devices used for the project was tested under the entire system and documented accordingly.
Use of communicative field devices: - Communicative field devices are required to achieve simple
cabling and consistent communication structures.

Connect communicating field devices: - Common manufacturers must be integratable to connect third party devices and subsystems. (E.g. communicating pumps, Modbus subsystems, M-bus capable heat
meters, etc.)

Third-party system connection: - A interface is required to connect various devices that supports
communication protocols such as Modbus, M-Bus, Genibus and USS.
Support of Plug Play commissioning: - The communications protocol used on the field level must
support "Plug & Play", i.e. commissioning must be able to be conducted by a person without tools other than a PC/notebook without expensive software tools.

Number of supported communicative field devices: - The communications protocol used on the field level must support at least 30 communicative field devices for each controller **with** the use of gateways.

C. Field Devices and its Requirement Scenarios:
Note: Below mentioned are the minimum technical standards/specification that has to be maintained for the Field Devices and other Miscellaneous Hardware in the project. However, with the approval of the engineer-in-charge, the design and technical details can be changed at the time of implementation.
1. Lux Level Sensor: Lux sensors should be used to detect the day light and the BMS should be able to control/manipulate the turning on/off of street lights based on the inputs received from the lux sensor.
2. Outside Temp & Humidity Sensor with radiation shield: The BMS should be able to take inputs from the Outside Temp & Humidity Sensor and provide controls/visuals as per requirement.
3. Fire Alarm System (FAS)- Below mentioned are the minimum technical standards/specification that has to be maintained for the FAS in the project. However, with the approval of the engineer-in-charge, the design and technical details can be changed at the time of implementation.

Panel	
Type	2 Loop Intelligent Addressable
Main Input Power	230V AC @ 50 Hz.
Standard	EN 54
Display	LCD display
Loop Capacity	Minimum 230 devices per loop @ 1000 meter loop length (1.5mm² Cu cable) – Return loop to be considered in this length.
Battery backup	2 Hours of batter backup required in case of power failure
Repeater Panel	1 Nos. of repeater panel shall be provided for Security cabin

Output	RS 485 output to be provided for connecting with BMS panel.
Intelligent Addressable Heat & Smoke Detector with Base	
Type	Address programmable in field
Operating Temperature	-10°C to +50°C
Programming method	Electronically programming
Mounting JB	Weatherproof mounting ABS plastic JB to be used for mounting detectors on hard ceiling.
Response Indicator	Response indicator shall be installed where ever the multi detector is installed in confined (closed) area.
Manual Call point	
Type	Press type
Operating Temperature	-10°C to +50°C
Programming method	Electronically programming
Mounting JB	Weatherproof mounting ABS plastic JB or proper back box to be used for mounting MCP on hard ceiling/wall.
Sounder cum Strobe	
Sound Level	Non lower than 95 dB at 1 meter distance
Operating Voltage	24V DC
Operating Temperature	-10°C to +50°C
Mounting JB	Weatherproof mounting ABS plastic JB or proper back box to be used for mounting Sounder cum Strobe on hard ceiling/wall.
FAS connectivity	Suitable Control output module shall be connected with Sounder cum Strobe
Operating Temperature	-10°C to +50°C
Isolator Module	
Installation criteria	Isolator module shall be installed after every 30 devices
Mounting JB	Weatherproof mounting ABS plastic JB or proper back box to be used for mounting Isolator Module on hard ceiling/wall.
Input/ Output Control Module	
Input/ Output control module shall be used integrating third party devices (like Gas Detectors) with FAS	
Mounting JB	Weatherproof mounting ABS plastic JB or proper back box to be used for mounting Input/ Output Module on hard ceiling/wall.
Cable	
2 C * 1.5 mm² Stranded unarmoured with overall shielded, FRLS Cable	
Colour	Red
Accessories: • All the cable laid in the field should be tagged at every 10 meter distance. • Proper Criss-cross Ferruling to be done at the terminal end of each device and main panel.	

- In case if the cables run on the wall then they should be inserted in conduits and shall be fixed on the wall with proper saddling.
- All the accessories (clamps, miscellaneous hardware / fittings, Casing- Capping, cable laying etc.) required for the installation of complete FAS system as a whole shall be in the scope of supply. Hence it is essential to quote for all the accessories irrespective of whether the bidder considers it as a standard supply or optional, that a working system could be compared at par. If any accessory is required but not quoted, the quotation shall be rejected since the cost of unquoted item cannot be considered later on.

4. CCTV: Below mentioned are the minimum technical standards/specification that has to be maintained for the CCTV in the project. However, with the approval of the engineer-in-charge, the design and technical details can be changed at the time of implementation.

a) 60" Full HD LED Monitor with wall mount bracket:

Panel			
Diagonal Size	60”	Type	60 Hz. D-LED BLU
Resolution	1920 * 1080 (FHD)	Pixel Pitch (mm)	0.12125 (H) * 0.36375 (V)
Active Display Area (mm)	1300 (H) * 700 (V) approximately	Brightness (Typical)	300 nit approximately
Contrast Ratio	5000:01:00	Viewing Angle (H/V)	178°:178°
Response Time (G to G)	8 ms	Display Colors	16 M
Colour Gamut	72%	Haze	2%
Display			
Dynamic C/R	MEGA	H-Scanning Frequency	30 ~ 81 KHz.
V-Scanning Freq.	48 ~ 75 Hz.	Maximum Pixel Frequency	148.5 MHz
Speaker Type	Built in Speaker (10W * 1)		
Standards			
Safety	BIS(India) : IEC60950-1 / IS13252		
EMC	CE (Europe) : EN55022:2006+A1:2007, EN55024:1998+A1:2001+A2:2003		
Connectivity			
Input	RGB	D-SUB, DVI-D	
	Video	HDMI1, HDMI2, Component (CVBS Common)	
	Audio	Stereo Mini Jack, RGB/DVI/HDMI/CVBS/ Component Audio (Common)	
	USB	USB 2.0 * 1	
Output	Audio	Stereo Mini Jack	
External Control		RS 232 C (IN) thru stereo jack RJ 45	
External Sensor		IR	
Tuner		Yes	
Power			
Type		Internal	

Power Supply		AC 240V ~ (±10%), 50 Hz.	
Power Consumption	Max (W/h)	172 (max.)	
	Power saving Mode	Less than 45W	
Mechanical Specification			
Dimension (mm)	Set	1487 * 881 * 170 (approximately)	
Weight (Kg.)	Set	26 Kg. (approximately)	
VESA Mount		200 * 200 mm (approximately)	
Operation			
Operating Temperature	0°C to 45°C	Relative Humidity	10% to 80%

b) IR Bullet Camera – IP Based:

Operational	
Video standard	NTSC/PAL
Scanning system	Progressive scan
Image sensor	1/3″4 MP CMOS
Number of pixels (h × v)	2688 × 1520
Minimum illumination	0.08 lux color @ f2.0 (color, 1/3s, 30 IRE) 0 lux B/W with IR LEDs on @ F2.0
S/n ratio	> 45 dB
Electronic shutter speed	1/3(4) – 1/100,000 s
IR distance	Up to 98 ft (30 m), depending on scene reflectance
Smart IR	Auto/manual
Day/night	Auto (ICR)/Colour/BW
Backlight compensation	BLC/HLC/WDR (120 dB)
White balance	Auto/ Natural/ Street lamp/ Outdoor/ Manual/ Customized region
Gain control	0~100
Wide dynamic range	120 dB
Noise reduction	3d DNR
Privacy masking	Up to 4 configurable zones
Motion detection	Up to 4 configurable zones
Region of interest	Up to 4 configurable zones
Digital zoom	16x
Lens	3.6 mm, fixed, F2.0
Angle of view	87° (H), 56° (V)
Video	
Video compression	H.265/H.264H/Smart Codec/MJPEG (Sub Stream)
Resolution	4 MP (2688×1520), QHD (2560×1440), 3 MP (2304×1296), 1080p (1920×1080), SXGA (1280×1024), 1.3 MP (1280×960), 720p (1280×720), D1 (704×480/576), VGA (640×480), CIF (352×240/288)
Frame rate	4 M P at 1 – 20fps, 3 MP at 1 – 25/30fps D1/CIF at 1 – 25/30fps
Bit rate control	CBR/VBR

Bit rate	H.265: 12K – 8448 Kbps H.264: 32K – 10240 Kbps
Network	
Ethernet	RJ-45 (10/100base-T)
Supported web browsers	Internet explorer (11.0+)
Supported OS	Windows® 7 32-bit/64-bit; Windows® 10 32-bit/64-bit
Protocols	HTTP; https; TCP; ARP; RTSP; RTP; RTCP; UDP; SMTP; DHCP; DNS; PPPoE; IPv4/v6; QoS; UPnP; NTP; Bonjour; IEEE 802.1x; Multicast; ICMP; IGMP; TLS
Interoperability	ONVIF Profile s/q
Maximum user access	20 users
Security	User account and password protection HTTPS, IP Filter, Digest authentication, User access log, TLS1.2 only, AES-128/256, SSH/Telnet closed, sftp by default, PCIDSS compliance
Event	Network disconnection, IP address conflict, illegal access, video tampering, motion detection
Event notification	Record (NAS and FTP), email, snapshot
Electrical	
Power supply	POE (802.3af) class 0, 12 VDC
Power consumption	5.7 w max. (IR LEDs ON)
Mechanical	
Dimensions	6.49″ × 2.79″ – (approximately)
Product weight	0.84 lb – (approximately)
Construction	Die-cast aluminum housing with powder coat
Construction color	RAL 9003 (White)
Environmental	
Operating temperature	–22°f to 131°f (–30°c to 55°c)
Storage temperature	–22°f to 131°f (–30°c to 55°c)
Relative humidity	Less than 95 , non-condensing
Ingress protection	IP66
Regulatory	
Emissions	FCC part 15B, EN 55032
Immunity	EN 50130-4
Safety	EU: EN 60950-1 North America UL listed to UL/CSA 60950-1
ROHS	EN 50581

c) IR Ball(Dome) Camera – IP Based:

