Haryana State Cooperative Supply and Marketing Federation Limited (HAFED)

NOTICE INVITING TENDER (NIT)

EPC TENDER

DESIGN, PLANNING, ENGINEERING, PROCUREMENT, CONSTRUCTION, ERECTION & COMMISSIONING OF MUSTARD OIL MILLHAVING CRUSHING CAPACITY OF 150 MTPD AT RAMPURA, REWARI (HARYANA) ON TURNKEY BASIS

NIT No.: Adt. No……/ ….. /HAFED/ 2022-23
Date:

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THE HARYANA STATE COOPERATIVE SUPPLY AND MARKETING FEDERATION LIMITED
CORPORATE OFFICE, SECTOR 5, PANCHKULA HARYANA (INDIA) TEL: 2590520-24, FAX: 2590711 E.Mail: hafed@hry.nic.in
Web-site: www.hafed.gov.in

Notice Inviting E-Tender

(E-Tendering Website:**https://etenders.hry.nic.in**)
Online bids are hereby invited for the following works:

NAME OF WORK: DESIGN, PLANNING, ENGINEERING, PROCUREMENT,CONSTRUCTION, ERECTION & COMMISSIONING OF MUSTARD OIL MILL HAVING CRUSHING CAPACITY OF 150 MTPD EXPANDABLE TO 300 MTPD AT RAMPURA, REWARI ON TURNKEY BASIS

Earnest Money (Rs. in Lakh)	Time Limit	Tender Document Fee + Processing Fee	Start Date & Time of Bid	Expiry Date & Time of Bid Preparation & Submission
50,00,000/-	18 Month	Rs.10,000/- + Rs.1,000/-	11.11.2023 at 12:00PM	19.12.2023 at 10:00 AM

The tender document containing details of required work, quantity, specifications etc. and other terms & conditions are available on portal https://etenders.hry.nic.in or at HAFED Website www.hafed.gov.in The interested parties may download the tender document and must remit the funds on or before **19.12.2023 at 10:00 AM**. The date of bid submission is from 10.11.2023 **at 04:00 PM** through e- Tender portal as mentioned above. All bidders are required to get register on e-tendering portal & obtain Digital Signature from NIC office. The technical bid will be opened on **19.12.2023 at 11:30 AM** and the date for opening of the financial bid will be informed later on. The tender document fee, processing fee and EMD will be deposited by online payment as specified in the tender document. No exemption is allowed for deposit of EMD in any case, without EMD bid will notbe accepted.

HAFED reserve the right to reject any / all bids without assigning any reason whatsoever.

*Tenders can be downloaded/opened as per the schedule given above.

(Non-Refundable) For downloading the tender documents online, bidders are required to pay the tender documents fees online using the electronic payments gateway service. The interested parties/bidders shall have to pay mandatorily e-Service fee (under document fee Rs. 10,000 Non-refundable) of **Rs.1,000/-** (Rupee One Thousand Only) online by using the service of secure electronic gateway. For online payments, please refer to the home page of the e-tendering Portal https://etenders.hry.nic.in.

GENERAL TERMS AND CONDITIONS

1. DNIT can be seen on any working day during office hours in the office of the undersigned and canbe downloaded from website**:** **https://etenders.hry.nic.in &www.hafed.gov.in**

2. The Technical and Financial bid without EMD will not be considered.

3. Conditional tenders will not be entertained and are liable to be rejected.

4. In case the day of opening of tenders happens to be a holiday, the date and time of opening of tender will be conveyed later.

5. The amount of earnest money shall be same in case of cooperative labour & construction societies as well as other contractors.

6. The validity of the tender is 90 days extendable by 60 days purely at the discretion of HAFED. The contractors who modify their rates, terms and conditions or withdraw within the validity period of tenders, their tenders are liable to be rejected and earnest money will be forfeited.

7. Tenderer should have valid GST Registration Certificate from concerned Authorities of the State / Centre as applicable.

8. The jurisdiction of the Court will be at Panchkula / Chandigarh.

9. HAFED reserves the right to accept or reject any or all offers without assigning any reason.

MANAGING DIRECTOR,
HAFED,PANCHKULA.

THE HARYANA STATE COOPERATIVE SUPPLY AND MARKETING FEDERATION LIMITED

CORPORATE OFFICE, SECTOR 5, PANCHKULA HARYANA (INDIA) TEL: 2590520-24, FAX: 2590711 E.Mail: hafed@hry.nic.in

Web-site: www.hafed.gov.in

Detailed Notice Inviting-tender.

E-tender is invited for Design, Planning, Engineering, Procurement, Construction, Erection & Commissioning of Mustard Oil Mill Having Crushing Capacity of 150 MT per day at Rampura, Rewari, Haryana on Turnkey basis in single stage two cover system i.e. request for Technical Bid (online bid under Technical Envelope) and request for Financial Bid (comprising of price bid Proposal under online available Commercial Envelope): -

S. N.	Particulars	EMD	Tender Document Fee	Processing Fee
1.	Design, Planning, Engineering, Procurement, Construction works of Silos, Sheds etc. Erection & Commissioning of Mustard Oil Mill having Crushing Capacity of 150 MT per day at Rampura, Rewari (Haryana) on Turnkey Basis	Rs.50,00,000/- (Fifty lakh only/-)	Rs.10,000/- (Non-refundable)	Rs.1,000/- (Non-refundable)

Under this process, the Technical Bid Application as well as online Price Bid shall be invited at single stage under two cover i.e. Technical Bid & Commercial Envelope. Eligibility of the Bidders will be first examined based on the details submitted online under first cover (Technical) with the request to eligibility and qualification criteria prescribed in the Tender document. The Price Bid under the second cover shall be opened for only those bidders whose Technical Applications as responsive to eligibility and qualifications requirements as per Tender document.

1. **The payment for Tender Document Fee and Processing Fee shall be made by the bidders online directly through Debit Cards & Internet Banking Accounts and the payment for EMD can be made online directly through RTGS/NEFT or Over The Counter (OTC) Please refer to „Online Payment Guideline" available at https://etenders.hry.nic.inand also mentioned under the Tender Document.**
2. Intending bidders will be mandatorily required to online sign-up (create user account) on the website https://etenders.hry.nic.in to be eligible to participate in the e-Tender. **He/ She will be required to make online payment of required EMD in due course of time. The intended parties fail to pay EMD fee under the stipulated time frame shall not be allowed to submit his/her bids for the respective event/Tenders.**

3. The interested bidders must remit the funds at least T+1 working day (Transaction + One Day) in advance as given under Key Dates **and make payment via RTGS/NEFT or OTC to the beneficiary account number specified under the online generated challan. The intended bidder/agency thereafter will be able to successfully verify their payment online, and submit their bids on or before the expiry date & time of the respective events/Tenders at https://etenders.hry.nic.in**

4. The interested bidders shall have to pay mandatorily Processing Fee (under tender document fee Rs. 10000 Non-refundable) of Rs.1000/- (Rupee One Thousand Only) online by using the service of secure electronic gateway. The secure electronic payments gateway is an online interface between bidders & online payment authorization networks. The Payment for tender document fee

(Rs.10,000/-) and Processing Fee (Rs.1000/-) can be made by eligible bidders online directly through Debit Cards & Internet Banking.

The interested bidders must remit the funds at least T+1 working day (Transaction + One Day) in advance before the expiry date & time of the respective events. And make payment via RTGS/NEFT to the beneficiary account number specified under the online generated challan.

The Parties/Bidders can submit their tender documents (Online) as per the dates mentioned in the key dates: -

INSTRUCTIONS TO BIDDER ON ELECTRONIC TENDERING SYSTEM

These conditions will over-rule the conditions stated in the tender documents, whereverrelevant and applicable.

1. Registration of bidders on e-Procurement Portal:

All the bidders intending to participate in the tender process online are required to get registered on the centralized e-Procurement Portal i.e.**https://etenders.hry.nic.in**Please visit the website for more details.

2. Obtaining a Digital Certificate:

2.1. The Bids submitted online should be encrypted and signed electronically with a Digital Certificate to establish the identity of the bidder bidding online. These Digital certificates are issued by an Approved Certifying Authority, by the Controller of Certifying Authorities, Government of India.

2.2. A Digital Certificate is issued upon receipt of mandatory identity (i.e. Applicant"s PAN Card) and Address proofs and verification form duly attested by the Bank Manager / Post Master / Gazetted Officer. Only upon the receipt of the required documents, a digital certificate can be issued. For more details please visit the website — **https://etenders.hry.nic.in**

2.3. The bidders may obtain Class-II or III digital signature certificate from any Certifying Authority or Sub-certifying Authority authorized by the Controller of Certifying Authorities or may obtain information and application format and documents required for the issue of digital certificate from.

2.4. The bidder must ensure that he/she comply by the online available important guidelines at the portal **https://etenders.hry.nic.in** for Digital Signature Certificate (DSC) including the e-Token carrying DSCs.

2.5. Bid for a particular tender must be submitted online using the digital certificate (Encryption & Signing), which is used to encrypt and sign the data during the stage of bid preparation. In case, during the process of a particular tender, the user loses his digital certificate (due to virus attack, hardware problem, operating system or any other problem) he will not be able to submit the bid online. Hence, the users are advised **to keep a backup of the certificate** and also keep the copies at safe place under proper security (for its use in case of emergencies).

2.6. In case of online tendering, if the digital certificate issued to the authorized user of a firm is used for signing and submitting a bid, it will be considered equivalent to a no-objection certificate/power of attorney /lawful authorization to that User. The firm has to authorize a specific individual through an authorization certificate signed by all partners to use the digital certificate as per Indian Information Technology Act 2000. Unless the certificates are revoked, it will be assumed to represent adequate authority of the user to bid on behalf of the firm in the department tenders as per Information Technology Act 2000. The digital signature of this authorized user will be binding on the firm.

In case of any change in the authorization, it shall be the responsibility of management / partners of the firm to inform the certifying authority about the change and to obtain the digital

signatures of the new person / user on behalf of the firm / company. The procedure for application of a digital certificate however will remain the same for the new user.

The same procedure holds true for the authorized users in a private/Public limited company. In this case, the authorization certificate will have to be signed by the directors of the company.

2. Pre-requisites for online bidding:

In order to operate on the electronic tender management system, a user"s machine is required to be set up. A help file on system setup/Pre-requisite can be obtained from NIC or downloaded from the home page of the website - **https://etenders.hry.nic.in** The link for downloading required java applet & DC setup are also available on the Home page of the e-tendering Portal.

3. Procedure for submission of Bids

The bids shall be submitted Online in two separate envelopes:

"Envelope 1: Technical Bid

The parties/bidders shall upload the required details online in the Technical Bid

"Envelope 2: Commercial Bid"

The bidders shall **quote** the prices in price bid format under Commercial Bid.

Bidders are mandatorily required to submit the technical and financial bid in the prescribed online format only. No manual bids shall be entertained.

4. Online Viewing of Detailed Notice Inviting Tenders:

The bidders can view the detailed N.I.T and the time schedule (Key Dates) for all the tenders floated through the single portal e-Procurement system on the Home Page at **https://etenders.hry.nic.in**

5. Download of Tender Documents:
The tender documents can be downloaded free of cost from the e-Procurement portal **https://etenders.hry.nic.in**

6. Key Dates:

The bidders are strictly advised to follow dates and times as indicated in the online Notice Inviting Tenders. The date and time shall be binding on all bidders. All online activities are time tracked and the system enforces time locks that ensure that no activity or transaction can take place outside the start and end dates and the time of the stage as defined in the online Notice Inviting Tenders.

7. Online Payment of Tender Document Fee, Processing fee & EMD fees &Bid Preparation & Submission (Technical & Commercial/Price Bid):

7.1. Online Payment of Tender Document Fee + Processing fee:

The online payment for Tender document fee, Processing Fee & EMD can be done using the secure electronic payment gateway. The Payment for Tender Document Fee and Processing Fee shall be made by bidders/Vendors online directly through Debit Cards & Internet Banking Accounts and the Payment for EMD shall be made online directly through RTGS / NEFT & OTC.

The secure electronic payments gateway is an online interface between contractors and Debit card / online payment authorization networks. In case of any technical issue faced by the bidder(s)during the uploading of bid(s), bid document (in hard

copy) may be submitted by the bidder at O/o HAFED before closing date and time of bid. However, EMD Fees shall only be accepted when the same has been paid through Online.

7.2. PREPARATION & SUBMISSION OF ONLINE APPLICATIONS/BIDS:

i) Detailed Tender documents may be downloaded from e-Procurement website **https://etenders.hry.nic.in**and tender mandatorily be submitted online following theinstruction appearing on the screen.

ii) Scan copy of Document to be submitted / uploaded for Technical bid under online Technical Envelope. The required documents (refer to DNIT) shall be prepared and scanned in different file formats (in PDF/JPEG/MS WORD format such that file size is not exceed more than 10 MB) and uploaded during the on-line submission of Technical Envelope.

iii) FINANCIAL or Price Bid PROPOSAL shall be submitted mandatorily online under Commercial Envelope and original not to be submitted manually)

8. ASSISTANCE TO THE BIDDERS

For queries on Tenders Haryana Portal, Kindly Contact

Note: Bidders are requested to kindly mention the URL of the ortal and Tender ID in the subject shiel emailing any issue along with the contact detail. For any issue/clarification relating to the Tender (s) published kindly contact the repective tender Inviting Authority.

Tel:-0120-4200462,0120-4001002
Mobile:88262-46593
Email:-support.etender@nic.in
For any techincal related queries please call at 24x7 Help Desk
number0120-4001002,0120-4200462,0120-4001005,120-6277787

For support related to Haryana Tenders in addition to help desk you may also contact on email ID eproc.nichry@yahoo.com, Tel:0172-2700275

Timing:
Technical support assistance will be available over telephone Monday to Friday (9:00am to 5:30pm) (Helpdesk Support in team shall not be contracted for online bidding on behalf of the contractors)

Note:

Contact e-Procurement helpdesk on or before prior to 4 hours of the scheduled closing date and time of respective e-tendering event. Also, for queries related to e-payment of EMD kindly contact the helpdesk at least two days prior to closing date and time of the respective event.

Intended bidders mandatorily required to register their queries if there is any pertaining to the online bidding and the single e-Procurement portal at email address:- **https://etenders.hry.nic.in**

Note:

A. ***Bidders participating in online tenders shall check the validity of his/her Digital Signature Certificate before participating in the online Tenders at the portal*** **https://etenders.hry.nic.in**

B. ***For help manual please refer to the 'Home Page' of the e-Procurement website at https://etenders.hry.nic.in, and click on the available link 'How to...?' to downloadthe file.***

C. ***In case Financial bid is submitted but bid security has not been submitted by any bidder, then bidder would be debarred from further tendering in HAFED for a periodof minimum one year.***

(Online Payment Guidelines)

Guideline for Online Payments at e-Procurement Portal of Government of Haryana.

Post registration, bidder shall proceed for bidding by using both his digital certificates (one each for encryption and signing) & Password. Bidder shall proceed to select the event/Tenders he is interested in. On the respective Department's page in the e-Procurement portal, the Bidder would have following options to make payment for tender document fee + Processing fee & EMD:

A. Debit Card
B. Net Banking
C. RTGS/NEFT or Over The Counter (OTC)

Operative Procedures for Bidder Payments

A. Debit Card

The procedure for paying through Debit Card will be as follows:

(i) Bidder selects Debit Card option in e-Procurement portal.

(ii) The e-Procurement portal displays the amount and the card charges to be paid by bidder.The portal also displays the total amount to be paid by the bidder.

(iii) Bidder clicks on "Continue" button.

(iv) The e-Procurement portal takes the bidder to Debit Card payment gateway screen.

(v) Bidder enters card credentials and confirms payment.

(vi) The gateway verifies the credentials and confirms with "successful" or "failure" message, which is confirmed back to e-Procurement portal.

(vii) The page is automatically routed back to e-Procurement portal.

(viii) The status of the payment is displayed as "successful" in e-Procurement portal.

(ix) In case of successful payment, a success message along with unique transaction ID is passed on to e-Procurement system. The e-tendering portal shall store the unique transactionnumber in its database along with the date and timestamp.

(x) The e-Procurement portal allows Bidder to process another payment attempt in case payments are not successful for previous attempt.

B. Net Banking

The procedure for paying through Net Banking will be as follows:

(i) Bidder selects Net Banking option in e-Procurement portal.

(ii) The e-Procurement portal displays the amount to be paid by bidder.

(iii) Bidder clicks on "Continue" button.

(iv) The e-Procurement portal takes the bidder to Net Banking payment gateway screen displaying list of Banks.

(v) Bidder chooses his / her Bank.

(vi) The Net Banking gateway redirects Bidder to the Net Banking page of the selected Bank

(vii) Bidder enters his account credentials and confirms payment.

(viii) The Bank verifies the credentials and confirms with "successful" or "failure" message to the Net Banking gateway which is confirmed back to e-Procurement portal.

(ix) The page is automatically routed back to e-Procurement portal.

(x) The status of the payment is displayed as “successful” in e-Procurement portal.

(xi) In case of successful payment, a success message along with unique transaction ID is passed on to e-Procurement system. The e-Procurement portal shall store the unique transaction number in its database alongwith the date and timestamp.

(xii) The e-Procurement portal allows Bidder to process another payment attempt in case payments are not successful for previous attempt.

RTGS/ NEFT

This solution shall also allow the bidder to make the EMD payment via RTGS/NEFT this shall add to the convenience of those bidders who are not conversant to use net banking option to make the transaction.

Using this module, bidder would be able to pay from their existing bank account through RTGS/NEFT. This would offer a wide reach for more than 1,10,000 bank branches and would enable the bidder to make the payment from almost any bank branch across India.

i) To choose the payment of EMD, the bidder clicks on RTGS/NEFT payment option.

ii) Upon doing so, the e-Procurement portal will redirect the bidder to a page where it will generate a Challan.

iii) This Challan shall include the beneficiary (virtual) account number and other details like beneficiary IFSC code each.

RTGS / NEFT Payment Procedure

The bidder shall be required to take a print of the challan and make the RTGS / NEFT on the basis of the virtual account number period on the challan. This provision will ensure that number confidential details regarding the bidder or tender are disclosed to the bank while remitting theRTGS/NEFT.

The bidder would remit the fund at least one day in advance to the last day and make the payment via RTGS/NEFT to the beneficiary account number as mentioned in the challan. SBI Bank shall receive this amount and credit the payment gateway service provider intermediary Department/PSUs Escrow Security Deposit account post validating the first part of the beneficiary account number, i.e., the client code only, in case of validation of client code is not successful, the bank shall return thefund and not credit the Tech process intermediary Department/PSUs Escrow Security Deposit A/c.