Operational	
Video standard	NTSC/PAL
Scanning system	Progressive scan
Image sensor	1/3″4 MP CMOS
Number of pixels (h × v)	2688 × 1520
Minimum illumination	0.08 lux colour @ f2.0 (colour, 1/3s, 30

	IRE) 0 lux B/W with IR LEDs on @ F2.0
S/n ratio	> 45 Db
Electronic shutter speed	1/3(4) – 1/100,000 s
IR distance	Up to 82 ft (25 m), depending on scene reflectance
Smart IR	Auto/manual
Day/night	Auto (ICR)/Colour/BW
Backlight compensation	BLC/HLC/WDR (120 dB)
White balance	Auto/ Natural/ Street lamp/ Outdoor/ Manual
Gain control	Auto/ Manual
Wide dynamic range	True WDR (120 dB)
Noise reduction	3d DNR
Privacy masking	Up to 4 configurable zones
Motion detection	Up to 4 configurable zones
Region of interest	Up to 4 configurable zones
Digital zoom	16x
Lens	2.8 mm, fixed, F2.0
Angle of view	104°/87° (H), 56°/48° (V)
Video	
Video compression	H.265/H.264
Resolution	4 MP (2688×1520), QHD (2560×1440), 3 MP (2304×1296), 1080p (1920×1080), SXGA (1280×1024), 1.3 MP (1280×960), 720p (1280×720), D1 (704×480/576), VGA (640×480), CIF (352×240/288)
Frame rate	4 MP at 1 – 20fps, 3 MP at 1 – 25/30fps D1/CIF at 1 – 25/30fps
Bit rate control	CBR/VBR
Bit rate	H.265: 12K – 8448 Kbps H.264: 32K – 10240 Kbps
Network	
Ethernet	RJ-45 (10/100base-T)
Supported web browsers	Internet explorer (11.0+)
Supported OS	Windows® 7 32-bit/64-bit
Protocols	IPv4/v6, TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, HTTPS, SSL, FTP, SMTP, DHCP, PPPoE, UPnP, SNMP v2/v3, Bonjour, DNS, DDNS, IEEE 802.1X, QoS, NTP
Interoperability	ONVIF Profile S
Maximum user access	20 users
Security	User account and password protection, HTTPS, IP filter, IEEE 802.1X, digest authentication, user access log, TLS1.2, AES-256, SSH/Telnet closed, FTP disabled
Event	Network disconnection, IP address conflict, illegal access, video tampering, motion detection

Event notification	Record (NAS and FTP), Relay output, email, snapshot
Electrical	
Power supply	POE (802.3af) class 0, 12 VDC
Power consumption	4.68 w max. (IR LEDs ON)
Mechanical	
Dimensions	3.68″ × 3.14″ – (approximately)
Product weight	0.51 lb – (approximately)
Construction	Die-cast aluminum housing with powder coat
Construction color	RAL 9003 (White)
Environmental	
Operating temperature	–22°f to 131°f (–30°c to 55°c)
Storage temperature	–22°f to 131°f (–30°c to 55°c)
Relative humidity	Less than 95 , non-condensing
Ingress protection	IP66
Regulatory	
Emissions	FCC part 15B, EN 55032
Immunity	EN 50130-4
Safety	EU: EN 60950-1 North America UL listed to UL/CSA 60950-1
ROHS	EN 50581

d) 64 Channel NVR:

System	
Main Processor	Quad-core embedded processor
Operating System	Embedded LINUX
Video	
Inputs	HEN642*4: 64 Channels IP
Audio	
Audio input/output	1 Channel Input/1 Channel Output, RCA
Two-way communication	Supported
Display	
Interface	2 HDMI (1 HDMI up to 3840 × 2160); 1 VGA
Resolution	3840 × 2160; 1920 × 1080; 1280 × 1024; 1280 × 720; 1024 × 768
Display Split	HEN642*4: 1/4/8/9/16/25/36/64
OSD	Camera title; Time; Video loss; Camera lock; Motion detection; Recording
Fisheye video de-warping	Supported in local and web user interface
Recording	
Compression	H.265/H.264/MJPEG/MPEG4
Resolution	12 MP (4000 × 3000); 8 MP (3840 × 2160); 6 MP (3072 × 2048); 5 MP (2560 × 1920); 4 MP (2560 × 1440); 3 MP (2048 × 1520); 1080p (1920 × 1080); 720p (1280 × 720); D1 (704 × 576 /

	704 × 480); CIF (352 × 288 / 352 × 240)
Frame rate	1–15 fps (12 MP and 8 MP); 1–25/30 fps (rest of the resolutions)
Record bit rate	320 Mbps
Bit rate	16 kbps ~ 20 Mbps, per channel
Recording mode	Schedule (Regular/Continuous, Motion Detection, Alarm); Manual; Stop
Recording interval	1 to 120 minutes (default 60 min)
Pre-event recording interval	1 to 30 seconds
Post-event recording interval	10 to 300 seconds
Video Detection & Alarms	
Trigger events	Recording; PTZ; Tour; Alarm; Video Push; Email; FTP; Snapshot; Buzzer
Video detection	Motion Detection—MD Zones: 396 (22 × 18); Video Loss; Camera Blank
Playback and backup	
Sync playback	1/4/8/16 (maximum 4-ch @ 8 MP, 8-ch @ 4 MP, or 16-ch @ 1080p simultaneous playback)
Search mode	Time/Date; Alarm; Motion Detection (MD); Exact Search (accurate to a second); Smart Search
Playback function	Play; Pause; Stop; Rewind; Fast play; Slow play; Next File; Previous File; Next Camera; Previous Camera; Full Screen; Repeat; Shuffle; Backup selection; Digital Zoom
Backup mode compatibility	USB Device; Network; Internal SATA burner
Network	
Ethernet	1 RJ-45 port (10/100/1000 Mbps)
POE	16 ports (IEEE802.3af/at)
Supported protocols	HTTP, TCP/IP, IPv4/IPv6, UPnP, RTSP, UDP, SMTP, NTP, DHCP, DNS, IP Filter, PPPoE, DDNS, FTP, Alarm Server, IP Search, P2P
Maximum number of users	128 users
Network throughput	Input 320 Mbps; Output 320 Mbps
Smart phone compatibility	iPhone; iPad; Android
Storage	
Internal HDD	4 SATA ports, up to 32 TB
External HDD	1 eSATA port
Auxiliary Interface	
USB Ports	3 (2 rear USB3.0; 1 front USB2.0)
RS232	1 port (for PC communications and keyboard)
Electrical	
Power Supply	Single, 100~240 VAC, 50/60 Hz
Power consumption	NVRs: 17.5 W max (without HDD) PoE: 25.5 W for a single port (150 W total)
Environmental	
Operating temperature	–10°C to 55°C (14°F to 131°F)

Relative humidity	10° to 90°, non-condensing
Storage temperature	–20°C to 70°C (–4°F to 158°F), 0° to 90° relative humidity
Physical	
Dimensions	17.3" × 16.3" × 3.0" – (approximately)
Weight (without HDD)	10.3 lb – (approximately)
Regulatory	
Emissions	FCC Part 15B, EN55032: 2012 +AC: 2013, EN61000-3-2: 2014, EN61000-3-3: 2013
Immunity	EN50130-4: 2011+A1: 2014, EN55024: 2010+A1: 2015
Safety	EU: EN60950-1 North America UL listed to UL/ CSA 60950-1
ROHS	EN50581: 2012

e) Fibre Patch panel:

Hardware Specification	
Functionality	Patching
Body Style	Symmetrical
Colour	Black
Colour Front	Black
Interface Feature, front	Standard
Interface, front	LC
Rack type	EIA 19 in
Rack unit	1
Shelf movement	Sliding
Splice Trays included, quantity	1
Splicing Type	Heat shrink, single fibre fusion
Total Ports	12
Rack units	1
Shelf movement	Sliding
Mounting	Rack mounted

Above item shall be used common for BEM's controller, IP based EPABX and other IP based devices/equipment's.

f) 8TB Hard Disk:

Specifications	
Formatted capacity	8 TB
Interface	SATA 6 Gb/s
Cache	256MB
Bytes per sector	4096
Performance	
R/V (Rotational Vibration) Sensor	Yes
Drive bays supported	8+
Camera supported	Upto 64
Max sustainable transfer rate	230 MB/s
Rescue Data Recovery Service	
3 – year option with Rescue model	Yes