Over the Counter (OTC)

This solution shall allow the bidder having account with SBI bank, to make the payment from any CMS enables Branch of SBI Bank in India. Bidders can make the payment via cash (if amount is <=[]49,999), Demand Draft or SBI Bank Cheque.

The procedure for paying through OTC mode is as follows:

(i) Bidder selects over the counter remittance option in e-Procurement portal.

(ii) The e-Procurement portal displays the amount to be paid. The bidder chooses the bankaccount number for refund of the amount.

(iii) Bidder clicks on “Continue” Button.

(iv) The e-Procurement portal displays the details of payment. The Bidders click on “Print Challan” and print the OTC Challan.

(v) Bidder submits the OTC Challan at the counter of any designated bank of SBI Bank with Cash/Demand Draft/SBI Bank Cheque (Payment in Cash is allowed upto Rs. XXXXXX/-).

(vi) SBI bank verifies the URL (format to be discussed and decided) and amount with e-

Procurement portal prior to accepting the payment.

(vii) On successful verification from e-Procurement portal, SBI bank accepts the payment. In caseof failure, SBI bank shall return back the OTC challan and payment to the bidder.

(viii) SBI bank commits the payment transaction (in case of successful verification from e-Procurement portal) and sends the Bank Transaction number (I-Sure Reference Number) online against the URN and Amount.

(ix) SBI bank will generate receipt for the payment transaction and issues the same to the bidder.

(x) The e-Procurement system updates the bank transaction number against the URN and Amount based on the details sent by SBI bank online prior to generation of the receipt.

(xi) The status of the payment will be displayed as "verification successful" in e-Procurement Portal, when the bidder clicks on the verification option in the portal.

(xii) Bidder would be required to upload the scan copy of receipt as received from SBI Bank as part of proof in next tender portal before submitting the tender.

SECTION – 1: INTRODUCTION

Definition as provided in clause 3.1 of section 3 – General Conditions of Contract shall be read in constitute in same manner unless the context otherwise required.

1. Introduction

The Haryana State Cooperative Supply and Marketing Federation Limited ("HAFED") invites sealed bids from eligible Bidders for planning, engineering, procurement, construction works of Sheds & Silos etc., erection, commissioning, trial run of Mustard Oil Mill having crushing capacity of 150 MT per day at Rampura Rewari, Haryana on Turnkey Basis which is approximately100 kilometres from Delhi on turnkey basis, as per the Scope of Work mentioned hereinafter.

1.1 Project Background

The proposed Oil Mill unit will be located at Rampura, Rewari, district Rewari, Haryana having the maximum crushing capacity of 150 MT per day of mustard seeds.

1.2 Scope of Work

Scope of Work shall include, but shall not be limited to designing, engineering, procurement, construction, supply, transportation, unloading, storage, erection & installation, testing and commissioning in facility as under:

Package- 1: Civil Work

Please refer Attached detailed BOQ and its drawings.

Package- 2: Plant and Machinery

- **Mustard Processing Facility**
- **Storage and Cleaning Section**

The dried mustard seeds stored in the silo and conveyed to the cleaning section are cleaned, wherein all the dirt and foreign particles are removed to ensure the extraction of oil is pure and of high quality.

Oil Extraction Section

In this process, the oil extracted by crushing and pressing of the mustard seeds and the extracted oilis of top quality and purest form as per the specification attached as an Annexure. This oil gets a better market sellable value than the oil extracted thereafter by slightly heating the seeds by the help of steam and placing them in the oil expeller to extract the remaining oil. The oil cake from the Kachi ghani is collected by the scraper conveyor system and conveyed to preheating cooker before entering the expeller so that maximum oil can be extracted from the seeds. Oil remained in the seeds cake is 6% to 7%. The final De- oiled cake (DoC) then cooled and packed in gunny bags for selling as a by-

product. The extracted oil is stored in the storage tank and then passed thought the filter plate pressto separate the solid suspended particles from the oil.

Packaging Section

In this process, the oil is now ready for packaging after quality control checks of the batch. Mustard oil is now packed in the pet bottles and then sealed by screw cap and ladled with batch no and date of manufacturing. Now, they are packed and stored into the corrugated box and ready for dispatch. The process flow has been explained in figure below.

Note:

a) The detailed Scope of Work is given in Section 5 – Scope of Work of this NIT.

b) The works shall include but not limited to internal roads, drainage system, Electrical lighting, Electrical substation & control room, automatic weigh bridge, Rain Water Harvesting, plant and machinery, Septic tank, ETP, STP, Fire Fighting System works, and any other work as related to processing facilities.

c) Detailed layout and facility wise area is attached as Annexure -1: Site Layout.

d) As per the scope mentioned above if any other items required to make the plant operational, the same will be considered the part of the scope. No extra cost will be provided for the same.

e) After installation the bidder is required to meet the required specification of Kachchi Ghani Mustard Oil mentioned in Annexure A.

f) The performance key parameters for the bidder has been detailed in Annexure B.

g) The bidder should ensure that the oil mill will be completed in all respect. In case any item/machinery/equipment is not mentioned in the BOQ but essential for the completion of the project, the same will be provided free of cost by the bidder.

1.3 Brief Tender Details

Item	Description
Site Location	Rampura, District Rewari is a city in Indian state of Haryana
Bid Downloading Date and Time	11.11.2023 at 12:00 PM
Pre-bid meeting	22.11.2023 at 11:00 AM at Hafed Head Office, Sector-5, Panchkula.
Notice for corrigendum and uploading revised tender, if needed.	30.11.2023
Last Date &Time for Online Submission of document	19.12.2023 at 10:00 AM
Date of submission of tender document fees, tender processing fee and EMD amount online	19.12.2023 at 10:30 AM
Bid Submission Mode	Online Submission on **https://etenders.hry.nic.in/**
Opening of Technical Bid	19.12.2023 at 11:30 AM
Submission of Additional Supporting document if required.	Upto 19.12.2023 at 10:00 PM
Date of Opening of Price Bid	Will be initiated after evaluation of Technical Bid
Bid Validity Date	90 days from bid closing date
Tender Document Cost	INR 10,000 (Rs. Ten Thousand Only) Online Payment
Bid Security/ Earnest Money Deposit (EMD)	INR 50.00 Lakhs (Rs. Fifty Lakhs Only) in the form of NEFT/RTGS/Online as per Tender document
Bid security / Earnest Money Deposit (EMD) Validity	90 days from Bid Closing Date

Note:

a) HAFED reserves the right to assess the capabilities and capacity of the Bidder / his collaborators / associates / subsidiaries / group companies to perform the contract, should the circumstances warrant such assessment in the overall interest of HAFED.

b) HAFED reserves the right to reject any or all bids or cancel/withdraw the NIT without assigning any reason whatsoever and in such case no Bidder/intending Bidder shall have any claim arising out of such action.

c) The Tender Document Cost as mentioned in Clause 1.4 shall be submitted along with the bid submission.

d) For participation in the e-tendering process, the Bidders need to register themselves on e-procurement website: https://etenders.hry.nic.in/.On registration Bidder shall be provided with a User ID and a system generated password enabling them to submit their Bid along with Digital System Certificate (DSC).

e) Bids without digital signatures will not be accepted by the e-procurement system. No Bid will be accepted only in physical form and in case it has been submitted only in the physical form it shall be rejected summarily. The Instructions to Bidders (ITB) of the RFP document can be downloaded from the e- procurement website i.e. https://etenders.hry.nic.in/ after making an online payment of Rs. 10000/- (Rupees Ten Thousand Only), through online payment gateway, as the cost of the Bidding Documents. The above schedule is tentative. The Authority reserves the right to modify the said schedule of Bidding Process at any time during the Bidding Process at its sole discretion without assigning any reason or being liable for the same in any manner whatsoever. Further, the Authority reserves the right to hold, in its sole and absolute discretion, more than one pre-bid meeting or hold one or more consultation meetings with the interested parties and in such event the above schedule shall stand modified and amended.

f) Scanned copy of the Technical Bid shall be submitted online on the e-procurement portal i.e.https://etenders.hry.nic.in/ on or before the Bid Due Date. The Financial proposal shall be submitted only online in the format available on the e-procurement portal.

g) **Address for Communication:**

Mr. Jogender Singh, General Manager (Processing)

The Haryana State Cooperative Supply and Marketing Federation Limited. (HAFED),Head Office, Sector 5, Panchkula, Haryana — 134108
Email:hafed.oilmills@gmail.com

SECTION – 2: INSTRUCTION TO BIDDER (ITB)

Definition as provided in clause 3.1 of section 3 — General Conditions of Contract shall be read inconstitute in same manner, unless the context otherwise required.

Introduction
The proposed plant is located at Rewari, District Rewari. The district Rewari is a city in Indian state of Haryana. It is located in south-west Haryana and is approximately 82 kilometres from Delhi and 51 km from Gurgaon. Rewari has a variety of industries, from cottage industries to small-scale integrated units, automobiles, and auto ancillary industries. Rewari is famous for its traditional metalwork, particularly brass work.

2.1 Contract Brief

2.1.1 The "Engineering, Procurement, and Construction" (EPC)shall include planning, engineering, procurement, construction, erection, commissioning, trial run at Rewari. HAFED hereby invites bids for the selection of the Contractor (hereinafter referred as "Bidder" and/or "Contractor") to implement the EPC Contract.

2.1.2 The Bidder shall have the overall responsibility to complete "Scope of Work" as specified under Section 5 of this NIT including those which are not mentioned explicitly in this NIT but required for successful installation and completion of the Contract.

2.1.3 Bids are invited in the prescribed formats as per the details given below:

Item	**Description**
Project Site ("Site")	Rewari, District Rewari. The district Rewari is a city in Indian state of Haryana
Letter of Intent ("LOI")	HAFED shall issue LOI to the successful Bidder for execution of Contract.
Performance Bank Guarantee (PBG) for Contract (Clause 3.12.1)	The Contractor shall furnish within 10 (ten) days from the date of acceptance of LOI, an unconditional and irrevocable bank guarantee towards PBG as per Appendix 2 (a) and shall be: i. for 5 %of the total Contract Price ii. valid for 18 months from the date of LoI plus 12months of Defects Liability Period. Note: PBG shall be submitted in form of Bank Guarantees as indicated in the GCC clause 3.12.1.

Item	Description
Bank Guarantee against Mobilization Advance, if required by the Contractor (Clause 3.12.2)	The Contractor shall, if required, furnish within 10 (ten) days from the date of signing of Contract Agreement, an unconditional and irrevocable Bank Guarantee (BG) for Mobilization Advance. The BG shall be: a) for 10% of the total Contract Price b) valid for 18 months from the date of signing of Contract Agreement which may be released before 18 months if all mobilisation advance has been adjusted. Note: The Mobilization Advance plus applicable interest rate charged by HAFED"s bank from time to time shall be adjusted against the running bills of the Contractor during the execution of the Contract as indicated in the GCC clause 3.12.2. The mobilisation advance shall be completely recovered when work done reaches 80% of project cost.
Retention Amount	5% of the bill value would be retained from each approved bill which shall be released after successful of completion of 6 months of Defect Liability Period, starting from the issue of Completion Certificate by HAFED.

2.2 Local Conditions

2.2.1 The Bidder is advised to visit and examine the Site conditions, approach road, traffic, location, surroundings, climate, availability of power, water and other utilities for construction, access to Site, handling and storage of materials, weather data, applicable laws and regulations, and obtain for itself on its own responsibility all information, as per their understanding, may be necessary for preparing the Bid and entering into the Contract Agreement. All the expenses of visiting the Site and its associated costs shall be borne by the Bidder.

2.2.2 Failure to visit the Site or failure to study this NIT document shall in no way relieve the successful Bidder from furnishing any material or performing any work in accordance with this NIT document.

2.2.3 Unless otherwise specified, in no case the date and time for submission of the Bid shall be extended.

2.2.4 The Bidder must conduct its own inspection of the Site, access to the Site and surroundingsat its own cost in order to make a proper estimate of the Scope of Work to be performed asper Section 5 of this NIT. The Bidder shall also inspect the Site to ensure the availability of proper access to the Site for supply of necessary equipment and goods to the Site. If any improvements are required in the available access, the same shall be carried out by theBidder at its own cost. It shall be deemed that by submitting a Bid, the Bidder has:

2.2.5 Made a complete and careful examination of this NIT document.

2.2.6 Received all relevant information requested from HAFED.

2.2.7 Acknowledged and accepted the risk of inadequacy, error or mistake in the information provided in this NIT document.

2.2.8 Satisfied itself about all matters, things and information necessary and required for

submitting the Bid, execution of the Contract in accordance with this NIT document and performance of all of its obligations mentioned in this NIT document.

2.2.9 acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in this NIT document or ignorance of any of the matters as per tender document herein shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc., from HAFED, or a ground for termination of the Contract.

2.2.10 Agreed to be bound by the undertakings provided by it under and in terms hereof.

2.2.11 HAFED shall not be liable for any omissions, mistakes or errors on the part of the Bidder in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to this NIT document or the Bidding Process, including any error or mistake therein or in any information or data given by HAFED.

2.2.12 It shall be imperative for each Bidder to fully inform itself of all local conditions, laws and factors which may have any effect on the execution of the Contract as described in this NIT. HAFED shall not entertain any request for clarification from the Bidder, regarding such local conditions.

2.2.13 It is the responsibility of the Bidder that such factors have properly been investigated and considered while submitting the Bid and that no claim whatsoever to the Contract awarded under this NIT shall be entertained by HAFED and that neither any change in the time schedule of the Contract nor any financial adjustments arising thereof shall be permitted by HAFED.

2.2 Bidding Cost

The Bidder shall bear all costs in relation to its Bid and consequent bidding process activities. HAFED shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

2.3 Understanding the NIT

2.4.1 The Bidder shall be deemed to have carefully examined the general conditions, specifications and schedules site conditions, all relevant matters & details and also shall satisfied himself as to the nature and character of the plant and equipment to be supplied and installed under the Contract for the proposed facility.

2.4.2 The Bidder should ensure that all information listed under this NIT has been attached/enclosed in appropriate envelopes. Failure to furnish relevant information and documentary evidence as stipulated in this NIT in all respects shall be rejected.

2.4 Clarifications on NIT

The Bidder requiring any clarification on the NIT may notify HAFED in writing or by e-mail at the communication details as indicated in Clause 1.3 of this NIT within 10 (ten) days from of issuance of NIT.

2.5 Amendment and Withdrawal of NIT

2.5.1 HAFED shall, for any reason, whether at his own initiative or in response to a clarification requested by a Bidder, modify the NIT.

2.5.2 Any Addendum thus issued will only be uploaded on the e-procurement website i.e.https://etenders.hry.nic.in/

2.5.3 Any amendment, if any, shall be notified to the Bidder. In order to allow the prospective Bidder(s), reasonable time in which to take the amendment into account in preparing their Bids, HAFED is at discretion, may extend the deadline for the submission of Bids

2.5.4 While HAFED has floated this NIT and has invited prospective Bidders to submit their proposals, HAFED shall always be at the liberty to withdraw this NIT at any time

before its acceptance without assigning any reason.

2.5 Eligibility Criteria

2.6 Technical Criteria

The Bidder who fulfils the following requirements shall be eligible to apply:

a) The Bidder should either be a body incorporated in India under the Companies Act, 1956/2013 including any amendment there to or a partnership firm registered in India or a proprietary firm registered in India. The Bidder can bid as consortium or Joint Venture of maximum 3 partners. Hence, the eligibility conditions can be met independently by a single Bidder or jointly in consortium with other members.

b) If the Proposal is submitted by a JV, there shall be a Joint Venture Agreement specific for this contract between the constituent firms/ members, indicating clearly, amongst other things, the proposed distribution of responsibilities both financial as well as technical for execution of the work amongst them. A copy of the JV agreement entered by the Joint Venture members shall be submitted along with the bid.

c) In case of JV/Consortium, a maximum of three members are allowed to participate in the bid. In case, the Bidder is a JV/Consortium, the members shall authorize one of the JV/Consortium members to act on their behalf as lead member though a written & notarized Power of Attorney signed by each members authorized representative for exercising all the rights and obligations towards the client under this NIT, including without limitation to the receiving of instructions and payments from the client. Though the lead member shall be responsible for the overall management and delivery of the project, all the members of JV/Consortium shall be jointly and severally responsible for execution of the works in relation to the project.

d) The Bidders or any consortium partners should have experience of planning, design and construction of similar Edible Oil Mill for planning, designing, procurement, construction of building and Plant Machinery.

e) The lead Bidder should have completed minimum 3 similar projects of Oil Mill in India or abroad with capacity of plant more than 50 MT

f) In case, the Bidder is a Consortium or Joint Venture(JV), their collective/ individual experience should meet the required experience.

g) The Bidder shall submit, in support to the above, the list of projects commissioned along with their details.

h) The bidder should be registered with appropriate authorities under Income Tax Deptt., GST department as applicable.

i) The bidder or all consortium should not Blacklisted in last 5 years from any state/ Central agency in the country. Self-attested undertaking should be submitted by the Bidder.

2.6.1 Financial Criteria

a) The Annual average Turnover of the Bidder during the last Five (5)financial years i.e.,2018-19, 2019- 20, 2020-21,2021-22 and 2022-23shall not be less than INR 10 Crore or Equivalent foreign currency. Auditor certificate shall be furnished for the same.

b) In case, the Bidder is a Consortium or Joint Venture (JV), the average annual turnover

of all or any members should meet the turnover requirement.

c) The networth of the Bidder as on date 31stMarch2023 shall be positive. In case, the Bidder is a Consortium or Joint Venture (JV),the net worth of each member shall be positive.

2.7 Authorized Representative of Bidder

2.7.1 All the Bidders are requested to mention the name of their authorized representative, with full address in the Bid. Power of attorney (PoA) as per “Appendix 2 (d) - Power of Attorney” shall be submitted along with the bid duly notarized by competent authority.

2.7.2 In case the authorized representative is changed during the bidding process, such changes shall be notified by the Bidder within 3 days of such change, failing which, HAFED shall not accept any responsibility. Any change in name of the authorized signatory shall be accompanied by Power of Attorney (PoA) as per “Appendix 2 (d)- Power of Attorney” for signing the Bid.

2.8 Financial Proposal and Currencies

2.8.1 The Bidders shall quote the basic prices exclusive of GST, as per formats given under “Appendix 2 (e): Proforma for Financial Proposal”.

2.8.2 The Bidder shall indicate the price in Financial Proposal in Indian National Rupee (INR) only, in both figure and words.

2.8.3 If there is any discrepancy in the words and figure quoted, price mentioned in words will prevail.

2.9 Third Party Agency

2.9.1 A Third-Party Inspection (TPI) agency shall be appointed by the Contractor after the approval from HAFED at its sole discretion, to conduct any kind of inspection regarding procurement, fabrication, installation, hook-up and commissioning during the execution of the Contract. The Contractor shall provide necessary access and coordination to conduct such inspections.

2.9.2 All expenses for above inspections at project site shall be borne by the Contractor.

2.9.3 Apart from regular checks by The Haryana State Cooperative Supply and Marketing Federation Limited/ PMC and TPI agency, an agency from State/Center may also visit the project.

2.10 Compliance with Rules and Regulations

2.10.1 HAFED will have no obligations towards the employees/ persons engaged by the Contractor for the works as assigned under the Contract.

2.10.2 The Bidder shall be solely responsible and liable to obtain approvals and comply with all the statutory rules and regulations as required for execution of Contract. All such approvals shall be furnished to HAFED.

2.11 Transferability of Bid Documents

2.11.1 Bid Documents are non-transferable.

2.11.2 Unsolicited Bids shall not be considered and will be rejected straightway.

2.12 Right to accept and to reject any or all Bids

2.12.1 Notwithstanding anything contained in this NIT, HAFED reserves the right to accept or reject any Bid and to annul the bidding process and reject all Bids at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons thereof.

2.12.2 HAFED reserves the right to reject any Bid and forfeit the Bid Security/ Earnest Money Deposit (EMD) at any time if a material misrepresentation is made or uncovered. The decision of HAFED in this regard is final and binding.

2.12.3 Any misrepresentation/ improper response in the Bid shall lead to the disqualification of the Bidder. If such disqualification / rejection occurs after the Bids have been opened and the lowest Bidder gets disqualified / rejected, then HAFED reserves the right to invite the second lowest Bidder for discussion and negotiation.

2.12.4 In case, it is found during the evaluation or at any time before signing of the Contract or after its execution and thereof, that one or more of the pre-qualification conditions have not been met by the Bidder or the Bidder has made material misrepresentation or has given any materially incorrect or false information, the Bidder shall be disqualified forthwith, if not yet appointed as the Contractor either by issue of the LOI or entering into of the Contract Agreement, or if the Successful Bidder has already been issued the LOI or has entered into the Contract Agreement, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this NIT, be liable to be terminated, by a communication in writing by HAFED to the Successful Bidder, without HAFED being liable in any manner whatsoever to the Bidder or Contractor, as the case may be. In such an event, HAFED shall forfeit and appropriate the Bid Security/Performance Bank Guarantee (PBG), without prejudice to any other right or remedy that may be available to HAFED.

2.12.5 HAFED reserves the right to verify all statements, information and documents submitted by the Bidder in response to the NIT documents. Failure of HAFED to undertake such verification shall not relieve the Bidder of its obligations or liabilities hereunder nor will it affect any rights of HAFED there under.

2.13 Preparation of Bids

2.13.1 Language of Bid:

The Bid as well as all correspondence and documents relating to the Bid exchanged between the Bidder and HAFED shall be in English language, except that any printed literature may be in another language provided it is accompanied by an official English translate diversion, which shall govern for the purpose of bid interpretation.

2.13.2 Bidder"s Name & Address

2.13.3 Bidders should indicate their detailed postal address including the Telephone / Cell Phone Nos. and E-mail address in their Bids.

2.14 Bid Security / Earnest Money Deposit (EMD)

2.14.1 Bidder shall be required to submit Bid Security/ Earnest Money Deposit (EMD) of INR 25 Lakhs (Rupees Twenty five Lakhs Only) as per Appendix 2 (b) in form of bank guarantee or NEFT in favor of “The Haryana State Cooperative Supply and Marketing Federation Limited” Payable at Panchkula the Bid Security / EMD shall be from any of the banks as per Appendix 2(t): List of Banks.

2.14.2 HAFED shall not be liable to pay any interest on the Bid Security/EMD.

2.14.3 The Bid Security/ EMD shall be valid for 90 days from the Bid Closing Date.

2.14.4 The Bank Guarantee submitted shall have the clear time validity. If, by any reason, it is required to extend the bank guarantee, the Bidder shall undertake to renew the Bank Guarantee at least one month before the expiry of the validity failing which HAFED shall be at liberty to en cash the same. HAFED shall notify the Bidder for submission of renewal of bank guarantee.

2.14.5 A Bid submitted without the Tender Document Cost and Bid Security/ EMD shall not be considered and shall be summarily rejected.

2.14.6 The Bid Security/ Ernest Money Deposit (EMD) shall specifically bind the Bidder to keep its Bid valid for acceptance and to abide by all the conditions of the NIT in the event of the desiring to award the work to the said Bidder. HAFED shall have discretion not to release the Bid Security / EMD and adjust the amount up to the full value there under in the event where such Bidder is chosen as the successful Bidder and refuses to unconditionally accept Letter of Intent (LOI) and/ or refuses to enter into Contract Agreement to carry out the work in accordance with the Bid. Further necessary action as deemed fit by HAFED may be taken against such successful Bidder.

2.14.7 HAFED shall release the Bid Security / EMD in respect of unsuccessful Bidders, within two weeks after signing of Contract Agreement with the successful Bidder.

2.14.8 The Bid Security / EMD in respect of the Successful Bidder shall be released on Bidders" request after receipt of the Performance Bank Guarantees as per Clause 2.2.3 as per "Appendix 2 (a): Format for Performance Bank Guarantee" and after receipt of its confirmation from the respective bank.

2.14.9 The Bid Security / EMD shall be forfeited by HAFED under the following conditions:

2.14.10 If a Bidder is found to be engaged in a corrupt practice, fraudulent practice, coercive practice, or restrictive practice.

2.14.11 The Bidder withdraws the bid at any stage after submission thereof.

2.14.12 If any information or document submitted by the Bidder are found to be false or forged or the Bidder is found to have been blacklisted by any other Center or State agency with regards to any works that may have been entrusted to the Bidder.

2.14.13 If any Bidder withdraws its Bid during the period of Bid Validity.

2.14.14 If any Bidder alters its Bid during the period of Bid Validity or if the Bidder increases the price during the period of Bid Validity.

2.14.15 If the Bidder does not accept the LOI issued by HAFED within the stipulated time as mentioned in LOI.

2.14.16 If the successful Bidder's Bid is accepted by HAFED and work is awarded but the Contractor does not furnish the Performance Bank Guarantees within ten (10) days of LOI acceptance.

2.15 Period of Validity of Bids

Bids shall remain valid for 90 days from the date of closing of bid as prescribed by HAFED. Bids of shorter validity shall be rejected. If nothing is mentioned by the Bidder about the Bid Validity, it will be presumed that the Bid is valid for 90 days from Bid Closing Date.

2.16 Submission of Bids

2.16.1 A Bidder is eligible to submit only one Bid for the Project. A Bidder shall not be entitled to submit another Bid either individually or in a JV/Consortium, as the case may be.

2.16.2 The Bid shall be furnished in the formats as mentioned in the NIT.

2.16.3 The complete Bid shall be without alterations, interlineations or erasures, except those to accord with instructions issued by HAFED, or as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

2.16.4 Scanned copy of the Technical Bid shall be submitted online on the e-procurement portal i.e.https://etenders.hry.nic.in/ on or before the Bid Due Date. The Financial proposal shall be submitted only online in the format available on the e-procurement portal. The bidder shall also submit this bifurcation of rates of all items separately in the sealed envelop before opening of Financial Bid.

2.17 Deadline for Submission of Bids

Bids received by HAFED after Bid Closing Date and Time shall not be eligible for consideration and shall be summarily rejected. In case of an unscheduled holiday being declared on the prescribed Bid Closing Date, the next working day shall be treated as the scheduled prescribed Bid Closing Date.

2.18 Modification and Withdrawal of Bids

2.18.1 The Bidder after submission of Bid may withdraw its Bid by written notice prior to Bid ClosingDate & Time to HAFED.

2.18.2 Bidders may request HAFED for returning their bids before the Bid Closing Date & Time for resubmission.

2.18.3 Bidder shall not be permitted to make any changes in their Bid after the Bid Closing Date & Time.

2.18.4 No Bid shall be withdrawn after the Bid Closing Date & Time.

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

2.18.6 No Bid can be withdrawn in the interval between the Bid Closing Date & Time and the expiry of the Bid Validity Date. Withdrawal of a Bid during this interval shall result in the Bidder's forfeiture of its Bid Security / Ernest Money Deposit (EMD) and Bidder shall be debarred from participation in future tenders of HAFED.

2.19 Bid Evaluation and Selection Process

2.19.1 The Authority would open the Bids as per the schedule specified in tender document in the presence of the Bidders who choose to attend.

2.19.2 The lowest financial bid will be selected as L1. The lowest financial bid will be selected as L1. The negotiations will be held as per Haryana Govt. negotiations policy in respect of procurement of goods / stocks, (fixed purchase) and rate contract, turnkey and services circulated vide memo No. 14/29/2023-6FA dated 26.05.2023.

2.19.3 The Authority would subsequently examine and evaluate Bids in accordance Evaluation criteria.

2.19.4 Bidders will be deemed to have understood and agreed that no explanation or justification on any aspect of the Bidding Process or selection will be given.

2.19.5 Any information contained in the Bid shall not in any way be construed as binding on the Authority, its consultants, agents, successors or assigns, but shall be binding against the Bidder if any Project is subsequently awarded to it under the Bidding Process on the basis of such information.

2.19.6 The Authority reserves the right not to proceed with the Bidding Process at any time without notice or liability and to reject any Bid without assigning any reasons.

2.19.7 If any information furnished by the Bidder is found to be incomplete, or contained in formats other than those specified herein, the Authority may, in its sole discretion, exclude the relevant project from computation of the Technical Capacity of the Bidder.

2.19.8 In the event the Bidder claims credit for an Eligible Project, and such claim is determined by the Authority as incorrect or erroneous, the Authority shall reject such claim and exclude the same from computation of the Technical Capacity. Where any information is found to be patently false or amounting to a material misrepresentation, the Authority reserves the right to reject the Bid.

2.19.9 The technical evaluation will be done for only those bids which have submitted all the required documents and are complete.

2.19.10 Correction of Errors.

2.19.11 Bids determined to be responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

2.19.12 Where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and

2.19.13 Where there is a discrepancy between the unit rate and the line-item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

2.19.14 Evaluation and Comparison of Bids

2.19.15 The Employer will evaluate and compare only the bids determined to be responsive in accordance with technical eligibility clause.

2.19.16 In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:

2.19.17 (a) Making any correction for errors pursuant to Clause 2.21.10

2.19.18 Contacts during Bid Evaluation

Bids shall be deemed to be under consideration immediately after they are opened and until such time, HAFED makes official communication of award/rejection to the Bidders. While the Bids are under consideration, Bidders and/or their representatives or other interested parties shall refrain from contacting HAFED and/ or its employees/ representatives on matters related to the Bids under consideration by any means.

2.20 Confidentiality

HAFED will treat all information, submitted as part of Bid, as confidential and shall require all who have access to such material to treat the same as confidential. HAFED will not divulge any such information unless it is directed to do so by any statutory entity under law.

2.21 Bank Guarantee

The Contractor shall provide the Performance Bank Guarantees and Mobilization Advance. Bank Guarantee in favour of HAFED. All bank guarantees shall be in the form of unconditional and irrevocable bank guarantee. All bank guarantees by the Contractor shall be given from the banks as specified in "Appendix 2 (t): List of Banks".

2.21.1 Performance Bank Guarantee (PBGs)

2.21.2 The Contractor shall, within ten (10) days of the issue of LOI, provide bank guarantees for the due performance of the Contract for five percent (5%) of the total Contract Price. The Contractor shall submit the Performance Bank Guarantee to HAFED as per "Appendix 2(a): Format of Performance Bank Guarantee".

2.21.3 PBGs shall be submitted in form of Bank Guarantees

2.21.4 PBGs submitted shall have the initial validity up to eighteen (18) months from the issue of LOI to the Contractor plus 12 months claim period. However, in case of delay in demonstration of the Performance Test and Final Acceptance, the validity of all the PBGs shall be extended by the period of such delay plus ninety (90) days.

2.21.5 The Performance Bank Guarantee shall be denominated in the currency as mentioned in the NIT and shall be in the form of unconditional and irrevocable bank guarantee.

2.21.6 Mobilization Advance Bank Guarantee

2.21.7 The Contractor shall, if required, furnish within 10 (ten) days from the date of signing of Contract Agreement, an unconditional and irrevocable bank guarantee for Mobilization Advance, as per “Appendix 2 (q): Mobilization Advance against Bank Guarantee” and shall be valid for 18 months from the date of signing of Contract Agreement which may be released earlier if mobilization advance has been adjusted.

2.21.8 The Mobilization Advance plus applicable interest rate from time to time shall be adjusted against the running bills of the Contractor during the execution of the Contract.

2.21.9 It should be clearly understood that adjustment in the value of bank guarantee for Mobilization Advance shall not in any way dilute the Contractor"s responsibility and liabilities under the Contract including in respect of the Facilities for which the adjustment in the value of bank guarantee is allowed.

2.22 Commencement of Services:

The Contractor shall commence the services immediately from the date of acceptance of LOI by the Contractor.

SECTION – 3: GENERAL CONDITIONS OFCONTRACT (GCC)

3.1 Definitions

The following words and expression shall have the meaning hereby assigned to them:

“Applicable Law” means any statute, law, regulation, ordinance, notification, rule, regulation, judgment, order, decree, bye-law, approval, directive, guideline, policy, requirement or other governmental restriction or any similar form of decision of, or determination by, or any interpretation or administration having the force of law in the Republic of India and the State Government, by any Government Authority or instrumentality thereof, whether in effect as of the date of this Contract or thereafter;

“Bid” means the Technical and Price Bids submitted by the Bidder along with all documents/credentials/attachment"s annexure etc., in response to this NIT, in accordance with the terms and conditions hereof.

“Bidder” means body incorporated in India under the Companies Act, 1956/2013 including any amendment thereto OR a partnership firm registered in India OR a proprietary firm registered in India OR consortium / joint venture.

“Bidding Documents” means documents submitted by the Contractor pursuant to the NIT along with all addendums to the NIT and minutes of meeting between the Parties.

“Bill of Quantities” means construction bidding or costing document that contains an itemized list of required works, tasks, materials, parts, elements, labour (with their costs), terms and conditions under which a contract is to be left to construct, maintain, or repair a specific structure

“Chartered Accountant” means a person practicing in India or a firm whereof all the partners practicing in India as a Chartered Accountant(s) within the meaning of the Chartered Accountants Act, 1949.

“Commissioning” means all Facilities as per Scope of Work under Section 5 of this NIT has been installed and successful trial run has been done.

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the SCC) have been completed operationally and structurally and put in a tight and clean condition and that all work in respect of Pre-commissioning of the Facilities or such specific part thereof has been completed; and Commissioning has been attained as per Scope of Work.

“Completion Certificate” means the certificate issued by HAFED to the Contractor as per Appendix 2 (u).

“Contract” or “Contract Agreement” means the agreement entered between HAFED and the Contractor along with the Contract Documents referred to therein as per Section 6 of this NIT.

“Contract Documents” means the documents listed in the Contract Agreement.

“Contract Price” means the contract price specified in the Contract Agreement.

“Contractor” means the person(s) who"s bid to execute the Contract has been accepted byHAFED and is named as such in the Contract Agreement, and includes the legal successors or permitted assigns.

“Contractor"s Equipment” means all plant, facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant and Equipment, or other things intended to form or forming part of the Facilities.

“Contractor"s Representative” means any person nominated by the Contractor andapproved by HAFED to perform the duties delegated by the Contractor.

“Day” means calendar day of the Gregorian calendar. “Month” means calendar month of the Gregorian calendar.

“Defect Liability Period” means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) which is 6 months from the date of issuance of Completion Certificate of the Project by HAFED.

“Facilities” means the infrastructure including equipment and materials to be supplied and installed, as well as their installationservices as mentioned in the GCC Clause 3.7.

“Final Acceptance” means acceptance of Facilities by HAFED on successful trial run through demonstration of minimum daily production capacity.

“GCC” means the General Conditions of Contract hereof. “GOI” means Government of India.

“Guarantee Test(s)”means the test(s) specified in the “Section 5 – Scope of Work” of this NIT as per the relevant codes to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the functional guarantees as specified.

“GST” means Goods and Services Tax.

“Installation Services” means all those services ancillary to the supply of the equipment and materials for the Facilities, to be provided by the Contractor under the Contract; e.g., transportation and provision of marine or other similar insurance, inspection, expediting, Site preparation works (including the provision and use of Contractor‟s equipment and the supply of all structural and construction materials required), installation including civil and allied works etc., testing, pre- commissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training of HAFED‟s Personnel etc.;

“LOI” means Letter of Intent issued by HAFED to the Successful Bidder.

“NIT” means Notice inviting Tender.

“Operational Acceptance” means the acceptance by the “HAFED” of the Facilities (or anypart of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor‟s fulfilment of the Contract in respect of functional and plant performance guarantees of the Facilities.

"Origin" means the place where the materials, equipment and other supplies for the facilities are mined, grown, produced or manufactured and from which the services are provided.

“HAFED” means The Haryana State Cooperative Supply and Marketing Federation Limited.

“Plant and Equipment” means plant, equipment, materials, machinery, apparatus, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts) but does not include Contractor’s Equipment.

“Pre-commissioning” means the testing, checking and other requirements specified in the Technical Specifications that are to be carried out by the Contractor in preparation for Commissioning.

“Project” means planning, engineering, procurement, construction, erection, commissioning, trial run of Mustard Oil Mill having crushing capacity of 150 MTPD expandable 300 MTPD at Rewari on turnkey basis pursuant to the NIT issued by HAFED.

“SCC”means the Special Conditions of Contract as mentioned in Section 4 of this NIT. “Scope of Work” means Scope of Work as mentioned in Section 5 of this NIT.

“Site” means the land and other places upon which the Facilities are to be installed, andsuch other land or places as may be specified in the Contract as forming part of the Site.

“Start Date” means the date of acceptance of LOI by the Successful Bidder and/or the Contractor.

"Subcontractor" means including vendors, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant and Equipment, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns. The contractor shall take Haryana State Cooperative Supply and Marketing Federation Limited approval before appointment of any sub-contractor/ vendor.