Voltage	
Voltage Tolerance, Inc. Noise (5V)	±5%
Voltage Tolerance, Inc. Noise (12V)	±10%
Power Management	
Start-up Power (12V, A)	1.8
Average Operating Power	9.0W
Idle Average	7.6W
Standby Mode	0.6W
Sleep Mode	0.6W
Environmental/ Temperature	
Operating (ambient, min)	5°C
Operating (drive case, max)	60°C
Non-operating (ambient, min)	-40°C
Non-operating (ambient, max)	70°C
Physical	
Height	1.028”
Width	4.010”
Depth	5.878”
Weight	1.72 lb

g) Cables:

Fibre Optic cable	
Type of cable	6F Multimode 6 core Armoured OFC
No. of Fibres	6F
CAT 6 cable	
Colour	Grey
Insulation material	FRLS PVC
Conductor	Copper
Core	4 pair
Approval	ISI/ EN standard approvals
Operating Temperature	-20°C to +70°C
Power Cable	
Colour	Grey
Insulation material	FRLS PVC
Type	Stranded unarmoured with overall shield cable
Core	3 C * 2.5mm2
Conductor	Copper
Approval	ISI/ EN standard approvals
Operating Temperature	-20°C to +70°C

h) Cabinet:

Product Description	42U 1200 mm Deep Static Rack
Rack Height	42 U
Colour	Black
Removable lockable side panels	Yes
Split rear doors	Yes
Top & Bottom cable exits	Yes
Side pockets	6
Tool less PDU mounting	6
Type	Static Rack
Exhaust fans	Yes

Mounting trays	To be used where ever needed

i) License Plate Surveillance (LPR) :

Sr. No.	Product	Description
1	8 Channel NVR	• Professional and Reliable • New logical and visualized GUI design • Dual-OS design to ensure high reliability of system running • ANR technology to enhance the storage reliability when the network is disconnected Video Input and Transmission • Adopt stream over TLS encryption technology (enhanced SDK service and RTP over HTTPS protocol) which provides more secure stream transmission service (max. 128 Mbps TLS stream outgoing bandwidth) • Up to xx-ch IP cameras can be connected (up to 12 MP) • Connectable to the third-party network cameras
2	Bullet Camera	• 1/1.8" progressive scan CMOS • 50 Hz: 1920 × 1080 @ 50 fps • 60 Hz: 1920 × 1080 @ 60 fps • Color: 0.001 Lux @ (F1.2, AGC ON) • H.265, H.264, MJPEG • 120 dB WDR • 3D DNR • 24 volt 3 amp Adapter inculding charges
3	Central License	• Manage and configure cameras on different servers from one web application • Database retention • License plate lists (white/black lists) • Rules to allow build custom business logic based on customer requirements • Multilingual user interface • ANPR/LPR engine provide the following information about recognized plate. • Plate text • Plate coordinates on image/frame • Confidence (%) • Frame image JPEG format (quality can be configured) • Camera name • Server name
4	Hard disk	• 8 TB capacity,3.5-inch internal hard drive, 64MB buffer size
5	Hardware &Cable	All the installation hardware and cable shall be supplied by the customer.

j) Accessories:

- Bidder should consider all other required accessories like suitable mounting rack with cable manager, PDU, and Fan (For NVR & POE switch).

- Field mountable weather proof rack (wall mount type) shall be used to mount all the accessories like BEM's controller, POE , LiU, SMPS and other accessories at each block and each floor of club house.
- All the cable laid in the field should be tagged at every 10 meter distance.
- Proper Criss-cross Ferruling to be done at the terminal end of each device and main panel. Also cable termination shall be done with suitable lugs. Internal dressing of the cables shall be done in cable PVC ducts inside the racks.
- In case if the cables run on the wall then they should be inserted in conduits and shall be fixed on the wall with proper saddling.
- All the accessories (Mounting poles, clamps, miscellaneous hardware / fittings, Casing- Capping, cable conduits etc.) required for the installation of complete CCTV system as a whole shall be in the scope of supply. Hence it is essential to quote for all the accessories irrespective of whether the bidder considers it as a standard supply or optional. If any accessory is required but not quoted, then it shall be bidders responsibility to supply that without any price implication.

k) 4.0 Recording and Backup:

l) a. The recordings of the **all** the cameras should be available on demand for 30 days from the date of recording.

b. Necessary storage capacity should be there to store the recordings of all the cameras for 30 days.

c. The storage of recordings and the CCTV application server should have minimum **hardware RAID level 5**.

5. Public Address System- Below mentioned are the minimum technical standards/specification that has to be maintained for the PAS in the project. However, with the approval of the engineer-in-charge, the design and technical details can be changed at the time of implementation.

PA – Main Controller:

- Compliant with standards for emergency sound systems (IEC60849)
- 6-zone system controller
- Rack Mount
- Built-in 240 W booster amplifier
- 12 Business and emergency control inputs and outputs
- Up to 255 messages can be stored in the internal 16 MB flash ROM
- Mains Voltage 230 / 115 VAC, ±10%, 50 / 60 Hz.
- Main Power Consumption 60 VA
- Max/Rated Output Power 360 W / 240 W
- Emergency Active Relay NO / COM / NC
- Call Active Relay NO / COM / NC
- Fault Relay NO / COM / NC normally energized (failsafe)
- General Purpose Relays (2x) NO / COM
- Tape Output Cinch, 2x mono
- Mic Input Type XLR, 6.3 mm jack
- Operating Temperature +5°C to +55°C
- Approval: EN 55103-1, IEC 60849, EN 55103-2, EN 60065

PA – Amplifier:

- LED bar on the front side to indicate the acoustic level of the signal in dB.
- 100V output as well as 70V output for connecting to the loudspeakers
- Input Voltage 230VAC ±10% at 50/60Hz.
- Rated Output 480W
- Line Inputs 2x
- Rack Mounted
- Operating temperature -10 ºC to +45 ºC
- Approval: EN60065

PA – Loud Speakers:

- Rated Power 15 W high-efficiency circular horn loudspeaker
- Maximum power 22.5 W
- Water-and dust protected to IP 65
- Shall be Wall or Pole Mount
- Rated input voltage 100 V
- Sound pressure level at 15 W / 1 W (1 kHz, 1 m) 115 / 103 dB
- Material ABS
- Operating temperature -25 ºC to +55 ºC
- Certification: IP65
- Approvals: EN60065

PA – Call Station:

- Six-zone call station
- LED indications for zone selection, fault, and emergency state
- Shall be Expandable in a lot of 6 zones
- Selectable gain, speech filter, limiter, and output level for improved intelligibility
- Connection by CAT6 LAN cable
- Voltage range 24 VDC supplied by Controller
- Controls and indicators
- Four status LEDs
- PTT-key
- PTT status LED
- Six zone selection keys
- Six zone selection LEDs
- All-call key
- Eight DIP switches
- Rotary volume control
- Table Top Mounting
- Operating Temp.: -10 to 45°C
- Certification: CE
- Approvals: EN55103-1, EN55103-2, EN60065

Accessories:

- All the cable laid in the field should be tagged at every 10 meter distance.
- Proper Criss-cross Ferruling to be done at the terminal end of each device and main panel.
- In case if the cables run on the wall then they should be inserted in conduits and shall be fixed on the wall with proper saddling.
- All the accessories (Hoods, clamps, miscellaneous hardware / fittings, Casing- Capping, cable laying etc.) required for the installation of

complete PAS system as a whole shall be in the scope of supply. Hence it is essential to quote for all the accessories irrespective of whether the bidder considers it as a standard supply or optional, that a working system could be compared at par. If any accessory is required but not quoted, the quotation shall be rejected since the cost of unquoted item cannot be considered later on.

6. EPABX System- Below mentioned are the minimum technical standards/specification that has to be maintained for the EPABX system in the project. However, with the approval of the engineer-in-charge, the design and technical details can be changed at the time of implementation.

Sr. No.	**IP Based Exchange : Requirement Specifications**
1	The IP-PBX/PABX/Communication System shall employ IP at its core with IP switching technology and 100% non-blocking.
2	The system should be IPV6 ready.
3	The manufacturer should have DSIR recognized R&D.
4	The system should have VoIP and VMS at its core i.e. VoIP and VMS modules should be mountable on the CPU.
5	The system shall provide IP functionality at its core to support SIP/IP extensions and trunks over SIP protocol. It should be possible to support SIP Trunks and SIP/IP Extension with the single VoIP module. It should support license-free 99 SIP trunks and 999 SIP/IP users (SIP/IP Phone, Mobile softphones, UC Client).
6	It should be possible to reach the capacity of system to 200 analogue and 999 IP user's without any add-on CPU or chassis/hardware platform.
7	The architecture of the system shall be capable of seamless migration to its maximum capacity by simply adding peripherals cards/modules in the same chassis without compromising function/features of the system. The architecture should be non-stackable eliminating individual power supply for each chassis.
8	The system should build on a universal slot architecture and modular in design to enable seamless growth, by adding the desired necessary modules and cards as and when required. Any interface peripheral card can be inserted in any slot of the platform, whereby it is possible to increase or decrease the trunk lines or subscriber lines of the system as per the requirement.
9	VoIP and VMS should be Daughter-board modules mounted on CPU. No slots should be utilized for it. VoIP module(s) should support up to 128 VoIP channels, 99 SIP trunks and 999 SIP/IP users (SIP/IP Phone, Mobile softphones, UC Client) on single VoIP module. The system should have high-density VoIP module of 64 channels to save on real-estate.
10	System power supply should be inbuilt and SMPS type with input ranges from 100 – 240 VAC, 47-60 Hz OR 48VDC +/- 15%
11	It shall have distributed processing architecture, SLIC and SMT Design.
12	It should support maximum 128 IP-TDM calls and 500 IP-IP calls (without transcoding in Relay RTP Mode) and 50 IP-IP video calls.
13	**The system should support UC Clients with following UC features:** Presence and IM Video Calling