"Successful Bidder" means the Bidder who has technically qualified and quoted lowest Contract Price approved by The Haryana State Cooperative Supply and Marketing Federation Limited.

"Time for Completion" means the time within which Completion of the Facilities shall be attained in accordance with the stipulations in the SCC and the relevant provisions of the Contract.

"Trial Run"means a period of one months after commissioning of the facility with necessary indicators as specified in the NIT or as required for the successful operations of the facility including raw materials, consumables etc. The cost towards trial run for the period of one months of the processing facility shall be borne by the contractor.

HAFED and Contractor are collectively referred to as the "Parties" and individually referred to as a "**Party**".

3.2 Use of Contract Documents & Information

3.2.1 All documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

3.2.2 The Contract Agreement shall be executed in two original copes, one each for HAFED andthe Contractor.

3.2.3 The Contractor shall provide/ submit, free of cost to HAFED all the engineering data, drawings and descriptive materials, in at least two (2) copies as per the timelines indicated in Clause 3.20 of GCC.

3.2.4 The Contractor shall not, without the prior written consent of HAFED, disclose the Contract or any provision thereof or any specification, plan, drawing, pattern therewith to any person other than person employed by the Contractor for execution of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend strictly for purpose of execution only.

3.2.5 Any document other than the Contract itself, shall remain the property of HAFED.

3.3 Interpretation

3.3.1 Definition

Definitions provided in Clause 3.1 of this Section3 – General Conditions of Contract, shall be read and construed in the same manner in Section 4 – Special Conditions of Contract and Section 5 – Scope of Work of this NIT;unless the context otherwise requires.

3.3.2 Language

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

3.3.3 Singular and Plural

The singular shall include the plural and the plural the singular, except where the context otherwise requires.

3.3.4 Heading

The headings and marginal notes in the General Conditions of Contract are included for ease of reference and shall neither constitute a part of the Contract nor affect its interpretation.

3.3.5 Persons

Words importing persons or parties shall include firms, corporations and government entities.

3.3.6 Entire Agreement

The Contract constitutes the entire agreement between HAFED and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of parties with respect thereto made prior to the date of Contract. The various documents forming the Contract are to be taken as mutually explanatory.

3.3.7 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of HAFED and the Contractor.

3.3.8 Independent Contractor

3.3.8.1 Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is executed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of HAFED. Nothing contained in the Contract or in any subcontract awarded by the Contractor, shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and HAFED.

3.3.8.2 Under no circumstances, the Subcontractor shall claim or shall put any binding to HAFED and at all times the Subcontractor must be managed by the Contractor. HAFED shall not be responsible for any claims at any time by the Contractor in relation to the Subcontractor.

3.3.9 Joint Venture or Consortium

If the Contractor is a Joint Venture ("JV") / consortium of two or more firms, all such firms shall be jointly and severally bound to HAFED for the fulfilment of the provisions of the Contract and shall designate one of such firms to act as a leader as per the ITB clause 2.8. The composition or the constitution of the JV / consortium shall not be altered without the prior written consent of HAFED.

3.3.10 Non-Waiver

3.3.10.1 Subject to GCC Clause 3.9, no relaxation, forbearance, delay or indulgence by either Party in enforcing any of the terms and conditions of the Contract or the granting of time by either Party to the other Party shall prejudice, affect or restrict the rights of that Party under the Contract, nor shall any waiver by either Party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.3.10.2 Any waiver of a Party"s rights, powers or remedies under the Contract must be in writing, dated and signed by an authorized representative of the Party granting such waiver, and must specify the right and the extent to which it is being waived.

3.3.11 Severability

3.3.11.1 If any provision of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of other provisions of the Contract.

3.3.11.2 It is stated that each paragraph, clause, sub-clause, schedule or annexure of this contract shall be deemed severable and in the event of the unenforceability of any paragraph, clause sub-clause, schedule or the remaining part of the paragraph, clause, sub-clause, schedule annexure & rest of the contract shall continue to be in full force & effect.

3.4 Notices

3.4.1.1 Unless otherwise stated in the Contract, all notices to be given under the Contract shall be in writing, and shall be sent by personal delivery, post, courier or e-mail to the address of the relevant Party by the authorized representative of the Party.

3.4.1.2 Any notice sent by e-mail shall be deemed to have been delivered on date of its dispatch and personal delivery deemed to have been delivered on date of delivery.

3.4.1.3 Either Party may change its postal, telex, facsimile or e-mail address or addresses for receipt of such notices by ten (10) days" notice to the other Party in writing.

3.4.1.4 Notices shall be deemed to include any approvals, consents, instructions, orders and certificates to be given under the Contract.

3.5 Law Governing Contract

The Contract shall be governed by and construed in all respects in accordance with the laws ofIndia and the Parties hereby agree to submit to the exclusive jurisdiction of Courts in Delhi.

3.6 Dispute Resolution

3.6.1 Amicable Resolution and Arbitration

i. If any dispute of difference of any king whatsoever shall arise between the parties in connection with or arising out of this agreement (and whether before or after the termination on breach of this agreement) parties shall promptly and in good faith negotiate with a view to arrive at amicable resolution and settlement. In the event no amicable resolution and settlement is reached within a period of 15 days from the date on which the dispute or difference arose, such dispute of differences shall be referred to a mutually acceptable sole Arbitrator, or upon the failure of the parties to agree upon a sole Arbitrator, either party may get the appointment of Sole Arbitrator from the competent court of governing jurisdiction. The Arbitration proceedings shall be conducted as per the provision of the Arbitration and Conciliation Act and rules made there under. The fees and expenses shall be borne equally be both the parties.

ii) The existence of any dispute of differences or the initiation or continuation of the arbitration proceeding shall not postpone or delay the performance by the parties of their respective obligation pursuant to this agreement. The outcome of the Arbitration shall be binding upon all the parties involved."

3.6.2 Appointment of Arbitrator, Rules and Venue of Arbitration

The Arbitration shall be held in accordance with the Arbitration and Conciliation Act, 1996, as amended from time to time, by an Arbitral Tribunal consisting of 3 (three) Arbitrators. HAFED shall nominate one Arbitrator and the Contractor shall nominate one Arbitrator within 30 (thirty) days of the delivery of the Arbitration Notice to the Respondent and the two Arbitrators so nominated shall appoint the Presiding Arbitrator. The seat and the place of the Arbitration shall be **New Delhi** or such other place as may be agreed to by the Parties in writing.

3.6.3 Language of Arbitration

The language of the Arbitration proceedings shall be English.

3.6.4 Award

a) The Award rendered shall be in writing and shall set out the reasons for the Arbitral Tribunal"s decision and shall be final and binding on the Parties. The Award shall allocate or apportion the costs of the Arbitration as the Arbitral Tribunal deems fair.

b) During the period of submission of Arbitration and thereafter until the grant of the Award, the Parties shall, except in the event of termination, continue to perform all their obligations under this Contract Agreement without prejudice to the final determination in such Award.

3.6.5 Bar on Suits

The Parties hereby agree that no Party shall have any right to commence or maintain any suit or legal proceedings (other than for interim or conservatory measures) until the Dispute has been determined in accordance with the arbitration procedure provided herein and then only for enforcement of the Award rendered in the arbitration.

3.7 Scope of Work

3.7.1 All works as mentioned in Section 5 – Scope of Work in this NIT.

3.7.2 The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining

Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.

3.7.3 In addition to the supply of mandatory Spare Parts, the Contractor shall also agree to supply other spare parts, recommended for the Facilities. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof shall be agreed between HAFED and the Contractor based on the recommendation of Original Equipment Manufacturer (OEM).

3.7.4 The bidder should ensure that the oil mill will be completed in all respect. In case any item/machinery/equipment is not mentioned in the BOQ but essential for the completion of the project, the same will be provided free of cost by the bidder.

3.8 Contractor's Responsibility

3.8.1 The Contractor shall design, procure, manufacture (including associated purchases and/or subcontracting), install, commission and complete the Facilities, carry out the Guarantee tests with due care and diligence in accordance with the Scope of Work.

3.8.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the facilities provided by HAFED and assessed by himself at the site location, and on the basis of information that the Contractor shall have obtained from the site inspection and from other data readily available, only after proper due diligence relating to the Facilities prior to Bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Scope of Work.

3.8.3 The Contractor shall assist, HAFED and provide supporting document if any, in acquiring all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located that are necessary for the setting up of the plant mentioned under the Contract, including, but not limited to, entry permits for all imported equipment (if any). Contractor must ensure safe keeping of the documents and diligent use. It is the responsibility of the Contractor to safe keep and handover all the approvals, permits, licenses, certificates and other relevant document generated as a result of the setting up of project to HAFED.

3.8.4 The Contractor shall acquire in its name all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located that are necessary for the Performance of the Contract, including, but not limited to, the right of way for the access to site and for erection of transmission lines as applicable, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of HAFED under Clause 3.9 of GCC hereof and that are necessary for the execution of the Contract.

3.8.5 The Contractor shall comply with all laws in force at the place, where the Facilities are installed and where the installation services are carried out. The laws shall include all national, provincial, municipal or other laws that affect the execution of the Contract and are binding upon the Contractor. The Contractor shall indemnify and hold harmless HAFED from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to Clause 3.9.1 of GCC hereof.

3.8.6 Any plant, material, spares & spares inventory and services that will be incorporated in or be required for the facilities and other supplies shall have their Origin clearly mentioned.

3.8.7 Unless otherwise specified in the Contract or agreed upon by HAFED and the Contractor, the Contractor shall provide/ deploy sufficient, properly qualified operating and maintenance personnel; shall supply and make available all raw materials, spares, other materials and facilities; and shall perform all work and services of whatsoever nature, to properly carry out Pre-commissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of NIT at or before the time specified in the work schedule furnished by the Contractor under Clause 3.18 of GCC hereof and in the manner

thereupon specified or as otherwise agreed upon by HAFED and the Contractor.

3.9 HAFED"s Responsibility

3.9.1 HAFED shall ensure the accuracy of all information and/or data supplied as described in this NIT.

3.9.2 HAFED shall be responsible for acquiring all the permits, approvals and/or licenses from state or central government authorities or public sector undertakings for setting up the said plant including approval for imported items.

3.9.3 HAFED shall be responsible for acquiring and providing legal and physical possession of the Site thereto required for the proper execution of the Contract. HAFED shall give full possession of site and accord all rights of access thereto on or before the date(s) specified in Clause 4.2 of SCC.

3.9.4 The statutory approvals and licenses obtained on or behalf of HAFED by the Contractor, the fees paid towards obtaining the same shall be paid and/or reimbursed by HAFED.

3.9.5 HAFED shall pay and/or reimburse to the Contractor, the statutory fees for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located for the plant establishment, which such authorities or undertakings require HAFED to obtain them in HAFED"s name and are necessary for the execution of the Contract.

3.9.6 If requested by the Contractor and upon sole discretion of HAFED, HAFED shall provide necessary assistance to the Contractor in obtaining permits, approvals and/or licenses necessary for the execution of the Contract from concerned authorities.

3.9.7 HAFED shall be responsible for the utilization of the facilities after completion and proper hand over of the site by Contractor, in accordance with Clause 3.25 and 3.26 of GCC.

3.9.8 Assist the Contractor for movement of men and materials and approving paperwork in a reasonable time;

3.9.9 To resolve all site related issues expeditiously without any bias;

3.9.10 To release payment of the Contractor as per Clause 4.7 of SCC.

3.10 Contract Price

3.10.1 The Contract Price mentioned under Appendix 2 (e): Performa for Financial proposal shall be firm and shall not change after the award of Contract.

3.10.2 Subject to Clause 3.10.1 of GCC hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price.

3.11 Payment Terms

The terms of Payment shall be as specified in Clause 4.7 of SCC.

3.12 Bank Guarantees

The Contractor shall provide the Performance Bank Guarantees and Mobilization Advance Bank Guarantee in favour of HAFED. All bank guarantees shall be in the form of unconditional and irrevocable bank guarantee. All bank guarantees by the Contractor shall be given from the banks as specified in Appendix 2(t): List of Bank sat the times, and in the amount, manner and form specified below:

3.12.1 Performance Bank Guarantee (PBGs)

3.12.1.1 The Contractor shall, within ten (10) days of the issue of LOI, provide Bank Guaranteesfor the due performance of the Contract for five percent (5%) of the total Contract Price. The Contractor shall submit the Performance Bank

Guarantee to HAFEDas per "Appendix 2 (a): Format of Performance Bank Guarantee".

3.12.1.2 PBGs shall be submitted in 3 separate Bank Guarantees in the ratio of 20%, 40% and 40% of the total PBG value.

3.12.1.3 PBGs submitted shall have the initial validity up to eighteen (18) months from the issue of LOI to the Contractor plus 12 months claim period. However, in case of delay in demonstration of the Performance Test and Final Acceptance, the validity of all the PBGs shall be extended by the period of such delay plus ninety (90) days.

3.12.1.4 The Performance Bank Guarantee shall be denominated in the currency as mentioned in the NIT and shall be in the form of unconditional and irrevocable bank guarantee.

3.12.2 Mobilization Advance Bank Guarantee

3.12.2.1 The Contractor shall, if required, furnish within 10 (ten) days from the date of signing of Contract Agreement, an unconditional and irrevocable bank guarantee for Mobilization Advance, as per “Appendix 2 (q): Mobilization Advance against Bank Guarantee” and shall be valid for 18 months from the date of signing of Contract Agreement.

3.12.2.2 The Mobilization Advance plus applicable interest rate from time to time shall be adjusted against the running bills of the Contractor during the execution of the Contract.

3.12.2.3 It should be clearly understood that adjustment in the value of Bank Guarantee for Mobilization Advance shall not in any way dilute the Contractor"s responsibility and liabilities under the Contract including in respect of the Facilities for which the adjustment in the value of Bank Guarantee is allowed.

3.13 Taxes and Duties

3.13.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and payall taxes, duties, levies and charges assessed on the Contractor, its Subcontractor or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country.

3.13.2 In case of all components, equipment and materials identified by the Contractor and HAFED to be dispatched directly from the sub-vendor"s work place to HAFED"s site in a state different from the state wherein sub-vendor"s work place is located, the Contractor shall affect sale in transit. For effecting the sale in transit, the Contractor shall ensure that his sub-vendor raises invoices and obtain Goods Receipt (GR)/ Lorry Receipt (LR)/ Railways Receipt (RR) in the name of Contractor (and not in the name of HAFED). The Contractor shall further ensure that he endorses the GR/LR/RR in the name of HAFED during transit of the equipment before the delivery of equipment is taken by HAFED.

3.13.3 All taxes, duties, levies and charges levied for the execution of Contract, if any, shall be borne by the Contractor and no separate claim in this regard will be entertained by HAFED.

3.13.4 If any rates of taxes, duties, levies and charges are increased or decreased or a new tax is introduced or an existing tax is abolished after the Bid opening, the same has to be taken into account by the Contractor. No adjustment of the Contract Price shall be made into account for any such change by addition/deduction to the tax rate.

3.14 Intellectual Property Rights

3.14.1 For the purpose of this Contract, “Intellectual Property Rights” shall mean any patent, trademark, service mark, copyright, moral rights, trade secrets, ideas, concepts, know-how, techniques or other proprietary right in a design, know-

how and/or Confidential Information together with all or any goodwill relating or attached thereto.

3.14.2 The copyright in all drawings, documents and other materials containing data and information furnished to HAFED by the Contractor herein shall remain vested in the Contractor or, if they are furnished to HAFED directly or through the Contractor by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party. HAFEDshall be free to reproduce all drawings, documents, specification and other material furnished to HAFED for the purpose of the Contract including, if required, for operation and maintenance of the Facilities.

3.14.3 The Contractor shall indemnify HAFED against third party claims of infringement of patent, trademark or industrial design rights arising from use of goods or any part thereof in India.

3.14.4 The Intellectual Property Rights in any documentation or product arising out of the performance of the Contract shall remain vested in HAFED unless otherwise specifically agreed in writing by HAFED, and none of which shall be considered “work for hire”. The Parties agree that any existing Intellectual Property Rights owned by HAFED shall remain its property.

3.15 Confidentiality

3.15.1 The term “Confidential Information” under this Contract Agreement does not include information from a disclosing Party which:

3.15.1.1 at the time of disclosure to the receiving Party was publicly available or thereafter becomespublicly available through no fault of the receiving Party;

3.15.1.2 is already rightfully in the receiving Party"s possession or is rightfully received by such Party from a third party without a nondisclosure obligation to the disclosing Party here under;

3.15.1.3 is independently developed by the receiving Party without use of the confidential material; or

3.15.1.4 is readily ascertainable through awareness of public statements or disclosures.

3.15.2 Confidential Information shall be used solely for the purpose(s) for which it was exchanged. Confidential Information may be disclosed to the receiving Party"s employees or sub- contractors and only to the extent such employees or sub-contractors have a need to know the contents of such Confidential Information for the purpose(s) for which it was exchanged or for similar or replacement purpose(s).

3.15.3 If at any time a Party receiving Confidential Information is requested or required as a result of a judicial or regulatory proceeding to disclose any Confidential Information, the receiving Party agrees to provide the disclosing Party with prompt notice thereof so that the disclosing Party may seek an appropriate protective order. If requested by the disclosing Party, the receiving Party shall reasonably cooperate in obtaining such a protective order. If a Party receiving Confidential Information is compelled by a judiciary or regulatory authority to disclose Confidential Information concerning the disclosing Party or else stand liable for contempt or suffer other censure, sanction or penalty, the Party receiving Confidential Information may disclose such information to the extent required without liability hereunder. It is clarified for the purpose of this Clause, cooperation means reasonable assistance to the disclosing Party without there being a financial cost.

3.15.4 At any time upon the disclosing Party"s request, the receiving Party shall promptly deliver to the disclosing Party all written material (or such portions thereof as the disclosing Party may demand) constituting the Confidential Information, and the receiving Party shall not retain any copies, extracts or other reproductions in whole or in part of such written material. Notwithstanding

anything contained hereinabove, receiving Party may retain and may disclose the Confidential Information for the following purposes:

3.15.4.1 ensuring compliances under the best corporate governance practices adopted by the receiving Party; or mandated by law, as the case may be;
3.15.4.2 for the purpose of procuring insurance or as may be required for internal audit purpose;
3.15.4.3 documented before the committee meeting or before board of directors of the receiving Party;
3.15.4.4 documents that are created or retained by any advisers (including legal, tax, accounting and financial advisers) or financiers of the receiving Party where those documents are required to be held, or it is the usual practice of the adviser or financier to hold those documents, for the purposes of any relevant professional standards, practices, codes or insurance policies applicable to the relevant adviser or financier;

3.15.5 The confidentiality obligation under this Contract Agreement shall survive for two years post termination/expiry of the said Contract Agreement.

3.16 Geological Discoveries

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site where the services are performed, be deem to be the absolute property of HAFED. The Contractor shall take reasonable precautions to prevent the personnel or any other persons from removing or damaging any such article or thing and shall immediately upon the discovery thereof and, before removal, acquaint HAFED of such discovery any carry out, at the expense of HAFED, HAFED"s orders as to the disposal of the same.

3.17 Authorized Representatives

3.17.1 Any action required or permitted to be taken, and any document required or permitted to beexecuted under this Contract, may be taken or executed:

3.17.1.1 on behalf of HAFED by _____ designated or his/her representative;
3.17.1.2 On behalf of the contractor by _____ or his/her designated representative.

3.17.2 HAFED shall give a notice of change of its authorized representative to the Contractor withoutdelay.

3.17.3 If the Contractor want to change its authorized representative, the Contractor shall request HAFED in writing to approve the person for appointment as authorized representative of the Contractor. If HAFED makes no objection to the appointment within seven (7) days of such request, the Contractor"s authorized representative shall be deemed to have been approved.

3.17.4 The Contractor's authorized representative shall, subject to the approval of HAFED (which shall not be unreasonably withheld), at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time.

3.17.5 Any act or exercise by any person of powers, functions and authorities so delegated to him or her shall be deemed to be an act or exercise by the Contractor"s authorized representative.

3.17.6 From the commencement of installation of the Facilities at the Site until Operational Acceptance, the Contractor"s authorized representative shall appoint a suitable person as the site in charge ("Site in Charge"). The Site in Charge shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours for the proper execution of the Contract. Whenever the Site in Charge is absent from the Site, a suitable person shall be appointed to act as his or her deputy.

3.17.7 HAFED by notice to the Contractor, may object to any representative or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of HAFED may behave inappropriately, may be in-competent or negligent, or may commit a serious breach of the Site regulations and safety. HAFED shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.

3.17.8 HAFED reserves the right to allow / deny personnel employed by the Contractor within the premises of the site. If any representative or person employed by the Contractor is removed upon direction of HAFED, the Contractor shall promptly appoint a replacement immediately and inform HAFED within three (3) days of such replacement.

3.18 Project Implementation

3.18.1 Work Schedule

Within seven (7) days after the date of acceptance of LOI, the Contractor shall prepare and submit to HAFED a detailed program for execution of the Contract, in the form of a PERT Chart and showing the sequence in which, it proposes to design, manufacture, transport, assemble, install and pre-commission the Facilities along with planned dates of all critical activities. The program so submitted by the Contractor shall accord with the Time Schedule indicated in Clause 4.2of SCC and any other dates and periods as specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by HAFED, but without modification in the Time for Completion given in the Clause

4.2 of SCC and any extension granted in accordance with clause for extension of time, and shall submit all such revisions to the Project Manager.

The Contractor shall also submit updated Work Schedule with detailed look-ahead plan for upcoming 2 months along with monthly report.

3.18.2 Progress Report

The Contractor shall monitor progress of all the activities specified in the work schedule as per Clause 3.18.1 of GCC and submit the monthly progress report to HAFED as per the before 5thday of each month during the tenure of the Contract. The progress report shall be in a form acceptable to HAFED and shall indicate:

3.18.2.1 percentage completion achieved compared with the planned percentage completion foreach activity; and

3.18.2.2 where any activity is behind the program, giving comments and likely

consequences and stating the corrective action being taken.

3.18.2.3 Any other format as required by HAFED.

3.18.2.4 The Contractor shall also submit Weekly Progress Report every Saturday covering the status of works planned and completed during the reporting week along with details of any hindrances /issues that may impact the performance of the Contractor.

3.18.3 Maintenance of Records of Weekly Progress Review Meetings at Site

The Contractor shall attend all weekly site progress review meetings organized by HAFED or its authorized representative. The deliberations in the meetings shall inter-alia include the weekly program, progress of work (including details of manpower, tools and plants deployed by the Contractor vis-à-vis agreed schedule), inputs to be provided by HAFED, delays if any and recovery program, specific hindrances to work and work instructions by HAFED. The minutes of the weekly meetings shall be recorded in triplicate in a numbered register by the Contractor or its authorized representative. These recordings shall be jointly signed by HAFED or its authorized representative and the Contractor or its authorized representativeand one copy of the signed records shall be handed over to HAFED.

3.19 Subcontracting

Without the prior consent in writing of HAFED, the Contractor shall not assign or sublet or transfer its Contract in whole or in part, its obligations to perform under the Contract or a substantial part thereof, other than raw materials, or for any part of the works of which makers are named in the Contract, provided that any such consent shall not relieve the Contractor from any obligation, duty or responsibility under the Contract.

The Contractor shall notify HAFED in writing of all sub-contracts awarded under the Contract; if not already specified in its Bid. Such notification in its original Bid or later shall not relievethe Contractor from any liability or obligation under the Contract. In case, the Contractor engages any Subcontractor to carry out a part of the work, the Subcontractor shall have requisite statutory licenses and approvals for carrying out such part of the work.

3.20 Design and Engineering

Specification and Drawings

a) The Contractor shall execute the basic and detailed design and engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good and sound engineering practice acceptable to HAFED.

b) The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by HAFED or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of HAFED.

c) The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of HAFED by giving a notice of such disclaimer to HAFED.

Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date of Bid submission shall apply unless otherwise specified.

Approval/Review of Technical Documents by HAFED

a) The Contractor shall prepare list of documents as per Scope of Work and

furnish the same to HAFED for approval. Any part of the Facilities covered by or related to the documents to be approved by HAFED shall be executed only after HAFED"s approval Within seven (7) days after receipt by HAFED of any document requiring HAFED"s approval, HAFED shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that HAFED proposes. In case of approvals, which require special permission may take an additional time and that shall be informed to the Contractor in writing by HAFED.

b) HAFED shall not disapprove any document, except on the grounds that the document does not comply with some specified provision of the Contract or that it is contrary to good engineering practice.

c) If HAFED disapproves the document, the Contractor shall modify the document and resubmit it for HAFED"s approval. If HAFED approves the document subject to modification(s), the Contractor shall make the required modification(s), and upon resubmission with the required modifications, the document shall be deemed to have been approved.

d) HAFED"s approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by HAFED.

e) If any dispute or difference occurs between HAFED and the Contractor in connection with or arising out of the disapproval by HAFED of any document and/or any modification(s) thereto that cannot be settled between the Parties within a reasonable period, then such dispute or difference may be settled in accordance with Clause 3.23.2 of GCC. If such dispute or difference is referred as per Clause 3.23.3 of GCC, the Contractor shall proceed as per HAFED"s instructions. If the Arbitration upholds the Contractor"s view on the dispute, then the Contractor shall be reimbursed by HAFED for any additional costs incurred due to implementation of such instructions and the Time for Completion shall be extended accordingly.

f) The Contractor shall not depart from any approved document unless the Contractor has first submitted to HAFED an amended document and obtained HAFED"s approval thereof, pursuant to Clause 3.18.1 of GCC.

g) If HAFED requests any change in any already approved document and/or in any document based thereon, generally shall be taken care by the Contractor if the change is not causing any major financial impact.

3.21 Handling, Transportation and Delivery

3.21.1 The Contractor shall arrange for procurement, transportation, loading & unloading and safe storage of all necessary materials required for the execution of Contract at the Site in an expeditious and orderly manner at its own cost and risk.

3.21.2 The Contractor shall be responsible for protecting and packing of the materials as per prescribed standards in force to withstand the journey and ensuring safety of materials and arrival at destination in original condition and good for contemplated use.

3.21.3 Packing lists of materials shall be provided for each package to facilitate checking up of the contents at the destination.

3.21.4 In order to import any items, associated with the Project, from abroad or from any other state in India, the Contractor shall have to arrange any clearance, permission, if required at his own risk, from any Government (Government of State & Government of India) controlled organization for transportation of materials from manufacturing shop to delivery at Site. Necessary letters if so required may be issued by HAFED at its sole discretion after getting written request from the Contractor along with the

necessary documents substantiating necessity of such approvals.

3.21.5 The Contractor shall deliver the equipment and materials in accordance with the terms of the Contract at the time(s) to the place(s) and in the manner specified in this NIT. The Contractor shall comply with instructions given by HAFED from time to time regarding the transit of the equipment and materials.

3.21.6 Notification of delivery or dispatch about each and every consignment shall be made to HAFED immediately after dispatch or delivery from the manufacturing works.

3.21.7 The Contractor shall be responsible for loss, damages, or depreciation to goods or of plant, equipment, and machineries up to delivery at Site. In case of any occurrence of loss or damage in transit, it shall be the liability of the Contractor to initiate or pursue the claim with insurance agency and shall take immediate steps to repair the damaged equipment and materials or their replacement.

3.22 Material and Workmanship

3.22.1 All materials shall be of the best quality and workmanship capable of satisfactory operation under the operating and climatic conditions of the Site. Unless otherwise specified, all materials shall conform in all respect to the latest edition of the relevant IS codes specification wherever Indian specifications apply or IEC codes or equivalent internationally accepted standard.

3.22.2 If the Contractor offers equipment manufactured in accordance with other international well recognized standards (mentioned above), he shall, in that case, supply a copy in English of the Standard Specification adopted and shall clearly mention in what respect such standard specification differs from Indian Standard Specifications. All materials offered by the contractor should comply with one consistent set of Standards only to make the systemcompatible and work in harmony as far as possible.

3.23 Variation

3.23.1 No alterations, amendments, omissions, additions, subtractions, or variations of the work ("Variation") under the contract shall be made by the Contractor except as directed by HAFED.

3.23.2 If any suggested variations would, in the opinion of the Contractor, if carried out prevent it from fulfilling any of its obligations or guarantees under the Contract, it shall notify HAFED thereof in writing and HAFED shall decide forthwith whether or not the same shall be carried out and if HAFED confirms its instruction, the Contractor shall carryout the work as per the instructions.

3.23.3 The differences in cost, if any, occasioned by such variations, shall be added to or deducted from the total Contract Price, as the case may be.

3.23.4 In the event of HAFED requiring any variations, reasonable and proper notice shall be given to the Contractor as well, to enable it to make arrangements accordingly, and in cases where goods or materials are already prepared/procured, or any designs, drawings or patterns made or work done that require to be altered, a reasonable sum in respect thereof shall be allowed by HAFED.

3.24 Installation

3.24.1 Tools & Tackles

The Contractor shall provide technically suitable tools and tackles for execution of Contact conforming to relevant BIS safety and technical

standards for proper execution of works. HAFED in no way, shall be responsible for supply of any tools and tackles for implementation of the work.

3.24.2 Benchmark

3.24.2.1 The Contractor shall be responsible for setting-up of the Facilities in relation to benchmarks, reference marks which are mutually agreed between the Contractor and HAFED.

3.24.2.2 If, at any time during the progress of installation of the Facilities, any error that may appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify HAFED of such error and, immediately rectify such error at its own expense to the satisfaction of HAFED.

3.24.3 Supervision

The Contractor shall give or provide all necessary superintendence during the installation of the Facilities and the Site in Charge, or its deputy shall be constantly available on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only skilled and experienced personnel and supervisory staff who are competent to adequately supervise the works.

3.24.4 Labour

3.24.4.1 The Contractor shall provide and employ such skilled, semi- skilled and unskilled labour as required for proper and timely execution of the Contract. The Contractor is encouraged to use local labour that has the necessary skills.

3.24.4.2 Unless otherwise provided in the Contract, the Contractor shall be responsible for the recruitment, transportation, accommodation and catering of all labour, local or expatriate, required for the execution of the Contract and for all payments in connection therewith.

3.24.4.3 The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labour and personnel to be employed by the Contractor at the Site.

3.24.4.4 The Contractor shall always during the progress of the Contract use its best endeavours to prevent any unlawful, riotous or disorderly conduct or behaviour by or amongst its employees and the labour of its Subcontractors.

3.24.4.5 The Contractor must pay minimum wages as per labour law (Central/State) to all his labours whether regular or temporary. In case of non-payment of PF/ESI, same amount will be deducted from the Contractor"s payment.

3.24.4.6 The Contractor shall, in all dealings with its labour and the labour of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labour.

3.24.5 Equipment

All equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall remove such equipment from the Site which are no longer required for the execution of the Contract. Upon completion of the Facilities, HAFED shall not be responsible in any manner towards any equipment of the Contractor.

3.24.6 Site Regulation and Safety

3.24.6.1 The Contractor shall provide all necessary and adequate safety measures including personal protective equipment and precautions to avoid any accident, which may cause damage to any equipment / material or injury to workmen. HAFED shall not be responsible for any such accidents. The Contractor shall engage enough security guards to protect Facility from any theft and unauthorized access to Site. The workers and team involved in the execution shall be insured.

3.24.6.2 The Contractor shall provide and maintain at its own expense all lighting, fencing, watch and ward wherever necessary for the proper execution and the protection of the Facilities and for the safety of HAFEDs and occupiers of adjacent property and for the safety of the public.

3.24.7 Site Clearance During Execution of Contract

During the execution of the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage,rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

3.24.8 Site Clearance after Completion

After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and Facilities clean and safe.

3.24.9 Disposal of Scrap

3.24.9.1 The Contractor shall promptly remove from the site any „Scrap" generated during performance of any activities at site during execution of the Contract, only after the written consent of HAFED.

3.24.9.2 The term „Scrap" shall refer to scrap/waste/remnants arising out of the unpacking of equipment, construction debris, fabrication of structural steel work and piping work at the project site in the course of execution of the Contract and shall also include any wastage of cables during the termination process while installing the cables.

3.24.9.3 The ownership of such Scrap shall vest with the Contractor except in cases where HAFED has issued the items from its stores for their installation only without any adjustment to the Contract Price. The removal of scrap shall be subject to the Contractor producing the necessary clearance from the relevant authorities, if required by the law, in respect of disposal of the scrap. The liability for the payment of the applicable taxes/duties towards the same shall be borne by the Contractor.

3.24.9.4 The Contractor shall indemnify HAFED harmless from any act of omission or negligence on the part of the Contractor in following the statutory requirements with regard to removal/disposal of Scrap. The Indemnity Bond as per "Appendix 2 (s) – Indemnity Bond for removal/disposal of Scrap". Further, in case the laws require HAFED to take prior permission of the relevant authorities before handing over the scrap to the Contractor, the same shall be obtained by the Contractor on behalf of HAFED.

3.24.10 Inspection & Testing

3.24.10.1 HAFED or its authorized representative shall have at all time, access to the Contractor's premises and also shall have the power, at all times, to inspect and examine the materials and workmanship of Project work during its manufacture, shop assembly and testing. If some part of the

materials is required to be manufactured in the premises other than the Contractor's, the necessary permission for inspection shall be obtained by the Contractor for HAFED or its authorized representative.

3.24.10.2 HAFED shall have the right to serve notice in writing to the Contractor on any grounds of objections, which he may have in respect of the work. The Contractor must satisfy the objection within seven (7) days of receipt of such notice, otherwise, HAFED at its liberty shall reject all or any component connected with such work.

3.24.10.3 The Contractor shall issue request letter to HAFED for testing of any component of the work, which is ready for testing at least seven (7) days in advance from the date of actual testing at the premises of the Contractor or elsewhere. However, HAFED at its own discretion may waive the inspection and testing in writing under very special circumstances. In such case, the Contractor may proceed with the tests which shall be deemed to have been made in HAFED"s presence, and it shall forthwith submit duly certified copies of test results and certificates to HAFED for approval. The Contractor on receipt of written acceptance from HAFED shall dispatch the equipment for erection & installation.

3.24.10.4 For all tests to be carried out, whether in the premises of the Contractor or any Subcontractor, the Contractor shall arrange labour, materials, electricity, fuel, water, stores, apparatus and instruments etc. at its own cost as may reasonably be demanded to carry out such tests in accordance with the Contract. The Contractor shall provide all facilities to HAFED to accomplish such testing.

3.24.10.5 HAFED shall have the right to carry out inward inspection of the items on delivery at Site and if the items are not in line with the approved specifications, HAFED shall have the liberty to reject the same.

3.24.10.6 In case, HAFED requires that testing of any component(s) shall be carried out by an independent Third-Party Inspection (TPI) agency, which shall be approved by HAFED. The inspection fees shall be paid by the Contractor.

3.24.10.7 The Contractor must provide the necessary testing reports and certificates to HAFED as and when required.

3.24.10.8 Neither the waiving of inspection nor acceptance after inspection by HAFED shall in anyway absolve the Contractor of the responsibility of supplying the materials strictly in accordance with the Scope of Work.

3.24.10.9 The materials shall have valid test certificates for their qualification as per specified IEC/ IS Standards. In case, such testing facilities do not exist in India, test certificates from internationally reputed agencies (with proper proof of accreditation) shall be acceptable.

3.25 Commissioning of the Facilities

3.25.1 On completion of installation / commissioning of the Facilities as specified in the Section 5 - Scope of Work, the Contractor shall ask HAFED in writing for the permission to initiate the installation / commissioning of the Facility.

3.25.2 During material delivery (Pre-erection), the Contractor shall ask HAFED in writing the permission to initiate the installation / commissioning of the facility as per the Clause 2.25.1 of GCC.

3.25.3 Installation / commissioning of the Facilities shall be completed by the Contractor as per procedures detailed in the Section 5 - Scope of Work and in the presence of HAFED.

3.25.4 If HAFED notifies the Contractor about any defects and/or deficiencies, the Contractor shall correct such defects and/or deficiencies at any stage within the agreed time frame.

3.26 Guarantee Test

3.26.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified under the Scope of Work, subject to andupon the conditions therein specified.