	Auto Sign-in IM to SMS and vice versa SMS to email and vice versa Bulk Messaging Busy Lamp Field and SMS on No Reply Drag and Drop conference on Windows UC Client
14	The system should support SNMP, which helps to manage and monitor network elements, audit network usage and detect network faults. SNMP manager should support SNMPv1/v2c/v3 versions.
15	It should support SIP over TLS and SRTP to ensure VoIP call security over IP network.
16	System should have two Gigabit Ethernet ports for LAN and WAN to separate out local and VoIP traffic on external network.
17	It should be suitable for DTMF as well as the FSK type of telephone instruments.
18	The EPABX capacity shall be suitable to scale up to 99 VoIP (SIP) Trunks and 999 SIP/IP Users.
19	It should have built-in multi-party conferencing without any software licensing. It should be possible to carry out 15 conferences of 3-participants at a time. The minimum number of participants in single conference should be at least 21.
20	The system shall have the inbuilt Auto-attendant facility and shall be able to answer minimum 9 calls simultaneously and should support dial-by-name.
21	The system shall be compatible with ISDN PRI line of Local Service Provider.
22	The PRI card should be software programmable for TE/NT mode.
23	The system shall have multiple port interfaces such as analogue extension lines, digital key phone, GSM/3G/4G for voice, T1E1 PRI, RADIO, CO and E&M . All interfaces except VoIP and VMS shall be in the form of expansion cards and can be plugged into the universal slots of the system as and when required in the future. VoIP and VMS Board module should sit on the CPU.
24	The system should have in-skin GSM card so that the multiple SIMs can be inserted on the GSM card plugged on to the PBX platform. Hence, the calls on GSM mobile can be routed through this SIMs and contribute in reduction of overall telecom bill.
25	The system should have combo cards (PSTN+DIGITAL+ANALOG) to have flexible configuration and save on the resources of universal slots.
26	The system should support SMPP protocol to send/receive SMS using in-skin GSM SIMs within IP-PBX. Any software required to send/receive SMS shall also to quote separately.
27	The system shall have at least 1 RS232 ports for SMDR/PMS/CAS Interface.
28	The system shall have built-in web-based software programming tool for system administration.
29	The system shall have a built-in remote maintenance facility. The system can be programmed remotely over the internet without any modem required on the system side.
30	The call ringing sequence would be programmable and have options such as simultaneous, hunting off, round robin and delayed simultaneous.
31	Detail reports of all system parameters should be generated through the SMDR port of system.
32	The system should have built-in Power Failure Transfer for minimum 4

	ports of PSTN Trunks. No external devices for Power failure should be required.
33	The offered system should be QSIG ready (for PRI) for Networking and Feature Transparency between two or more exchanges. System should be networked over PRI QSIG with an option of direct fibre optic connectivity on E1PRI Card.
34	Each port of the system shall be programmable. It shall have programmable features port-wise/extension-wise.
35	The system shall support flexible numbering for extensions such as it may have extensions with 1 digit, 2 digits and up to 6 digits numbers as well as in combination of all.
36	Access codes, system timers and access to features shall be programmable.
37	Storage of outgoing, incoming and internal call reports shall be generated on SMDR port of the system. It shall also be available online through Ethernet Port.
38	The system should have built-in outgoing Call Log buffer of 6000 calls, incoming call log buffer of 5000 and call log buffer of 1000 internal calls.
39	System should support dial from the corporate directory. There shall be minimum 999 numbers possible to store in corporate directory and shall also possible to dial it as an abbreviated number.
40	Features given to an extension shall be accessed from any other extension by dialing the secret codes.
41	**The system must have following features:** Call Budget on Trunk CLI based DISA (Mobile Extension) GSM Trunk Connectivity Multi-stage Dialing Returned Call to Original Caller (RCOC) Automatic Call to Missed (Predefined) Calls on Trunks Dual Ring Routing of calls to only permissible legal networks (Logical Partitioning) SMDR/CDR through Ethernet Port
42	Extension features shall have an extension to extension call, extension to central office, extension to operator, automatic call back, call transfer, call forward, follow me, executive/secretary, do not disturb, barge-in, raid, Boss ring, Priority shall be supported.
43	Operator features shall have the assistance to extension, attended call transfer, call intercept, indication of call waiting, night service control etc. should be available by default.
44	The system shall have features as CLI based routing, call duration control, least cost routing i.e. time, number or combination of both.
45	The system shall have a conversational recording in the mail box. Conversation recording should be possible on Analog/Digital/IP as well as Mobile SIP Smartphones (Android/iPhone) without any additional software licenses.
46	Varied type of open SIP Terminals such as IP Phone, SIP softphone, Mobile SIP Client and UC Client shall be supported.
47	System's UC Client should support 1000 DSS, 500 BLF and drag & drop conference.
48	The manufacturer should also have UC Client application for Android and iPhone and on Windows PC so that the mobility can be extended for the Smartphone users.
49	The system must support following features of IP telephony: Dynamic

	DNS, Registrar Server, Proxy Server, Presence Server, NAT and STUN.
50	The hardware should be 19" rack mountable with not more than 4U size so that it can be accommodate with the standard rack.

Sr. No.	**IP Based Phones: Requirement Specifications**
1	VoIP Protocol: SIP (1 SIP Account)
2	Ethernet Ports: 2 (PC and LAN)
3	Display: 132x64 Graphical Display
4	Colour: Grey
5	Functional Keys: 13 Function keys and 4 Context Sensitive Keys
6	Power Supply: PoE and 5V DC (Adaptor Based)

Notes:

1. Bidder shall design, supply, install, test and commission of Internal Protocol (IP) Telecommunication Exchange.
2. Design of layout of Exchange and its auxiliaries and peripherals at location shown by OIL.
3. Installation of the Exchange, Main Controller and other auxiliaries and peripherals at the central control room in club house premises at OIL, Jodhpur.
4. The main controller shall be installed in the 42U rack (common for BMS controller, CCTV NVR, EPABX Controller, PA controller and other auxiliary equipment).
5. Cabling of OFC & CAT6 cable (where ever needed) shall be done either in trench, on wall (in conduit with proper saddles)
6. In each flat located in the residential area there shall be 2 IP based telephones installed in parallel (1 in drawing room and 1 in master bed room) having same IP address. A splitter module shall be mounted be both the phones.
7. Common LiU, Patch board, 48 port PoE switch shall be mounted at each location in field, details of the PoE switch is provided in CCTV technical writeup.
8. Carrying out all civil (Including Rack mounting) activities for installation of the above and Installation of Earthling for the Exchange.
9. Vendor shall follow all Statutory and Safety regulations of OIL like ESI, PF, Safety Helmet and Safety Shoes and other PPE's.
10. Documentation including installation, testing, programming and commissioning reports and O&M Manual, in both soft (2 Nos.) and hard (1 Nos.) copies.

7. IR Beam Intrusion Detection System: The boundary of the complex should be guarded with IR Beam Intrusion Detection System. The BMS should be able to receive input from the IR Beam Sensors/Detectors installed at the boundary of complex and detect any intrusion at any point of time at any section of the boundary and be able instantly set-off alarm for the same.

Technical Specification of IR Beam Intrusion Detection System

i. Type of IR Beam Detector: High Power Quad Beam
ii. A set of Transmitter and received shall be installed on the wall of Residential complex and Clubhouse.
iii. Double modulation
iv. Beam Power control selector
v. A.T.P.C. – Automatic Transmit Power Control
vi. I.A.S.C. – Integrated Alignment Status Communication
vii. Upper/ Lower pair of beam selection button
viii. Beam detector operation should be able to withstand Light disturbance, Small interference, Fog, Lightning & Forst etc.
ix. Detection range: 60 meters/ 200 Ft.
x. Output: Potential free contact output to be connected to the BMS DDC controller
xi. Operating temperature: -35°C to 60°C
xii. IP – 65
xiii. Bidder shall install & commission the intrusion alarm system.
xiv. A set of alignment kit (If required shall be supplied to us on FOC for future calibration and alignment).

8. RFID based boom barrier system- The Gates of the Complex shall be equipped with RFID based boom barrier system. The requirement scenario is that every authorized vehicle shall be given/tagged with RFID stickers/ID. Whenever, any such authorized vehicle approaches the RFID based boom barrier, the system should automatically open the barrier for passage of the vehicle. The process and the system should be seamless and without any unreasonable delay. However, for any other unauthorized vehicle the barrier should not open. Manual overriding of the above process should be allowed, if required, provided that such events are logged in the system and reports generated later on.