3.26.2 If, for reasons attributable to the Contractor, the guaranteed level of the Functional Guarantees specified under the Scope of Work are not met either in whole or in part, the Contractor shall, within a mutually agreed time, at its own cost and expense shall make such changes, modifications and/ or additions to the Facility or any part thereof as may be necessary to meet such Guarantees. The Contractor shall notify HAFED upon completion of the necessary changes, modifications and/or additions, and shall seek HAFED consent to repeat the Guarantee Test. If the level of the specified Functional guaranteed parameters, as demonstrated even during repeat of the Guarantee Test(s), are outside the acceptable shortfall limit, HAFED shall at its option, either

3.26.2.1 Reject the equipment/materials and advise immediate replacement with equipment to suit the provisions of the Scope of Work without any additional cost

3.26.2.2 Reject the equipment/materials and recover the payments already made, or

3.26.2.3 Terminate the Contract and recover the payments already made, or

3.26.2.4 Accept the equipment/materials after levy of penalties in accordance with the provisions specified.

3.27 Operational Acceptance

Operational Acceptance shall occur in respect of the Facilities when the Guarantee Test in accordance with the procedure specified in Scope of Work has been successfully completed and the Functional Guarantees are met and if applicable, the Contractor has paid the liquidated damages specified in Clause 3.31 of GCC.

3.28 Completion Certificate

If HAFED is satisfied that the Facilities have reached Completion, HAFED shall give written information to the Contractor that the Completion has been achieved and within fifteen (15) days after such information, HAFED shall issue a Completion Certificate.

3.29 Negligence

3.29.1 If the Contractor neglects to manufacture or supply or construct the Facility with due diligence and with expeditiousness or refuses or neglects to comply with any reasonable order given to it in writing by HAFED or contravenes any provisions of the Contract, HAFED shall give seven (7) days" notice in writing to the Contractor, to make good the failure, neglect or contravention complained of. If the Contractor fails to comply with the notice within reasonable time depending on the nature of affected work, which shall be evaluated by HAFED from the date of serving thereof, in the event of failure, neglect or contravention capable of being made good within that time, then in such case, if HAFED thinks fit, it shall be lawful for it to take the manufacture or supply of equipment and materials wholly or in part, out of the Contractor's hand and give it to another person on Contract at current market price and HAFED shall be entitled to retain any balance which may be otherwise due on the Contract by it to the Contractor or such part thereof as may be necessary, to the payment of the cost of manufacture or supply of such plant as aforesaid.

3.29.2 If the cost of executing the work as aforesaid shall exceed the balance due to the Contractor and the Contractor fails to make good such deficiency, HAFED shall take action in the manner it may consider deem fit in terms of the

Contract.

3.30 Statutory Responsibility

The Contractor shall comply with all applicable laws or ordinances, codes, approved standards, rules, and regulations and shall procure and maintain their validity all necessary municipal, panchayat and Government permits & licenses etc at its own cost.

3.31 Liquidated Damages

3.31.1 Any delay in completion of the work shall attract liquidated damages.

3.31.2 If the Contractor fails to deliver or start the work within specified time frame after signing of Contract Agreement or leave the work Site after partial execution of the work, HAFED shall have the right to get the work done through any other agency at the risk and cost of the Contractor. Further to this, HAFED shall recover damages for breach of trust of the Contract and shall impose liquidity damages on the Contractor.

3.31.3 If for reasons not attributable to HAFED or due to conditions constituting Force Majeure, the work is not completed in accordance with the provisions hereof within and in accordance with the time schedule as per Clause 4.2 of SCC, it is agreed that HAFED shall be entitled to recover and/or the Contractor shall pay to HAFED, without prejudice to any other right are remedy available to HAFED, the following as amount as mutually agreed compensation:

3.31.3.1 A sum equivalent to 0.5% (zero-point five percent) of the Contract Price for every complete week or part thereof, for delay in Completion Date, completion and handing over the Plant/ Equipment to HAFED by the Contractor, subject to a maximum 5% (five percent) of total Contract Price inclusive of escalation and contingencies, if any.

Notwithstanding anything contained in Clause 34.1.1 of the GCC, in the event of any delay beyond 10 (ten) weeks in Completion period/completion, HAFED reserves the right to either cancel the Contract Agreement wholly or partly and/or make alternative arrangements at the risk and cost of Contractor after providing a written notice of 30 (thirty) days to the Contractor. All the construction equipment which belongs to the Contractor shall be returned after the expiry of the stipulated Completion period or extension thereof or within the 30 (thirty) days" notice period provided.

3.31.3.2 A sum equivalent to 0.1% of the Contract Price for every complete week or part thereof, for delay in supply of technical documents and drawings, subject to a maximum 0.5% of total Contract Price, if any; however, all time taken by HAFED beyond as stated in this Contract Agreement shall be excluded from the calculation of delay.

3.32 Defect Liability

3.32.1 The Contractor must warrant that the Facilities shall be free from defects in the design, engineering, materials and workmanship of the plant and equipment supplied and of the work executed. If it shall appear to the Project Manager that any work as prescribed inthis Contract Agreement has been executed with unsound, imperfect or unskilled workmanship, or with materials of any inferior quality, or that any materials or articles provided by the Contractor for the execution of Contractor are unsound or otherwise not in accordance with the Contract Agreement, the Contractor shall on demand in writing inform the Project Manager or its authorized representative specifying the item, materials or articles complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for.

3.32.2 The Contractor shall forthwith rectify or remove and replace such item so specified and provide other proper and suitable materials or articles at its own charge and cost, and in the event of failure to do so within a period to be specified by the Project Manager in its demand aforesaid, the Project Manager may on expiry of notice period rectify or remove and re-execute the same or remove and replace with others, the materials or articles complained of as the case may be at the risk and expense in all respects of the Contractor. The decisionsof the Project Manager in this regard shall be final.

3.32.3 The Defect Liability Period shall be Six (6) months from the date of successful completion certificate of the project issued by HAFED ("Defect Liability Period"). The completion certificate shall be issued by HAFED within 10 working days from the intimation by the Contractor that all works are complete and after the satisfaction and verification of works by HAFED. HAFED undertakes to not unreasonably withhold the completion certificate. In case of any failure or delay to issue such completion certificate beyond 30 days from the communication of the Contractor, then the same shall not affect the start of the Defect Liability Period and the same would be deemed to have started from the expiry of the 30th day from the date of intimation as communicated by the Contractor.

3.32.4 If during the Defect Liability Period, any defect is found in the design, engineering, materials or workmanship of the plant and equipment supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with HAFED regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Contractor shall, at its discretion, determine) such defect as well as any damage to the facilities caused by such defect.

3.32.5 Furthermore, without prejudice to the generality of the foregoing, it is clarified that the Contractor shall also be responsible for the repair, replacement or making good of any defect, or of any damage caused to the facilities.

3.32.6 HAFED shall provide the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under Clause 3.8 of GCC. The Contractor may, with the consent of HAFED, remove any Plant and Equipment or any part of the Facilities that are defective from the Site, if the nature of the defect and/or any damage to the Facilities caused by the defect is such that repairs cannot be expeditiously carried out at the Site.

3.32.7 If in the event the repair or replacement of the said defect is of such a nature that it may affect the efficiency of the facilities or any part thereof, HAFED may issue a notice directing the Contractor to conduct necessary tests of such defective part. Such tests shall be conducted by the Contractor within 7 (Seven) days.

3.32.8 However, if such part fails the tests, the Contractor shall carry out further repair or replacement until that part of the facilities passes such tests. The tests, in character, shall in any case be not inferior to what has already been agreed upon by HAFED and the Contractor for the original equipment/part of the facilities.

3.32.9 In the event the Contractor fails to commence the work necessary to remedy such defect or any damage to the facilities caused by such defect within a reasonable time (which shall in no event be considered to be more than 7 (seven) days), HAFED may, pursuant to a notice issued to the Contractor, proceed to do such work, and the costs incurred by HAFED in connection therewith shall be borne by the Contractor which may be adjusted with the monies payable to the Contractor or with the performance bank guarantee, as

deemed fit by HAFED.

3.32.10 If the facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by HAFED because of any of the aforesaid reasons. Upon correction of the defects in the facilities or any part thereof by repair/replacement, such repair/replacement shall have the defect liability period of 12 (twelve) months from date of such replacement.

3.32.11 In addition, the Contractor shall also provide an extended warranty for any such component of the facilities and for the period specified herewith in this clause. Such obligation shall be in addition to the defect liability specified under Clause 35.2 of the GCC.

3.33 Termination

3.33.1 An event of default in relation to the Contractor shall occur:

3.33.1.1 If the Contractor fails to deliver any or all of the materials and equipment within the period(s) as specified in the NIT; or

3.33.1.2 If the Contractor fails to perform any of its obligations(s) under the Contract; or

3.33.1.3 In case of any change of the covenant and conditions of the Contract by the Contractor, HAFED shall have the power to annul, rescind, cancel or terminate the Contract. The decision of HAFED in this regard shall be final and binding on the Contractor.

3.33.2 A Party shall be at liberty to terminate this Agreement, at any time on the happening of any of the following events with respect to the other Party by notice in writing to the other Party of:

3.33.2.1 seven (7) days, in case the Other Party is declared bankrupt or insolvent or the business of the Other Party is wound up, or an effective resolution or final order is passed for winding up of the Other Party; or

3.33.2.2 thirty (30) days, to the Other Party if an event of Force Majeure which shall have occurred and continued for a continuous period of one year or more and has the effect of preventing the Other Party from performing and fulfilling any of its obligations under this Agreement; or

3.33.2.3 Thirty (30) days, in case of occurrence of default as per Clause 3.33.1.

Upon expiration of the relevant notice periods set out above, this Contract Agreement shall stand terminated with respect to the Other Party unless the Other Party cures the default or secures rectification of the default or action leading to the issue of the termination notice within such relevant notice period.

3.33.3 Any termination of this Contract Agreement, as aforesaid, shall not relieve any Party of any liability accrued prior to the date of termination of this Contract Agreement.

3.33.4 In case of termination of Contract Agreement as per Clause 3.33.1, HAFED shall forfeit thePBGs provided by the Contractor.

3.33.5 Upon termination of this Contract, the Contractor shall take all necessary steps to stop all theactivities at Site in a prompt and orderly manner.

3.34 Force Majeure

3.34.1 Definition

Force Majeure means in relation to either Party any act of God, strike, lock-out or other industrial disturbance (including any strikes, lock-outs or other industrial disturbances), shortages of suitable parts, labour or transportation, lockdown as notified by the Government or any notification under the Disaster Management Act, unavailability of electricity or communication equipment or public transportation, act of the public enemy, war declared or undeclared, threat of war, terrorist act, blockade, radioactive contamination or ionizing radiation, revolution, riot, insurrection, civil commotion, public demonstration, sabotage, act of vandalism, fire, inclement weather including snowfall, violent storm (as recognised by the Meteorological Office) but no lesser adverse weather condition, flood, earthquake, or explosion which (in each case) could not have been prevented by Good Industry Practice by the party seeking to be relieved of its obligations under its Contract and which directly or indirectly results in or causes the failure of that Party to perform any of its obligations under this Contract provided that the lack of funds shall not constitute an event of Force Majeure.

3.34.2 The Parties hereby agree that the following events shall not constitute the meaning orinterpretation of the term „Force Majeure":

3.34.2.1 any event caused by the negligence or intentional action or inaction of the Contractor or agents or employees, etc.; or

3.34.2.2 any event which a diligent Contractor could have reasonably foreseen and taken into account at the time of the execution of this Contract Agreement except the disturbance due to the impact of Covid -19 pandemic and relating thereto.

3.34.3 No Breach of Contract

The Contractor shall neither be held responsible or liable for, or deemed to be in breach hereof because of any failure or delay in complying with its obligations under or pursuant to this Contract Agreement as a direct result of one or more events of Force Majeure or its effects or any combination thereof, provided that the Contractor affected by such an event has taken all reasonable precautions, due care and adopted reasonable alternative measures in accordance with “Good Industry Practices”, all with the objective of carrying out the terms and conditions of this Contract Agreement.

3.34.4 Measures to be adopted by the Contractor

3.34.4.1 The Contractor affected by an event of Force Majeure or any combination of events shall take all reasonable measures to remove such inability to fulfil its obligations hereunder with minimum delay.

3.34.4.2 The Contractor affected by an event or any combination of events of Force Majeure shall notify HAFED of such event as soon as possible, and in any event not later than 14 (fourteen) days upon the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give notice of the restoration of normal conditions as soon as possible.

3.34.4.3 The Parties shall take all reasonable measures to minimise the consequences of any event of Force Majeure.

3.34.5 Extension of Time

Any period within which a Contractor, pursuant to the Contract Agreement, was unable to complete any Works or Services, shall be extended for a period equal to the delay suffered bythe Contractor to perform such Works and Services in conformance with the Bidding Documents under the Project as a result of Force Majeure. A Hindrance Register as specified under Clause 3.34 of the GCC shall be maintained at the site.

3.34.6 Consultation

Not later than a period of 30 (thirty) days after the Contractor, as the result of an event of Force Majeure, has become unable to perform a material portion of the Services, the Parties shall consult with each other with a view to agreeing on appropriate measures to be taken in the circumstances.

3.35 Insurance to be taken out by the Contractor

3.35.1 The Contractor shall, at its own cost and expense and without prejudice to its liability, obtain and maintain all insurance policies as required for the execution of the Contract. All other insurance policies mandated by law as may be applicable to the Contractor during the course of performance of the Contract Agreement.

3.35.2 Notwithstanding anything contained in this Contract Agreement, the Contractor shall be required to maintain relevant policies to insure its moveable and immoveable property and employees and shall make all efforts to protect and safeguard its employees and properties and in the event of any claim arising due to actions or inactions of the Contractor, the Contractor shall on its own without any recourse to HAFED, make earnest efforts to settle claims including any third-party claims.

3.35.3 Any First Information Report ("FIR") required to be lodged to local police station shall be the responsibility of the Contractor.

3.35.4 The Contractor shall arrange to supply/ rectify/ recover the materials even if the claim is unsettled for timely completion of the Contract.

3.35.5 In case of any delay of the project attributable to the Contractor, the Contractor himself in consultation with HAFED should take the extension of insurance. Any financial implications shall, however, be borne by the Contractor.

3.36 Statutory Acts, Rules and Standards

The work shall be executed in conformity with the relevant standard of Bureau of Indian Specification (or equivalent International Standard), Indian Electricity Act 2003, Indian Electricity Rules 2005 (as amended up to date), Explosive Act 1948, Petroleum Act 1934, National Building Code, hazardous waste management rules 2009, e — waste (Management &Handling) rules 2011 and relevant Rules/ Acts in vogue at the time of execution including operation & maintenance period.

3.37 Hazardous Material

The Contractor shall remove any hazardous material from the Site, which has been used during construction for recycling or disposing purpose after its operating / working life, so that it shall not affect the environment or any living being. The Contractor must comply with Haryana State Pollution Board regulation or any other Regulation/Act.

3.38 Stoppage of Work

HAFED shall not be responsible and not liable to pay any compensation due to stoppage of work as a reaction from local public due to any undue action on the part of the Contractor causing annoyance to local people.

3.39 Hindrance Register

The Contractor shall maintain a Hindrance Register at Site, where reasons for delay shall be recorded from time to time and at the time of occurrence of the hindrance and get it duly certified by HAFED or its authorized representative. The register shall be submitted to HAFED for records on a monthly basis.

3.40 Deduction from Contract Price

All costs, claims, damages or expenses, which HAFED may have paid for which the Contractor is liable, will be deducted by HAFED from any money due or which become due to him under this Contract or any other contract being executed with HAFED or from Performance Bank Guarantee (PBG).

3.41 Warranty/Guarantee

The Contractor shall ensure that the equipment and materials supplied under the Contract are new, unused and of most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

The Contractor shall procure all equipment and materials with warranty/guarantee and the same shall be handed over to HAFED for the procured items. Warranty/Guarantee period of equipment and materials (as applicable) shall start after the date of Completion certificate issued to the Contractor.

3.42 Contractor Performance & Feedback and Evaluation System

HAFED shall assess the Contractor"s Performance during the execution of Contract on acontinuous basis at regular intervals.

3.43 Fraud Prevention Policy

The Contractor along with their associates/ collaborator/ Subcontractors/ sub-vendors/ consultants/ service providers etc. shall observe the highest standard of ethics and shall not indulge or allow anybody else working in their organization to indulge in fraudulent activities during execution of the Contract. The Contractor shall immediately apprise HAFED about any fraud or suspected fraud as soon as it comes to their notice.

3.44 Final Bill

The final bill relating to the Contract shall be provided to HAFED only after the issuance of theCompletion Certificate by HAFED.

SECTION – 4: SPECIAL CONDITIONS OF CONTRACT(SCC)

Definition as provided in clause 3.1 of section 3 – General Conditions of Contract shall be read inconstitute in same manner, unless the context otherwise required.

4.1 Scope of Work

The Scope of Work for the Contract shall be including but not limited to the Section 5 – Scope of Work of this NIT.

4.2 Project Time-Lines:

The timelines for execution of Contract are eighteen (18) months from the date of acceptance of LOI by the Contractor (including commissioning plus one-month Trial Run period).

Timelines for Scope of Work

#	Stages	Reference From D
1	Acceptance of LOI	Start Date (D)
2	Submission of detail program of execution of contract in form of PERT chart	D+7 days
3	Submission of all applicable statutory approvals, insurance, etc. as required for commencement of work at site	D+30 days
4	Submission of detailed BoQs for the contract	
5	Submission of design, drawing (including layout, general arrangement, structure, P&ID"s)	
6	Finalization of approved PEB vendors and approval from applicable statutory bodies, placement of work orders for supply Plant and Machinery and material, utilities and finalization of each component etc. The submission of all sample as applicable in BoQs etc. Approval from Town and Country Planning (DTCP) etc	D+60 days
7	Site development work (grading/ levelling, internal road pattern, drainage, compound wall, pathway etc)	D+120 days
8	Delivery of foundation bolts / plates at site	
9	Delivery of PEB Building Material	D+200 days
10	Inspection and Dispatch of P&M	D+210 days
11	Material delivery PEB Material	D+250 days
12	Material delivery of P&M	D+280 days
13	Commissioning of PEB Building	D+310 days
14	Installation of all major equipment	D+360days
15	Completion of civil work	D+ 410days
16	Interconnection of all major equipment and completion of	D+ 460

	installation	
17	Completion, testing and commissioning of Plant	D+ 500
18	Completion of road work, drainage, & other miscellaneous site development work including high side works.	D+510 days
19	Operational Acceptance including trial run as per the technical criterion and necessary approvals from Fire department, Factories Act, Pollution Control Board, FSSAI etc for running the plant	D+ 540
20	Handover of Site	D+547 Days (18 Months)

4.3 Mode of Execution:

The entire work shall be executed on turnkey basis. Such works, not listed in the Scope of Workbut required for completion and successfully running of the Project shall deemed to have been included in the Scope of Work and the Contractor shall supply and install the same without any extra cost.