Technical Specification of RFID based boom barrier system:

i. Lane width: 3 Meter, upto 3.8 meter with telescopic boom
ii. Open/ Closing time: 1.8 seconds (maximum)
iii. Supply voltage: 230V AC @ 50 Hz.
iv. Cabinet material: Powder coated steel
v. Boom material: Aluminum Alloy
vi. Base frame: Cast Iron
vii. Temperature range: -20°C to 60°C
viii. Humidity range: ≤ 90%
ix. The barrier should be supplied with applicable accessories like loop detector, Remote transmitter, Siren & Photo cell.
x. The boom barrier shall be locked with the RFID UHF long range proximity reader at the entry/ exit direction of the boom barrier. It shall be interlocked with the BMS software to continuously monitor the entry/ exit of the vehicles. All the communication shall be done on Ethernet.
xi. Total 500 nos. of vehicle tags shall be supplied with the system.

9. Biometric Reader/Scanner System: The Biometric Reader/Scanners should be installed at the gates/or designated places for recording biometric identities of persons entering and exiting the complex. This Biometric Reader/Scanner System should be capable of Fingerprint recognition and Facial recognition. The system should be able to generate attendance report as required by OIL.

Technical Specification of Fingerprint & Face reader

i. Face & Fingerprint reader
ii. IP camera 2 MP
iii. 3.5" IPS display with capacitive touch panel with Gorilla Glass
iv. 100000 Faces & 25000 fingerprint Templates storage
v. 50,000 users & 5,00,000 event storage
vi. 2 Nos. of readers (IN & OUT) shall be installed at each gate (Residential complex and Club house)
vii. Wall Mounted type
viii. Licenses shall be installed, if required for the system
ix. License of minimum 200 people (Face & Finger recognition) shall be provided for the time attendance system.
x. All the mounting accessories should be kept in consideration.

10. Energy Meters:

i. There shall be Energy Meters installed at designated places for Solar Power, DISCOM power and one each for measuring individual flats.
ii. All this meter shall be integrated with the BMS system to record the data of energy consumption.
iii. A proper wall mounted panel box has to be installed in each area
iv. The meter shall be suitable to be connected to the BMS software through POE or DDC controller. Output of the meters shall be RS485/Ethernet.
v. A proper LCD display for diagnostics assistance.
vi. Suitable STAR or DELTA connections for low or high voltage application
vii. Field configurable CT/PT primary and secondary values using push-buttons.
viii. The BMS should be capable of capping the power usage (in Watt unit) of the individual flats based on the inputs of the Energy Meters/or otherwise. The application scenario is that whenever, there is a power changeover to Genset power from Discom Power, the BMS should be able to detect the changeover and immediately apply the capping mechanism to the individual flats so that the users of an individual flat can only draw a certain defined load of power.

11. Water Meters:

i. Water Meter shall be installed at designated places for recording the usage of water. The BMS should be able to take inputs from this water meters and provide the required control/visuals/alarms.
ii. Each flowmeter should have a pulse generator that shall be connected with the DDC controller.
iii. The meter installed at the residential complex shall be of 20mm size along the pulse generator.
iv. The bidder should make sure that the mounting of the flowmeter should be as per the OEM's guidelines.
v. All the database shall be logged in the BMS software.

12. Water Level Sensor: Water Level Sensors shall be installed at designated places for recording the water level of the water tanks. The BMS should be able to take inputs from these water level sensors and provide the required control/visuals/alarms.

13. Lifts on Modbus RS485: The BMS should be capable of providing control/visuals of the Lifts installed through open standards such as Modbus.

14. LPG Gas Detector- LPG gas detector shall be installed at individual flats and Club house for detecting leakage of LPG. The BMS should be able to take inputs from the LPG gas detectors and provide the required control/visuals/alarms.

15. CO2 Gas Detector- CO2 detectors shall be installed at designated places in the complex. The BMS should be able to take inputs from the CO2 gas detectors and provide the required control/visuals/alarms.

16. PIR Sensor (Occupancy Sensor): PIR sensors shall be mounted in club house in designated rooms and the same shall be connected with the auxiliary lightning of rooms

in which it shall be installed. Installation shall be either on the wall or ceiling. Below are the specification of PIR sensor.

Technical Specification:

i.	Technology:	Passive Infrared Sensor
ii.	Maximum mounting height: 1.8 meter to 3 meter	
iii.	Range:	Cone shaped detection pattern, 6 m radius @ 2.5 meter mounting height
iv.	Operating voltage:	230 – 240V AC @ 50 Hz.
v.	Recommended circuit protection: 16 A	
vi.	Maximum load:	6A or 1500 W fluorescent/ incandescent lighting load capacity
vii.	Photocell:	Approx. 30 – 200 Lux
viii.	Off delay:	5 sec. – 40 mins.
ix.	Colour:	White
x.	Material:	Flame retardant PC
xi.	IP rating:	IP 20

This system may not be connected to BMS and may operate independently.

17. RFID card Door Locks: RFID based door locking system shall be installed in the clubhouse at designated rooms. The system should be complete with set of Lock, Cards, RFID writer (@ reception desk), calibration apparatus and other required accessories for complete installation. Below are the specifications of the door lock

Technical Specification:

i. Applicable Card: RFID based with 100,000 times life
ii. Material: Zinc Alloy with chrome plated, Moisture proof & Fire retardant
iii. Panel surface finishing: PVD – durable for 15 years at least
iv. Power supply: 4 pcs. AA alkaline batteries
v. Battery life: 8 – 12 month in normal state of use

vi. Low voltage warning: When power's voltage is less than 4.5V, lock has to provide a warning tone
vii. The lock shall still be able to unlock 50 times before the batteries get exhausted.

viii. Software: With advanced driverless USB technology, without installing driver file. It can be easily and conveniently used when there is windows system in the PC with USB function

ix. Configuration: Setup for Room No. & Clock isn't needed to be operated. Only Read System Card (Authorized card) three times over the lock inductive area and use the corresponding Guest Card to open the door, Room No. & Clock is going to have accessed into door lock automatically.

x. RFID Cards: A lot of 500 card shall be provided with the system along with the calibration cards
xi. Master cards and master key for unlocking the doors in case of emergency shall be provided (minimum 5 sets).

xii. Portable data collector: 1 No. of data collector shall be provided to collect the data of locks in case of emergency.

xiii. Portable USB Writer: A portable USB card writer shall be provided

to assign the cards of respective rooms to the occupants.

This system may not be connected to BMS and may operate independently.

D. Miscellaneous Hardware Requirement:

Note: Below mentioned are the minimum technical standards/specification that has to be maintained for the Miscellaneous Hardware required for the project. However, with the approval of the engineer-in-charge, the design and technical details can be changed at the time of implementation.

a) **One 42 U Rack:** The following items are expected to be fitted into the 42 U Rack. Form factors of below items should allow such fittings.

Sr. No.	Item Description	Quantities
01	Main BEM's controller & interface devices	01 set
02	64 channels NVR	02 sets
03	PA Controllers and amplifiers	01 set
04	IP based EPABX controller and accessories	01 set
05	L2 type, 48 port PoE switch (for BEM, CCTV, EPABX and other IP based hardware)	1 No.
06	LiU 24 Port fully loaded	1 No.
07	CAT6 24 port patch panel	1 No.
08	And other accessories like SMPS, Relay Cards, Terminals Exhaust fans, cables & ducts etc.	1 Lot

Technical Specification of the Rack:

i. As per EIA standard
ii. **LCD monitors and KVM switches**: Rack LCD Consoles having keyboard, mouse, LCD console (19 in. monitor),, and optional integrated 8/16 port analog KVM switch all in a compact 1U design.
iii. Proper Horizontal and Vertical cable managers
iv. Cable access roof, Integrated baying brackets, Preinstalled leveling feet and castors, Easily adjustable vertical mounting rails
v. UL Listed

b) **Rack Server**: The BMS and other applications shall be installed in a rack server with the following specification:
   i. Processor: Minimum Intel Xeon Series with CPU base Frequency 2.1 GHz and 8 Cores and total Cache memory of 11 MB
   ii. RAM: Minimum 16 GB, DDR4, 4 DIMMS
   iii. Storage: Hot Plug SFF/LFF SATA HDD minimum 12 TB total storage
   iv. Appropriate Storage and RAID Controller
   v. Form Factor: Rack (1U) with Short Friction Rail Kit
   vi. Optical Drive Bay: 1
   vii. Ethernet 4 x1Gb (331i) Adapter
   viii. 24 inch Monitor
   ix. Complete Console with Mouse and Keyboard and other accessories
   x. Preconfigured Operating System: Microsoft Windows Server 2020 or higher
   xi. Preconfigured Additional Software: SQL Server 2019 or higher

c) **Router:** Router may be required for connecting internet connections or WAN to the LAN of the complex.

i. Aggregate Throughput (Default) : minimum 100 Mbps
ii. Total onboard WAN or LAN 10/100/1000 ports: minimum 3
iii. SFP-based ports: minimum 2
iv. Memory DDR3 ECC DRAM (Combined control/services/data planes): minimum 16 GB
v. Default flash memory: minimum 4GB
vi. AC input voltage: 100 to 240 VAC auto ranging
vii. SFP Transceiver Module included: Minimum one GLC-SX-MMD 1000BASE-SX SFP transceiver module, MMF, 850nm, DOM or equivalent compatible with the router SFP slot has to be provided by the Vendor as required.

d) **LIU (optical fibre interconnecting unit):** LIU will be required for converting fibre cable signals to Ethernet cable signals.

i. Form Factor: 1 U rack mountable
ii. Type: Sliding LIU
iii. LC connector compatible
iv. Multimode (MM) compatible

e) PoE Switches: The PoE switches are to be installed at designated places to provide data connectivity to the various field devices/cameras and also to provide adequate power to all the required field devices.

i. PoE ports: 48 ports with some/all ports having SFP+ capability
ii. Switching Capacity/Bandwidth: minimum 104 Gbps

E. Approved Make List

Sl. No.	**Short Description of Item**	**Appoved Make**
1	BMS Rack SERVER (PC with accessories & complete console)	HP, DELL, CISCO, IBM
2	BMS Client Station (PC with accessories & complete console)	HP, DELL, IBM
3	BMS System Software	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
4	FAS System Integration on Modbus RS485	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
5	Elevator Control system	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
6	Outside Temp & Humidity Sensor	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
7	Lux Level Sensor	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
8	2 Core 1.5mm², armoured ATC conductor	Polycab, RR Kabel, Havells, Dlink
9	3 Core 6 mm², armoured ATC conductor	Polycab, RR Kabel, Havells, Dlink
10	CAT-6 cable	Polycab, RR Kabel, Havells, Dlink
11	Optic Fibre Cable, Single mode, 6 Core	Polycab, RR Kabel, Havells, Dlink
12	Optic Fibre Cable Multimode mode 6 Core	Polycab, RR Kabel, Havells, Dlink
13	Supplying and laying of MS conduit-25mmø	Polycab, RR Kabel, Havells, Dlink or standard make
14	Supplying and laying of MS	Polycab, RR Kabel, Havells, Dlink or

	conduit-20mmø	standard make
15	ASLFA Control Panel & RS485 Network card	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric, GST
16	64 Channel NVR	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
17	60" LED screen for the display	LG, Samsung, Sony
18	Public Address System	Bosch, Sony, Phillips, Yamaha, JBL, Bose
19	15 Watt Speaker	Bosch, Sony, Phillips, Yamaha, JBL, Bose
20	EPABX system	Avaya, Matrix
21	Mounting Rack (Panel) - 42U	HP, DELL, Schneider Electric
22	Intrusion Beam Detector	Standard Make
23	Boom barrier - 3 Mtr. With accessories	Standard Make
24	RFID system for Vehicle control	Standard Make
25	UHF hard metal tag	Standard Make
26	Biometric Reader/Scanner System	Standard Make
27	DDC controller	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
28	BMS panel-type1	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
29	BMS panel -type2	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
30	Energy meters	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
31	Water meters	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
32	Y-Strainer	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
33	Water Level Sensor	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
34	LPG Gas Detector	Gastron, Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
35	CO2 Gas Detector	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
36	PIR Sensor (Occupancy Sensor)	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
37	RFID card Door Locks	Standard Make
38	Y-Strainer	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric
39	Heat & Smoke detector	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric, GST
40	MCP (Manual Call Point)	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric, GST
41	Sounder cum Strobe	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric, GST
42	Input modules for Gas Detectors	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric, GST
43	2 Core 1.5mm², armoured ATC conductor	Standard Make
44	Supplying and laying of MS conduit-20mmø	Standard Make
45	Bullet Camera	Honeywell, Emerson, Yokogawa, Johnson Controls, Schneider Electric, GST
46	Dome Camera	Honeywell, Emerson, Yokogawa, Johnson

		Controls, Schneider Electric, GST
47	8 CH NVR for LPR	HIKVISION, Emerson, Yokogawa, Johnson Controls, Schneider Electric
48	Industrial Camera Back box of Camera-LPR	HIKVISION, Emerson, Yokogawa, Johnson Controls, Schneider Electric
49	LPR Bullet Camera (Entry & Exit side)	HIKVISION, Emerson, Yokogawa, Johnson Controls, Schneider Electric
50	Central License for LPR	HIKVISION, Emerson, Yokogawa, Johnson Controls, Schneider Electric
51	Surveillance HDD-08 TB for LPR	HIKVISION, Emerson, Yokogawa, Johnson Controls, Schneider Electric
52	IP phones with 48 Nos. of Splitter	Avaya, Matrix
53	Miscellaneous Items for BMS	Standard Make

******

END OF SECTION – III, PART - 3

PROFORMA-A

CERTIFICATE FOR RESTRICTION OF PROCUREMENT

To
OIL INDIA LIMITED
For GM-C&P
RAJASTHAN FIELD
JODHPUR-342005

Sub: IFB No. CJI-5331-P21

Gentlemen,

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

Dated this _____ day of _____

Authorised Person's Signature: _____

Name: _____

Designation:_____

Seal of the Bidder:

PROFORMA-C

BID FORM

To
OIL INDIA LIMITED
For GM-C&P
RAJASTHAN FIELD
JODHPUR-342005

Sub: IFB No. CJI-5331-P21

Gentlemen,

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 _____ (Total Bid Amount in words and figures) or such other sums as may be ascertained in accordance with the Schedule of Prices 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 Letter of Award (LOA).

If our Bid is accepted, we will obtain the guarantee of a bank in a as per tender document for the due performance of the Contract.

We agree to abide by this Bid for a period of 120 days from the date fixed for Bid closing 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 _____

Authorised Person's Signature: _____

Name: _____

Designation:_____

Seal of the Bidder:

PROFORMA – D

Tender No. : CJI-5331-P21

STATEMENT OF COMPLIANCE
(Only exceptions/deviations to be rendered)

SECTION NO. (PAGE NO.)	CLAUSE NO. SUB-CLAUSE NO.	COMPLIANCE/ NON COMPLIANCE	REMARKS

(Authorised Signatory).

Name 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 highlighted as per format provided above and to be submitted as part of their Technical Bid. If the Proforma is left blank, then it would be presumed that the Bidder has not taken any exception/deviation to the terms and conditions of the bid document.

PROFORMA-E

FORM OF BID SECURITY (BANK GUARANTEE)

Ref. No. Bank Guarantee No.

TO
OIL INDIA LIMITED
For GM-C&P
RAJASTHAN FIELD
JODHPUR-342005

WHERAS, (Name of Bidder) ..... (hereinafter called "the Bidder") has submitted their Bid No. ..... dated .....for the provision of certain OILFIELD services (hereinafter called "the Bid") against OIL INDIA LIMITED, RAJASTHAN FIELD, JODHPUR (hereinafter called the "Company")'s IFB No..... KNOW ALL MEN by these presents that we (Name of Bank) ..... of (Name of country) ..... having our registered office at ..... (hereinafter called "the 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 ..... , 2020.

THE CONDITIONS of this obligation 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 the acceptance of their bid by the Company during the period of bid validity:
- fails or refuses to execute the Form of Contract in accordance with the Instructions to Bidders in the tender documents, or
- fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders in the tender documents;
Or
3. If the Bidder furnishes fraudulent document/information in their bid

We undertake to pay to Company up to the above amount upon receipt of its first written demand (by way of letter/fax/cable/email), 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 two or all of the 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.

SIGNATURE AND SEAL OF THE GUARANTOR.....
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 denominated in the currency of the Company's country or an equivalent amount in a freely convertible currency.
· The Date of Expiry of Bank Guarantee should be 210 days after the bid closing date as stated in the tender document

The details of the issuing bank and controlling bank are as under:

A. Issuing Bank
1. Full address of the bank:
2. Email address of the bankers:
3. Mobile nos. of the contact persons:

B. Controlling Office
1. Address of the controlling office of the BG issuing banks:
2. Name of the contact persons at the controlling office with their mobile nos. and email address:

Signature& Seal of the Bank

PROFORMA – F

FORM OF PERFORMANCE BANK GUARANTEE (UNCONDITIONAL)*

To:
(Name of Company ……)
(Address of Company ……..)

WHEREAS (Name and address of Contractor) …… (hereinafter called "Contractor") had undertaken, in pursuance of Contract No…… Dated …… to execute (Name of Contract and brief description of the work) …… (hereinafter called "the Contract"), AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a bank guarantee by a recognised bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND

WHEREAS we have agreed to give the Contractor such a Bank Guarantee, now THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of (Amount of Guarantee)** …… (in words) …… …… such sum being payable in the type and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of the guarantee sum as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modifications of the terms of the Contract or of the work to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee is valid until the date (……)**(calculated at **3 months** after Contract completion date).

SIGNATURE & SEAL OF THE GUARANTOR :……
Name of Bank
:……
Address :……
……
Date :……

---

* Bidders are NOT required to complete this form while submitting the bid.

**An amount is to be inserted by the guarantor, representing the percentage of the Contract price specified in the Contract, and denominated either in the currency of the

Contract or in a freely convertible currency acceptable to the Company as per para 29.0 of Part-1.