4.4 Commencement of Contract

4.4.1 This Contract shall come into force from the date of acceptance of LOI by the Contractor("**Start Date**").

4.4.2 Until the Agreement Date, the LOI in conjunction with the NIT and Bidding Documentsshallconstituted the legally binding Contract.

4.5 Commencement of Services

The Contractor shall commence the services immediately on the Start Date.

4.6 Expiration of Contract

Unless terminated earlier pursuant to SCC or GCC hereof, this Contract shall expire after the Contractor has performed all his services as per the terms and conditions envisaged in the NIT.

4.7 Terms of Payment

HAFED shall pay the Contractor in the following manner and at the following time:

#	Name of Contract Work	Payment terms				
1.	Plant & Machinery, Utilities, Material Handling Equipment & Miscellaneous Equipment	10% Mobilization Advance of the Contract Value against Bank	40% after receipt of material/ machinery at site	30% on erection and installation	15% on Commissioning of the Plant and verification report	5% on successful completion of work against submission of Performance

		Guarantee of equivalent amount				Guarantee
2.	Civil Work, Buildings		85% payment on running bills as certified by Project In-Charge. All bills to be submitted inline to directions of HAFED.			Balance 5 % to be released after satisfactory completion of the building in all respect

Note:

- The Contractor has to initially submit the detailed bills of quantities ("BoQs") as per Scope of Workand take the necessary approval from HAFED before initiating any work. Such work can beinitiated by the Contractor only after due approval has been provided by HAFED, which shall be provided within five (5) days from submission of BoQs.
- The payments shall be release by HAFED within 14 days against the receipt of Contractor"s invoices and verification of bills by HAFED.
- Performance Bank Guarantee shall be released by HAFED only after the completion of the DefectLiability Period.
- Tax provisions shall be in accordance with the applicable laws and regulations of India, as amended from time to time.
- After completion of the Defect Liability Period and settlement of all bills, the Contractor shall provide a `No Dues Certificate' to HAFED.
- Subject to any deduction which the "HAFED" may be authorized to make under this Contract, and or to any additions or deductions provided for in this Contract, the Contractor shall be entitled to payment as follows:
- All payments shall be made in Indian Rupees, unless otherwise specified in the LOI/ Contract Agreement. All payment shall be made because of actual measurement for the quantified items as per Scope of Work.
- All taxes and deductions shall be applicable as per prevailing income tax and other statutory rulesand provisions in force.
- The Contractor, while submitting the Invoices, shall provide the breakup of Supply, Services & other Works and applicable taxes separately.

- In case of JV/Consortium, the Contractor shall open TRA (Trust and Retention Account) within 10(ten) days from the date of signing of Contract Agreement. The Contractor shall submit the annexure along with bifurcation of the part payment that the Contractor will pay to each consortiumpartner against every invoice.

4.8 Samples

Apart from adhering to special provision made in the specification regarding submission of samples, the Contractor shall within ten (10) days of its acceptance of LOI by the Contractor, shall provide to HAFED samples along with detailed literature of all materials it proposes to use irrespective of the fact that specific make/material might have been stipulated. If certain items proposed to be used are of such nature that samples cannot be presented or prepared at Site, detailed literature test certificate of the same shall be provided instead. HAFED shall check the samples and give his comments and/or approval to the same.

4.9 Electricity and Water Supply at Site

The Contractor shall arrange electricity and water supply at the Site at its own cost during the execution of the Contract.Cost of electricity and water required during the execution of the Contract shall be payable by the Contractor.

4.10 Storage and Accommodation at Site

HAFED shall not provide any facility for storage of material and accommodation for labours atsite. The Contractor shall make his own arrangement for the above.

4.11 Term and Termination of Contract

a. This Contract will commence on the Start Date and shall continue for a period of completion of the Project which entails the completion of all Works and Services as provided in this Contract Agreement or on 365 days from the Start Date including trial run of Project for 30 days as per Clause 4.2 of SCC to this Contract Agreement ("Completion Date").

b. The Project is scheduled to be commissioned within 365 days from the Start Date including trial run of Project for 30 days as per Clause 4.2 of SCC to this Contract Agreement.

c. The Contractor shall prepare and submit to HAFED, a detailed program of performance of the Contract as specified under Clause 3.18.1 of GCC. If the Contractor fails to submit the same, HAFED has a right to declare such Contract Agreement as null and void, and as a result of such a declaration the Contractor shall not have any claim against HAFED.

d. In the event the Contract Agreement is rendered null and void as a result of failure or inaction on the part of the Contractor, the Contractor shall be liable to pay any special, consequential, incidental, indirect or exemplary damages including but not limited to loss of profit or revenue, loss of use of the goods or any associated equipment, cost of capital, downtime cost, cost to prevent or mitigate these kinds of damages to HAFED.

4.12 Reporting Obligations

e. The Contractor shall submit to HAFED all such reports and documents as may be required and specified under Clause 3.18 of the GCC from time to time.

f. All such reports and documents prepared by the Contractor in performing the Services shall become and remain the property of HAFED.

4.13 Amendment/Modification

This Contract may not be altered, modified, revoked or cancelled in any way unless such alteration, modification or cancellation is in writing and duly signed by or on behalf of the Parties and such amendment shall not be effective until the consent of the Parties has been obtained. However, it is hereby agreed between the Parties that every contractor shall give due consideration to any proposals for modification made by the other contractor in conformance with the Bidding Documents under the Project.

4.14 Good Faith

The Parties hereunder undertake to act in good faith with respect to their performance, obligations and rights under this Contract and further undertake, during the tenure of this Agreement, to take all reasonable measures, to ensure the achievement/ realization of the objectives of this Contract in conformance with the Bidding Documents under the Project.

SECTION – 5: COMPONENT SPECIFICATION ANDSCOPE OF WORK

Definition as provided in clause 3.1 of section 3 – General Conditions of Contract shall be read in constitute in same manner, unless the context otherwise required.

Summary
Summary of the works which shall be performed by the Contractor under the Contract Agreementare as follows:

Detailed layout and facility wise area is attached as Appendix 1 (a): Site Layout.

5.1 Package – 1Civil Works Specifications

Summary
Summary of the works which shall be performed by the Contractor under the Contract Agreement are as follows.

5.1.1 All associated civil engineering works including but not limited to design for Earthwork for Site grading, cutting, filling, levelling & compacting at Project Site and Construction of foundation & mounting structures for all building, plant & machinery.

5.1.2 Contractor shall design the pre-engineering structures like Silos of 5000 MT and load calculation sheet for PEB, which shall be approved by the Owner. After the Owner"s approval, final designs shall be vetted by the reputed organisations/Institute such as IITs, JNTU, Civil Aid, etc as approved by the Owner.

5.1.3 Contractor shall be responsible for arrangement of permanent water supply for construction purposes.

5.1.4 Contractor shall be responsible for obtaining all approvals related to buildings, electrical, fire and all other statutory and regulatory approvals as required for execution of Contract.

5.1.5 The Contractor shall submit all final reports, designs, calculations etc. which is required for the execution of the Contract to the Owner.

5.2 Civil Specification

Excavation/Site Clearance/Foundations/Survey & required Investigations

a. Excavations, Filling and Backfilling

The Scope for Work covered under this specifications pertain to excavation of foundations, trenches, pits and over areas, in all sorts of soil, soft and hard rock, correct to dimensions given in the drawing including shoring, protections of existing underground utilities of any, such as water lines, electric cables etc. dewatering and shoring if necessary, stacking the useful materials as directed within the lead specified, refilling around the foundation and into the plinth with selected useful excavated earth or sand as per IS (Indian standard) codes and disposing off the surplus earth / materials within specified lead and finishing the surface to proper levels, slopes and camber etc. all complete.

b. Site Clearance

Before the earth work is started the area coming under cutting and filling shall be cleared of all obstruction, loose stones, shrubs, rank vegetation, grass, bushes, and rubbish removed outside the periphery of the area under clearance.

c. Soil Investigation of the Site

- The scope of soil investigation covers execution of complete soil exploration including boring, drilling, collection of undisturbed soil sample where possible, otherwise disturbed soil samples, conducting laboratory test of samples to find out the various parameters mainly related to load bearing capacity, ground water level, settlement, and soil condition and submission of detail reports along with recommendation regarding suitable type of foundations for each bore hole along with recommendation for soil improvement where necessary.
- The Contractor shall carry out the soil investigation survey, through any Govt. approved / certified soil consultant, at required locations for the purposes of foundation design and other design/ planning required for the successful completion of the project. The Contractor shall submit the detailed soil investigation report, bore log records (minimum three bore holes), ERT (Electrical resistivity tomography) reports of survey to Owner.

d. Soil Tests & Water Tests

The Contractor shall be solely responsible to carry out detailed geotechnical investigation to ascertain soil parameters of the Site for the use of planning / designing / construction / providing guarantee / warranty of all civil work including but not limited to foundations / piling for module mounting structures, etc. These reports shall be furnished to the Owner prior to commencing work. All RCC (Reinforced Cement Concrete) works shall be provided of required grade of concrete as per relevant IS (Indian Standards) specifications as well as soil data considering appropriate earthquake seismic zone, wind velocity, weather effect, soil characteristics, load calculations of design & structures etc. The Contractor must submit the design stability certificate for the Building.

e. Other investigations

- The Contractor shall obtain and study earthquake and wind velocity data for design of module mounting structure, and considering all parameters related to the weather conditions like temperature, humidity, flood, rainfall, ambient air etc.

f. **Land Development for Site Activities (related to area earmarked for Processing Facility)**

The Contractor shall be responsible for making the Site ready and easily approachable by clearing of bushes, felling of trees (if required with appropriate approval from concerned authority), levelling of ground (wherever required) etc. for commencing the Project. It is to ensure that land shall be graded and levelled properly for the natural flow of water at the ground. If the land pocket needs any filling of sand, it is to ensure that the filled earth shall be well compacted as per the relevant IS standards. In case the filled earth is brought out from outside the Site, the Contractor shall provide the necessary challans to Owner. On the other hand, additional earth, if any, shall be disposed of properly. The Contractor shall take reasonable care to ensure that the plant is aesthetically designed.

g. Foundations: (RCC Structured)

- The contractor shall design foundation of the structures of the Project. The foundation of the module mounting structures, buildings and other important structures shall be checked and approved by the Owner prior to construction.
- The foundations shall be designed considering the weight and distribution of the structure and assembly, and a maximum wind speed of 180 km per hour. Seismic factors for the site shall be considered while making the design of the foundation. Contractor shall also plan for transport and storage of materials at Site.

a. RCC Works:

- All RCC works shall be as per IS 456 (fourth revision)/ IS: 4926:2003 and the materials used viz. Cement(UltraTech/ ACC/ JK), reinforcement steel, aggregate, sand etc. shall be as per relevant standards.
- Design mix/ batch mix calculation is required to be approved from authorised govt. body. and the Owner before starting the construction.
- The Contractor shall perform the Cube tests in presence of the Owner in every seven (7) days & twenty-eight (28) days from the date of any type of RCC casting.
- The Contractor shall maintain the register for the records of cube tests performed, in the proposed site as well as from any authorised govt. body.

b. Brick Works:

The ratio of cement mortar (CM) shall be 1:4 for 9"/10" thick and 4"/4½" thick wall. All brick works shall be using 1st class bricks of approved quality as per relevant IS (Indian standards) codes (mentioned in specification) and class designation test along with water absorption test. (water absorption test is required only for clay bricks).

c. Doors & Windows (as per the relevant food processing and IS standards):

- Steel framed doors, windows and ventilators shall conform to IS — 1081 with necessary glass panels/ equivalent including of all fixtures and painting etc. complete as per food industry norms. Aluminium/wooden doors and windows shall be as per the necessary IS standards (mentioned in the specifications).
- All sections shall be 20 microns anodized. Sections of door frame and window frame shall be adopted as per industrial standards. Door shutters shall be made of aluminium sections and combination of compact sheet and clear float/ wired glass.

d. Plastering:

Plastering in cement mortar 1:5, 1:6 and 1:3 shall be applied to all internal (12 to 15 mm thick), external (15 to 20 mm thick) walls and ceiling (6 to 10 mm thick) of slab respectively as per IS 1542.

e. Flooring:

- Flooring for halls shall be of Trimix flooring in loading concrete mix 1:2:4 using 10 mm aggregates as per IS 2571.
- Flooring for GM"s residence, Laboratory building and other office places, as per requirement, shall be of vitrified tiles
- For toilet area, the floor shall be of antiskid ceramic tiles 8 mm of thicknesses. The floorfinishing shall include skirting up to a suitable height.
- The wall tiles, as per requirement, shall be glazed ceramic tiles of 6 mm thickness and provided up to lintel level.

f. Roofing:

- The RCC roof of the building shall be waterproofed along with adequate number of rainwater pipes for draining of rainwater. Waterproofing shall be done as per relevant IS standard.
- Galvalume sheet roofing shall be insulated & proper inclination for drainage of rainwater along with rain gutters.

g. Plinth Protection:

Contractor shall provide the Plinth protection designs around all the buildings.

h. White washing & colour washing:

- White washing and colour washing work shall be conforming to IS 6278 & code of practice IS 2395 part 2 or equivalent.
- Internal walls - Acrylic distempering as per IS 427
- External walls – Heat reflective & weather shield synthetic enamel as per IS 428
- For cement painting IS 5410 shall be followed.
- For painting of steel doors, ventilators IS 2338, IS 1477 (Part I & II) shall be followed.

i. Rolling Shutters:

Rolling shutters made of cold rolled strips shall conforming to IS 4030 & IS 6248(updated) with approved gauge thickness shall be provided with all fixtures, accessories, painting all etc. complete.

j. Water supply:

Galvanised Iron (GI) pipes of Medium quality conforming to IS 1239 (Part I) and IS 1795 HDPE lined Steel pipes shall be used for all water supply and plumbing works.

k. Plumbing & Sanitary:

Sanitary fittings, which include water closet (European Water Closet (EWC)/ Indian Water Closet (IWC)), wash basins, sink, urinal fitting including flushing tank, and necessary plumbing lines of renowned company with ISI marked as per approved by the Owner, shall be provided for process building, office area, change rooms, Toilet blocks and Security house.

l. Electrification of Building:

- Electrification of buildings shall be carried out as per IS 732 and other relevant standards.
- The lighting design of the buildings shall be carried out as per IS 3646.
- The building shall be provided with adequate quantity of light fittings, 5A/ 15A 1 phase sockets, fans etc., controlled by required ratings of MCBs and MCB, DBs.Security room shall be fitted with suitably sized HVAC(Heating, Ventilation, Air conditioning) system. The Contractor shall use LED based lighting and the latest energy efficient equipment for the electrification and illumination.

m. Toilet/Change rooms:

Toilet/Change rooms shall be designed and constructed with following finish:

- Sanitary ware: Make of Jaguar/ Hindware/ Johnson & Johnson
- EWC: 390 mm high with health facet, toilet paper roll holder, flush tank etc. and all fittings

- IWC: with flush tank and other fittings.
- Urinal:(430 x 260 x 350 mm size) with all fittings.
- Divisional plate: for divider of urinals.
- Wash basin:(550 x 400 mm) with all fittings.
- Bathroom mirror:(600 x 450 x 6 mm thick) hard board backing
- CP (Chrome plated) brass towel rail: (600 x 20 mm) with C.P. brass brackets
- Soap holder and liquid soap dispenser.
- GI pipes (B class) of reputed makes
- Overhead water tank: equivalent of 2,000 litre capacity

n. Drainage for Toilets:

Drainage pipes with 1: 60 slopes shall be of PVC (6 kg/cm2) Supreme, Prince or equivalent make. Gully trap, inspection chambers, septic tank for 250 person and soak well to be constructed for above mentioned requirement.

o. Air Conditioner for Control Room/ Office/staff Rooms:

The control room shall be equipped with appropriate numbers of fans for effective heat dissipation. The SCADA cabin shall have split type air conditioning units of required capacity.

p. Fire Extinguishers/ Fire Hydrants:

- Liquefied CO2 fire extinguisher shall be installed with upright type of capacity 10 kg having IS: 2171. 7, IS: 10658 marked. The fire extinguisher shall be suitable for fighting fire of Oils, Solvents, Gases, Paints, Varnishes, Electrical Wiring, Live Machinery Fires, and All Flammable Liquid & Gas.
- The Contractor shall provide portable fire extinguisher; fire hydrants as approved by the department of fire and obtain the No Objection Certificate (NOC) certificate as per Hazardsystem by the local Govt Fire Station.

q. Sand Bucket:

Sand buckets shall be wall mounted made from at least 24 Standard Wire Gauge (SWG) (sheet with bracket fixing on wall conforming to IS 2546. Bucket stands with four buckets on each stand shall be provided in the approved plan area.

r. Sign Board:

- The sign board containing brief description of various components of the Plant as well asthe complete plant in general shall be installed at appropriate locations of the Plant.
- The Signboard shall be made of steel plate of not less than 3 mm thickness and size of 4 feet*6 feet. Letters on the board shall be with appropriate illumination arrangements.
- The Contractor shall provide to the Owner detailed specifications of the sign boards.

5.2.2 Water Supply & Cleaning

- A suitable arrangement of water shall be ensured to cater the day-to-day requirement of drinking water and Facilities. All necessary arrangement shall be in the scope of the Contractor to provide all the necessary equipment, accessories, tool & tackles, pumps, tankers, tractors and piping arrangement for the same.

- Water for processing & drinking purpose shall be supplied from the RO & UV plant and for wet cleaning &toilets shall be supplied directly from water storage tank.

5.2.3 Security Gates and Security offices

There shall be separate Entry and Exit Gates with Security offices for the vehicles and workers for hazardless access and to keep away the unauthorized access to plant. The Contractor shall provide the RCC columns & foundations for security gates.

- The Security offices shall be RCC structured incorporated with 6mm thick glass panes in windows for the proper outer view.
- All the drawings/ Design/ specifications for the entry and exit gate and security offices shall be approved by the Owner

5.2.4 Storm Water Drainage

- The storm water drainage shall ensure no water stagnation in the plant. The drains shall be constructed with RCC masonry/RCC underground Hume pipe as suitable for the Site conditions. Drainage shall be designed keeping the natural flow of water to the rain water harvesting pits.Further it can be used in landscaping & internal road cleaning purpose.
- The Contractor shall provide NP2 RCC Hume pipe at the crossing of road and drains and at required locations. The peripheral drain shall be of brick pitching which is backed up by cement mortar bed and all joints are filled up with cement mortar in C.M. 1:4, no pointing and plastering is required. All other internal drains i.e. on both side of central road, pathways etc to be done by excavating the drain of required size and required trapezoidal section.