The details of the issuing bank and controlling bank are as under:

A.Issuing Bank
1. Full address of the bank:
2. Email address of the bankers:
3. Mobile nos. of the contact persons:

B.Controlling Office
1. Address of the controlling office of the BG issuing banks:
2. Name of the contact persons at the controlling office with their mobile nos. andemail address:

Signature& Seal of the Bank

PROFORMA-G

AGREEMENT FORM

This Agreement is made on ____ day of _____ between Oil India Limited, a Government of India Enterprise, incorporated under the Companies Act 1956, having its registered office at Duliajan, Assam and Rajasthan Project Office at Jodhpur in the State of Rajasthan, hereinafter called the "Company" which expression unless repugnant to the context shall include executors, administrators and assignees on the one part, and M/s. _____ (Name and address of Contractor) hereinafter called the "Contractor" which expression unless repugnant to the context shall include executors, administrators and assignees on the other part,

WHEREAS the Company desires that Services _____ (brief description of services) should be provided by the Contractor as detailed hereinafter or as Company may requires;

WHEREAS, Contractor engaged themselves in the business of offering such services represents that they have adequate resources and equipment, material etc. in good working order and fully trained personnel capable of efficiently undertaking the operations and is ready, willing and able to carry out the said services for the Company as per Section-II attached herewith for this purpose and

WHEREAS, Company had issued a firm Letter of Award No. _____ dated _____ based on Offer No. _____ dated _____ submitted by the Contractor against Company's IFB No. _____. All these aforesaid documents shall be deemed to form and be read and construed as part of this agreement/contract. However, should there be any dispute arising out of interpretation of this contract in regard to the terms and conditions with those mentioned in Company's tender document and subsequent letters including the Letter of Award and Contractor's offer and their subsequent letters, the terms and conditions attached hereto shall prevail. Changes, additions or deletions to the terms of the contract shall be authorized solely by an amendment to the contract executed in the same manner as this contract.

NOW WHEREAS, in consideration of the mutual covenants and agreements hereinafter contained, it is hereby agreed as follows -

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. In addition to documents herein above, the following Sections and Annexure attached herewith shall be deemed to form and be read and construed as part of this agreement viz.:

a. General Conditions of Contract, (Part-3, Section-I)
b. Scope of Work/ Special Conditions of Contract for Civil works (Part-3, Section-II)
c. Scope of Work/ Special Conditions of Contract for Electrical works & BMS (Part-3, Section-III)
d. Certificate for Restriction of Procurement (Proforma-A)
e. Price Bid Format, (Proforma-B)
f. Bid Form, (Proforma-C)
g. Statement of Compliance, (Proforma-D)
h. Performance Security Form, (Proforma-F)

i. Undertaking towards submission of authentic information/documents as per Format vide Annexure-XI.

3. In consideration of the payments to be made by the Company to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Company to provide the Services and to remedy defects therein in conformity in all respect with the provisions of this Contract.

4. The Company hereby covenants to pay the Contractor in consideration of the provision of the Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of this Contract at the times and in the manner prescribed by this Contract.

IN WITNESS thereof, each party has executed this contract at Jodhpur, Rajasthan as of the date shown above.

Signed, Sealed and Delivered,

For and on behalf of	For and on behalf of Contractor
Company (Oil India Limited)	(M/s. _____)
Name:	Name:
Status:	Status:
In presence of	In presence of
1.	1.
2.	2.

* Bidders are NOT required to complete this form.

PROFORMA–H

PROFORMA LETTER OF AUTHORITY

TO
GM (C&P)
Contracts & Purchase Department
Oil India Ltd., Rajasthan Project
Jodhpur-342005
Rajasthan, India

Sir,

Sub: OIL's IFB No. CJI-5331-P21

We _____ confirm that Mr. _____ (Name and address) is authorised to represent us to Bid, negotiate and conclude the agreement on our behalf with you against Tender Invitation No. _____ for hiring of services for _____.

We confirm that we shall be bound by all and whatsoever our said representative shall commit.

Yours Faithfully,

Authorised Person's Signature: _____
Name: _____
Designation: _____
Seal of the Bidder:

Note: This letter of authority shall be on printed letter head of the Bidder and shall be signed by a person competent and having the power of attorney (power of attorney shall be annexed) to bind such Bidder. If signed by a consortium, it shall be signed by members of the consortium.

PROFORMA-I

AUTHORISATION FOR ATTENDING BID OPENING

Date: _____

TO
GM (C&P)
Contracts & Purchase Department
Oil India Ltd., Rajasthan Project
Jodhpur-342005
Rajasthan, India

Sir,

Sub: OIL's e-Tender No. CJI-5331-P21

We hereby authorise Mr. /Ms. _____ (Name and address) to be present at the time of Pre-Bid Meeting / Un-priced Bid Opening / PriceBid Opening and for any subsequent correspondence / communication of the above Tender due on _____ on our behalf.

Yours Faithfully,

Authorised Person's Signature: _____
Name: _____
Designation: _____
Seal of the Bidder:

Note: This letter of authority shall be on printed letter head of the Bidder and shall be signed by a person who signs the bid.

***

ANNEXURE – A1

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 ----------. 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 Organization "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

(1) 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.

(2) 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 substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section: 2 - Commitments of the Bidder/Contractor

(1) 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 cartelization 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.

(2) 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 to all Bidders/Contractor/Subcontractors

1. The Bidder/Contractor undertakes to demand form 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. Noida.

2. Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

3. If the Contractor is a partnership or a consortium, this agreement must be, signed by all partners or consortium members.

4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

…….. **……...**

For the Principal : **For the Bidder/Contractor:**

Witness 1: .....

Witness 2: .....

Place. JODHPUR.
Date ……

****

ANNEXURE – VI

CERTIFICATE OF ANNUAL TURNOVER & NET WORTH

[TO BE ISSUED BY PRACTISING CHARTERED ACCOUNTANTS' FIRM ON THEIR LETIER HEAD]

TO WHOM IT MAY CONCERN

This is to certify that the following financial positions extracted from the audited financial statements of M/s... ... ... (Name of the Bidder) for the last three (3) completed accounting years up to ..... (as the case may be) are correct.

YEAR	TURN OVER In INR Crores / US$ Million*	NET WORTH In INR Crores / US $ Million *

* Rate of Conversion (if used any): USD 1.00 = INR. ..... .

Place :

Date:

Seal:

Membership No ..

Registration Code:

Signature :

[* Applicable only for GLOBAL tenders.]

***

APPENDIX-A

GENERAL HSE POINTS

1.0 It will be solely the Contractor's responsibility to fulfil all the legal formalities with respect in the Health, Safety & Environmental aspects of the entire job (namely, the persons employed by him, the equipment, the environment etc.) under the jurisdiction of the district of that 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-Contractors.

2.0 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 the Company PPE schedule. Safety appliances like protect 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.

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

4.0 The Contractor shall provide a copy of SOP to the person designated the Mine Owner who shall be supervising the Contractor's work.

5.0 Keep an up to date SOP and provide a copy to changes to a person designed by the Mine Owner/Agent/Manager

6.0 The 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

7.0 All persons deployed by the Contractor for working in 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.

8.0 The Contractor shall submit to DGMS indicating – name of his firm Registration Number, name 7 Address of person heading the firm, nature of work, type of deployment of work persons, No. of work persons deployed, how many work persons hold VT Certificate, how many work persons undergone IME and type of medical coverage given to the work persons.

9.0 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.

10.0 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 the Company's Installation Manager/Safety Officer/Engineer/Official/Supervisor/Junior Engineer for safe operation.

11.0 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.

12.0 Any compensation arising due to accident of the Contractor's personnel while carrying out the job, will be payable by the Contractor.

13.0 The Contractor shall have to report all incidents including near miss to installation manager/Departmental Representative of concerned department of OIL.

14.0 The Contractor has to keep a register of the persons employed by him/her. The Contractor's supervisor shall take and main attendance of his men every day for the work, punctuality.

15.0 If the Company arranges any safety class/training for the working personnel at site (Company employees, Contractor worker etc.) the Contractor will not have any objection to any such training.

16.0 The health check-up of Contractor's personnel is to be done by the Contractor in authorized Health Centres 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.

17.0 To arrange daily tool box meeting and regular site safety meeting and maintain records.

18.0 Records of daily attendance, accident report etc. are to be maintained in Form B, E, J (as per Mines Rules 1955) by the Contractor.

19.0 A Contractor employee must, while at work, take reasonable care for the health and safety of people who are all the employee's place of work and who may be affected by the employee's act or omissions at work.

20.0 A Contractor employee must, while at work, co-operate 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.

21.0 Contractor's arrangements for health for health and safety management shall be consistent with those for the mine owner.

22.0 In case Contractor is found non-compliant of HSE laws as required the Company will have the right for directing the Contractor to take action comply with the requirements, and for further non-compliance, the Contractor

23.0 When there is a significant risk to health, environment or safety of a persons or pace arising because of a non-compliance of HSE measure the Company will have the right to direct the Contractor to cease work until the non-compliance is corrected.

24.0 The Contractor should prevent the frequent change of his contractual employees as far as practicable.

25.0 The Contractor should frame a mutually agreed bridging document between OIL and the Contractor with roles and responsibilities clearly defined.

26.0 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.

****

Appendix-B

Procedure for obtaining Labour License under Contract Labour (R&A) Act, 1970 & Central Rules-1971

Every Contractor to whom this Act applies shall execute any work through Contract Labour only after obtaining valid license from Licensing Officer. To obtain license contractor is required to submit:

i) Application in Form IV in triplicate duly filled (Name of the Proprietor/Partner or the Directors/Responsible person in case of firm/company, complete postal address including Pin Code number, Telephone Number, Fax Number & E-mail address, if any), correct details of PE and work to be executed etc. correctly against all columns;

ii) In case contractor is registered under the Companies Act and applicant is other than Director then he should be holding valid Power of Attorney.

iii) Original Form-V issued by PE

iv) Demand Draft for license fees and security deposit payable in favour of Regional Labour Commissioner (Central), Ajmer along with duly filled central challan (in TR-6) duly signed by applicant in quadruplicate for each demand draft;

v) Copy of Work Order;

vi Copy of Partnership Deed and in case of Company, the application should be accompanied with Memorandum of Association/Article of Association;

Note: 1. Application form complete in all respect shall be either personally delivered to the Licensing Officer or can be sent by Registered A.D. Post.

2. Contractors, may intimate Dy. Chief Labour Commissioner (Central), Ajmer for expediting/suitable action if they do not receive license nor any communication within a week.

3. Contractors are not required to visit office of Licensing Officer unnecessarily for obtaining license until and unless they have been specifically advised to appear in person. Appearance of contractors in the office of licensing officer for obtaining license by persuasion will be viewed seriously.

*****

ANNEXURE – X

Provisions for procurement of Services pertaining to Oil & Gas business activities covered under Purchase Preference Policy (linked with Local Content) (PP-LC).

This tender will be governed by the Purchase preference policy (linked with Local Content) (PP-LC) of Ministry of Petroleum & Natural Gas, Government of India. Indian Bidders are advised to refer notification no. O-27011/44/2016-ONG-II/FP dtd. 25.04.2017 and subsequent amendments, if any, and submit the necessary documents, declaration, undertaking etc. as per the policy guidelines along with their bid. As per the PP-LC policy, 50% of the tendered quantity would be awarded to the lowest techno-commercially qualified LC (Local Content) manufacturer / supplier which are within the price band of 10% of the L1, subject to matching the L1 price. The tendered quantity is not splitable / non-dividable / cannot be procured from multiple sources. Hence, the entire procurement value shall be awarded to the lowest techno-commercially qualified LC bidder subject to matching with valid NLC L1 rates. Bidders seeking Purchase preference (linked with Local Content) (PP-LC) shall be required to meet / exceed the target of Local Content (LC) as per values furnished vide original notification of the policy and subsequent amendments applicable as on the bid closing date. The remaining quantity will be awarded to L1 (i.e. Non-Local Content (NLC) manufacturer / supplier not meeting prescribed LC criteria). In case a bidder is eligible to seek benefits under PP-LC policy as well as Public Procurement Policy for MSEs-Order 2012, then the bidders should categorically seek benefits against only one of the two policies i.e. either PP-LC or MSE policy. If a bidder seeks EMD exemption under the MSE policy, then it shall be considered that the bidder has sought benefit against the MSE policy and this option once exercised cannot be modified subsequently. Evaluation of bids with reference to PP-LC policy shall be done by OIL based on the documents submitted by the bidder. OIL shall not be responsible for any incorrect/incomplete submission of documents by bidder leading to non-compliance to PP-LC policy and denial of benefits under the policy.

The bidder, who has been awarded the contract after availing Purchase Preference linked with Local Content, shall have to submit additional Bank Guarantee (format attached at Proforma-FA) equivalent 10% of total contract value.

A bidder who has been awarded the contract after availing Purchase Preference is found to have violated the LC provision, in the execution of the procurement contract of goods and/or services shall be subject to financial penalty over and above the PBG value prescribed in the contract and shall not be more than an amount equal to 10% of the Contract Price.

***

FORMAT OF UNDERTAKING BY BIDDERS TOWARDS SUBMISSION OF AUTHENTIC INFORMATION/DOCUMENTS
(To be typed on the letter head of the bidder)

Ref. No_____ **ANNEXURE-XI**
Date _____

Sub: Undertaking of authenticity of information/documents submitted

Ref: Your tender No. CJI-5331-P21 Dated 07.10.2020

To,
The GM-C&P (RF)
Contracts & Purchase Deptt,
OIL, Rajasthan Field, Jodhpur

Sir,

With reference to our quotation against your above-referred tender, we hereby undertake that no fraudulent information/documents have been submitted by us.

We take full responsibility for the submission of authentic information/documents against the above cited bid.

We also agree that, during any stage of the tender/contract agreement, in case any of the information/documents submitted by us are found to be false/forged/fraudulent, OIL has right to reject our bid at any stage including forfeiture of our EMD and/or PBG and/or cancel the award of contract and/or carry out any other penal action on us, as deemed fit.

Yours faithfully,
For (type name of the firm here)

Signature of Authorised Signatory

Name :

Designation :

Phone No.

Place :

Date :

(Affix Seal of the Organization here, if applicable)

***

PROFORMA - FA

Proforma of Bank Guarantee towards Purchase Preference – Local Content

Ref. No._____ Bank Guarantee No. _____
Dated _____

To
Oil India Limited
_____
_____
India

Dear Sirs,

1. In consideration of _____ _____ (hereinafter referred to as OIL, which expression shall, unless repugnant to the context or meaning thereof, include all its successors, administrators, executors and assignees) having entered into a CONTRACT No._____ dated _____ (hereinafter called 'the CONTRACT' which expression shall include all the amendments thereto) with M/s _____ having its registered/head office at _____(hereinafter referred to as the 'CONTRACTOR') which expression shall, unless repugnant to the context or meaning thereof include all its successors, administrators, executors and assignees) and OIL having agreed that the CONTRACTOR shall furnish to OIL a Bank guarantee for India Rupees/US$ _____ for the faithful fulfillment of conditions pertaining to Local Content in accordance with the value mentioned in the certificate of Local Content submitted by the contractor for claiming purchase preference under the Purchase Preference Policy (linked with Local Content).

2. We (name of the bank) _____ registered under the laws of _____ having head/registered office at _____ (hereinafter referred to as "the Bank", which expression shall, unless repugnant to the context or meaning thereof, include all its successors, administrators, executors and permitted assignees) do hereby guarantee and undertake to pay to OIL immediately on first demand in writing any / all money to the extent of Indian Rs./US$ (in figures) _____ (Indian Rupees/US Dollars (in words) _____) without any demur, reservation, contest or protest and/or without any reference to the CONTRACTOR. Any such demand made by OIL on the Bank by serving a written notice shall be conclusive and binding, without any proof, on the bank as regards the amount due and payable, notwithstanding any dispute(s) pending before any Court, Tribunal, Arbitrator or any other authority and/or any other matter or thin whatsoever, as liability under these presents being absolute and unequivocal. We agree that the guarantee herein contained shall be irrevocable and shall continue to be enforceable until it is discharged by OIL in writing. This guarantee shall not be determined, discharged or affected by the liquidation, winding up, dissolution or insolvency of the CONTRACTOR and shall remain valid, binding and operating against the bank.

3. The Bank also agrees that OIL at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance, without proceeding against the CONTRACTOR and notwithstanding any security or other guarantee that OIL may have in relation to the CONTRACTOR's liabilities.

4. The Bank further agrees the OIL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said CONTRACT or to extend time of performance by the said CONTRACTOR(s) from time to time or to postpone for any time or from time to time exercise of any of the powers vested in OIL against the said CONTRACTOR(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relived from our liability by reason of any such variation, or extension being granted to the said CONTRACTOR(s) or for any forbearance, act or omission on the part of OIL or any indulgence by OIL to the said CONTRACTOR(s) or any such matter or thing whatsoever

which under the law relating to sureties would, but for this provision, have effect of so relieving us.

5. The Bank further agrees that the Guarantee herein contained shall remain in full force during the period that is taken for the performance of the CONTRACT and all dues of OIL under or by virtue of this CONTRACT have been fully paid and its claim satisfied or discharged or till OIL discharges this guarantee in writing, whichever is earlier.

6. This Guarantee shall not be discharged by any change in our constitution, in the constitution of OIL or that of the CONTRACTOR.

7. The Bank confirms that this guarantee has been issued with observance of appropriate laws of the country of issue.

8. The Bank also agrees that this guarantee shall be governed and construed in accordance with Indian Laws and subject to the exclusive jurisdiction of Indian Courts of the place from where the purchase CONTRACT has been placed.

9. Notwithstanding anything contained herein above, out liability under this Guarantee is limited to INR in figures) _____ (Indian Rupees/US Dollars (in words) _____) and our guarantee shall remain in force until _____(indicate the date of expiry of bank guarantee).

Any claim under this Guarantee must be received by us before the expiry of this Bank Guarantee. If no such claim has been received by us by the said date, the rights of OIL under this Guarantee will cease. However, if such a claim has been received by us within the said date, all the rights of OIL under this Guarantee shall be valid and shall not cease until we have satisfied that claim.

In witness whereof, the Bank through its authorized officer has set its hand and stamp on this _____ date of _____ 20___ at _____

WITNESS NO.1

_____
(Signature)
Full name and official address
(in legible letters)
Stamp

_____
(Signature)
Full name, designation and address
(in legible letters)
With Bank

Attorney as per power of
Attorney No._____
Dated _____

WITNESS NO.2

_____
(Signature)
Full name and official address
(in legible letters)
Stamp

****

--END OF TENDER DOCUMENT--