5.2.5 Painting & Finish for Metal surface

- All metal surfaces and support structures shall be thoroughly cleaned of rust, scale, oil, grease, dirt etc. Fabricated structures shall be pickled and then rinsed to remove anytrace of acid. The under surface shall be made free from all imperfections before undertaking the finishing coat.
- After Phosphate treatment, two (2) coats of yellow zinc chromate primer shall be applied followed by two (2) coats of epoxy based synthetic enamelled paint. Shade shall be Siemens Grey RAL- 7032. Thickness of paint shall be not less than 75 microns.
- All unpainted steel parts shall be cadmium plated or suitably treated to prevent rust formation. If these parts are moving elements, then they shall be greased. For referenceIS 2074/IS 15489 shall be followed.

5.2.6 Inspection & Testing:

- A detailed Quality Assurance Plan 'QAP' for Manufacturing and Inspection shall be submitted by the Contractor for Owner's approval before commencing the work.

5.3 Technical Specification

a. Structural Steel Sections (Steel of Approved makes- Tata/ Sail) & Members -

a. **Main Frames/ primary Structural members –** (Main Built up sections) - as per American Institute of Steel Construction (AISC) Manual of Steel Construction or relevant Indian standard codes (IS). Followings are some AISC codes for reference. (like steel columns, beams, purlins, wind bracing, supporting members etc.)

- ANSI/AICS 360 – 16, for specifications of structural steel buildings.
- ASTM A6/A6M – 14, Standard specifications for general requirements for rolled structuralsteel bars, plates, shapes etc.
- ASTM A53/A53M – 12, standard specifications for pipe, steel, Black and hot dipped, zinccoated, welded and seamless.
- ASTM A572M – specifications of primary built up sections.
- ASTM A653M – Cold formed secondary members.
- ASTM A500/A500M – 13, standard specifications for cold formed welded and seamlesscarbon steel structural tubing.
- ASTM A501/A501M — 14, standard specifications for hot formed welded and seamlesscarbon steel structural tubing.
- ASTM A992/A992M – 11 (2015), standard specifications for standard steel shapes.
- AWS D1.1/D1.1M – 2015), structural welding code – steel.
- SSPC SP1 2015 – surface preparation specification (solvent cleaning.)
- SSPC SP2 2004 - surface preparation specification (Hand tool cleaning.)
- Earthquake resistance design as per IS 1893 (recent version).

b. Other Structural Members –

- **Anchor Bolts –** as per ASTM F1554 -18, standard specification for Anchor bolts/IS 2062or relevant standard shall be followed.
- High strength bolts, nuts and washers –
  - for Bolts – ASTM A325/ASTM A490/IS 4000 - 1992
  - for Nuts – ASTM A563M/IS 4000 – 1992
  - for Washers – ASTM F436/F844/IS 4000 – 1992.

- **Supporting pipes/rods for Roof & side cladding –** Supporting for roof sheet & sidesheet cladding for anti-sagging. For reference IS code 2062

- **Roof Sheeting** — precoated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Owner) 0.50 mm (+ 0.05 %), total coated thickness with zinc coating 120 gm per sqm as per IS:277 in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet shall have protective guard film of 25 microns minimum to avoid scratches during transportation and shall be supplied in single length upto 12metre or as desired by Owner. The sheet shall be fixed using self-drilling /self-tapping screws of size (5.5x 55mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces. For reference IS Code IS:277(2003)/IS 513 (2008).

Make – Tata/ Jindal/ BlueScope.

- **Side cladding -** 0.5 mm thick TCT colour Galvalume Sheet above Brick wall. Forreference IS code IS 277.

Make – Tata/ Jindal/ BlueScope.

- **Fasteners –** As per IS 4000
- **Turbo vents/ Turbo fans –** Adequate numbers of Turbo fans for proper ventilation.
- **Other Accessories –** sealants, joints, flashing etc required complete in all prospects asdirected by Owner.

Scope of Work –

The scope of work for the Contractor in respect of structural steel work shall include, but not limited to the following:

- Preparation of detailed project fabrication drawings, for approval of the competent authority required for all the permanent structures having a structural stability certificate from the institutions/ organizations such as IITs, etc as approved by Owner.
- Submission of revised design, structural stability certificate with calculations and detailed fabrication drawings along with revised earthquake proof design analysis with drawings for approval from the competent authority, in case any substitution of the designed sections is required.
- Procurement and testing of all raw structural steel materials in lots for fabrication considering wastage margin etc., including storage and upkeep of the materials.
- Providing all materials, labour, tools & plant and equipment"s and all types of consumables required for fabrication using Metal Arc welding or as mentioned in approved fabrication drawing including all necessary bolts, nuts, washers with wastage margins.
- Fabrication of the PEB steel works in accordance with the approved fabrication drawings, including all project assembling, matching and marking. Design, manufacture/fabrication and provision of all jigs, fixings, manipulators etc. required for the fabrication are included in item
- Suitably marking, bundling and packing for transport of all fabricated materials.
- Preparing and furnishing detailed bill of materials and any other lists of bought out items as applicable and desired by Owner required in connection with the fabrication of the PEBsteelwork.
- Loading and transporting all fabricated steelwork and field connection materials including site unloading and erection of PEB structure in final position with all bolts, nuts, insert plate etc.
- The methodology & procedure for erection of PEB structure compatible with the details of fabrication. in addition to this, complete drawings & phase wise instructions for all the activities required to erect PEB steel structure in final position, shall be submitted to Owner in advance. For reference IS 7205:1974 Safety code of erection for structural work shall be followed & for Tolerance IS 7215:1974 should be followed.
- The Contractor shall aid other vendors during complete erection or site assembling of the structural steelwork. The Contractor shall ensure the presence of the qualified and experienced site Engineer during complete erection work at site.
- All major/ minor modifications of the fabricated steel structures, as directed by the Owner, including but not limited to the following:
    - Removal of bends, kinks, twists etc. for parts damaged during transportation andhandling.
    - Cutting, chipping, filling, grinding etc. if required or preparation and finishing of siteconnections.
    - Reaming of holes for use of higher size bolt if required.
    - Re-fabrication of parts damaged beyond repair during transport and handling or re-fabrication of parts which are incorrectly fabricated.
    - Fabrication of parts omitted during fabrications by error, or subsequently foundnecessary.
    - Carry out tests in accordance with the related Specification which will be inspected byOwner.

- Details of erection equipment machinery including capacity & specifications, tools,tackles etc. to be used for erection purpose.
- All procedures and tests on welds as per specifications and welded parts to ensurethe strength requirements of joints.

c. Submittals –

On commencement of the work pertaining to steel structure, the Contractor shall submit the following in four sets:

- Detailed baseline program & methodology indicating the proposed overall schedule for documentation such as calculations, material procurement schedule based on availability with approved suppliers, project/working drawings, plan/ procedures and records. Submission of samples, inspection by Owner, process of fabrication/ delivery to site storage yard/ erection site for the approval of the Owner.
- Complete fabrication drawings, Bill of materials, cutting lists, bolt lists, welding schedules and Quality Assurance schedules, based on the concept drawing furnished to him and in accordance with the approved schedule. It is highlighted that structural steel member dimensions indicated in tender drawings are tentative only and shall be modified during final design stage.
- Results of any tests, as and when conducted and as required by the Owner.
- A detailed list of all constructional Plant & Equipment, such as hydra, derricks, winches, welding sets, etc.
- Complete scheme with drawings for the erection of steel structures.
- The contractor shall submit complete design calculations for any alternative sections proposed by him, for approval of the Owner. Use of any alternative section shall be subject to approval of the Owner. However, no extra payment will be entertained on this account.

d. Structural steel work for welded structure.

- This Specification covers the supply, fabrication, transportation, and erection at Site of welded structural steelwork, including the supply of approved consumables, electrodes, wires and other materials required for fabrication and field connections of all structural steelwork covered under the scope of the Specification. The shear connectors studs (if specified) in the drawing shall be welded in the project.
- The welding shall conform to code, IS: 816 and IS: 9595 and other applicable codes and standards, unless otherwise specified. As much work as possible shall be welded in projects and the layout and sequence of operations shall be so arranged as to eliminate distortion and shrinkage stresses.

- **Welding Procedure**

All welding procedures shall be submitted to the Owner for approval, well before starting fabrication. The welding procedures shall be arranged by the Contractor to suit the details of the joints, as indicated in the drawings, and the position at which welding has to be carriedout. Welding procedure shall cover the following:

1. Type and size of electrodes.
2. Current and (for automatic submerged arc welding) arc voltage
3. Length of run per electrode; or (for automatic welding) speed of travel
4. Number and arrangement of runs in multi run welds
5. Position of welding
6. Preparation and set-up of parts

7. Welding sequence
8. Pre or post heating

The welding procedures shall be so arranged that distortion and shrinkage stresses are reduced to the minimum. Any weld found defective shall be removed, by using either chipping hammer or gouging torch, in such a manner that parent material is not injured in any way. Welding shall not be carried out when temperature is below 10 degrees Celsius or surface is wet or during periods of strong winds unless the work and the welder is adequately protected.

- Qualification and Testing of Welders

The Contractor shall satisfy the Owner that the welders are suitable for the work for which they will be employed, and shall produce evidence to the effect that welders, have satisfactorily completed appropriate tests, as described in IS:817 Part I. The Owner shall, at his own discretion, order periodic tests of the welders and/or of the welds produced by them. Such tests shall be at the expense of the Contractor. Followings are some IS codes for reference:

i. IS: 813 Scheme of Symbols for Welding.
ii. IS: 814 (1991) Covered Electrodes for Manual Metal Arc Welding of Carbon & Carbon -Manganese Steel.
iii. IS: 822 Inspection of Welded Connection.
iv. IS: 1161 Steel Tubes for Structural Purposes.
v. IS: 823 Specification for Workmanship of Steel Structure.
vi. IS: 7307 (Part I) Destructive & Non-Destructive Test of Welds
vii. IS: 7318 (1974) (Part I) Approval Tests for Welders When Welding Procedure Approval isnot required -fusion Welding of Steel.
viii. IS:8500 (1991) Structural steel -Micro alloyed (Medium and High Strength Qualities).
ix. IS: 8613 Wise Flux Combinations for Welded Joints.
x. AWS A2.4 Standard symbols for welding, brazing, and non-destructive examination.
xi. AWS A3.0 Standard welding terms and definitions.
xii. AWS D 1.1 Structural welding (steel).
xiii. AWS D 1.3 Structural welding (sheet steel)
xiv. AWS D 1.4 Structural welding (reinforcing steel)
xv. AWS D9.1 Sheet metal welding.

b. Reinforced Cement Concrete –

- IS 456-2000 has designated the concrete mixes into a number of grades as M10, M15, M20, M25, M30, M35 and M40. In this designation the letter M refers to the mix and the number to the specified 28-day cube strength of mix in N/mm2. The mixes of grades M10, M15, M20 and M25 correspond approximately to the mix proportions (1:3:6), (1:2:4), (1:1.5:3) and (1:1:2) respectively.
- The Contractor shall get the mix design approved from the reputed institutions/ organizations such as IIT, etc. as per the requirement of Contract. No departure from the approved proportions shall be permitted during the works unless and until the Owner gives written authorization for any change in proportion. The Owner shall have authority to inspect whether the mixing of concrete is being carried out according to the approved proportions.

a. RCC grade shall not be less than M20 for this particular Site. reference codes for RCC are as follows
IS: 456– code of practice for plain and reinforced concrete.
IS: 383 – specifications for fine & coarse aggregate from natural sources for concrete.

IS: 2386 – methods of tests for aggregate for concrete. (9 parts).
IS: 2430 – methods of sampling.
IS: 2250 – compressive strength test for cement mortar cubes.
IS: 269-2015 – specifications for 33, 43 & 53 grade OPC.
IS: 2250 – compressive strength test for cement mortar cubes.
IS: 1489 – specifications for PPC (Portland pozzolana cement).
IS: 8041 – specifications for RHPC (Rapid Hardening Portland cement).
IS: 12330 – specifications for SRPC (sulphate resistant Portland cement).
IS: 3466 – specifications for masonry cement.
IS: 516BXB JWJJS– methods of test for strength of concrete.
IS: 9103 – specifications for concrete admixtures.
IS 1946 Code of practice for use of fixing devices in walls, ceiling, and floors of solid Construction
IS 2505 Concrete vibrators, immersion type

b. Requirements for concrete mix design: -

The minimum compressive strength required from structural consideration as per the grade of Concrete inline to IS 456:2000.

The adequate workability necessary for full compaction with the compacting equipment available, like vibrator, compactor etc.

c. Factors to be considered for mix design: -

The grade designation giving the characteristic strength requirement of concrete.

The type of cement influences the rate of development of compressive strength of concrete.

Maximum nominal size of aggregates to be used in concrete shall be as large as possible within the limits prescribed by IS 456:2000

The cement content is to be limited from shrinkage, craping and creep.

d. Water – Cement Ratio

Where a particular water/cement ratio is stipulated in the design or drawing along with the characteristic grade of concrete, the design of mix shall be carried out by adjusting the other variable factors to obtain characteristic strength of concrete with stipulated water/cement ratio. In the structures where the permeability and shrinkage of concrete have an important bearing on the durability and serviceability of the structures, such as water retaining structures, basements, underground premises, tunnels, pump houses, exposed structures near sea side or deserts, pre-stressed structure, thin precast members etc., the water/cement ratio shall be kept low and preferably not exceeding 0.45.

The water cement ratio as achieved in the mix design or as specified in the drawings shallbe adhered to strictly and shall not be varied without the permission of the Owner.

e. Workability

Consistency and workability of concrete shall be checked by measuring the slump of a truncated cone of concrete straight from the mixer under normal working conditions. The conical mould shall be of metal, 300 mm high and 100 mm and 200 mm in diameter at top and base respectively.

f. Admixtures and Additives

Chemical admixtures are not to be used until permitted by the Owner in case their use is permitted, the type, amount and method of use of any admixture proposed by the contractor shall be submitted to the Owner for approval. The Contractor shall further provide the following information concerning each admixture to the Owner: -

- In reinforced concrete, the chloride ion of any admixture as determined in accordancewith IS: 6925 and the total chloride ion in all admixtures used in concrete mix shall notexceed 0.30 percent by weight of cement.
- The admixtures when used shall conform to IS: 9103. The suitability of all admixtures shall be verified by trial mixes. Waterproofing admixtures shall comply with IS: 2645.

g. Tests

The Owner, if he so desires, shall order tests to be carried out on cement, sand, coarse aggregate, water in accordance with the relevant Indian Standards.

Tests on cement shall include.

- Fitness Test.
- Test for Setting Time.
- Test for soundness.
- Test for Tensile strength.
- Test for Compressive strength.
- Test for normal consistency.

Test on Sand shall include.

- Sieve Test.
- Specific Gravity Test.
- Test for Unit weight & Bulkage factor.
- Test for sieve analysis and fineness module.

Test on Aggregate shall include.

- Sieve analysis.
- Specific gravity and unit weight of dry, loose and rodded aggregate.
- Soundness and alkali aggregate reactivity.
- Petro graphic examination.
- Deleterious materials and organic impurities.
- Test for aggregate crushing value.

Any or all these tests would normally be ordered to be carried out only if the Owner feels the materials are not in accordance with the specifications or if the specified concrete strengths are not obtained and shall be performed by the Contractor at an approved test laboratory at the cost of the Contractor.

If the work cubes do not give the stipulated strengths, the Owner reserves the right to ask the Contractor to dismantle such portions of the work which, in his opinion, are unacceptable and re-do the work to standards stipulated, at the Contractor's cost.

The acceptance criteria of concrete on strength requirement shall be in accordance with the stipulations under clause 15 of IS:456 The unit rate for concrete shall be all inclusive, including making preliminary mix design and test cubes works, cubes, testing them as perspecification, slump tests, optional tests etc.

c.Steel Reinforcement

Providing, fabricating, delivering and placing of steel reinforcement Fe 550D (Approved makes- Sail/ Tata/ JSW) in position for casting all types of concrete work. Contractor shall provide the test certificate at the time of lot delivery in Site. The followings are some applicable codes & standards:

- IS: 280 Mild wire for general engineering purpose.
- IS: 456 Code of practice for plain and reinforced concrete.
- IS: 1139 Hot rolled mild steel, medium tensile steel and high yield strength steel deformedbars for concrete reinforcement.
- IS: 1566 Hard drawn steel wire fabric for concrete reinforcement.
- IS: 2502 Code of Practice for bending and fixing of bars for concrete reinforcement.

a. Bar Bending Schedule.

The Contractor shall prepare Bar Bending Schedule for reinforcement before fabrication and the same shall be checked & approved by the Owner.

b. Fabrication

- Reinforcement steel shall be carefully and accurately cut, bent or formed to the dimensions and configurations shown on the drawings and as per bar bending schedules approved by the Owner. All reinforcement shall be bent cold using appropriate pin size. Bars shall be preheated only on approval of the Owner. Quenching shall not cool hot bars. Bends shall be in accordance with IS: 2502.
- It shall be ensured that the bars are not straightened in any manner that will injure the material. Any bars incorrectly bent shall be used only if means for straightening and rebinding be such as not to affect adversely the material. Reinforcement shall not be re- bent or straightened without prior review by the Owner. No reinforcement shall be placed in position on the works without approval of the Owner, whether or not it is partially embedded in hardened concrete.

c. Lapping

Laps shown on the drawings or otherwise specified by the Owner shall be based on the use of bars of maximum length by the contractor. In case the Contractor wishes to use shorter bars, laps shall be provided at the Contractor"s cost in the manner and locations approved by the Owner

d. Placement

All reinforcement shall be placed accurately and maintained in the position indicated on the drawings. The Contractor shall provide approved type of supports for maintaining the bars in position and ensuring required spacing and correct cover of concrete to the reinforcement as specified in drawings. Pre-cast cement concrete blocks of required shapes and size, Mild Steel. Chairs and spacers bars shall be used in order to ensure accurate positioning of reinforcement. Pre-cast concrete blocks shall be cast well in advance and shall be comparable to equal in quality to the class of concrete specified in the BoQ / technical specifications.

e. Cover to Reinforcement

Unless shown otherwise on the drawings, minimum cover for all reinforcement shall be provided as per IS: 456 and care shall be taken to maintain the correct cover to reinforcement.

- For concrete members exposed to weather, earth, action of harmful chemicals, acid vapor, saline atmosphere, sulphurous smoke etc minimum cover for reinforcement shall be increased by 15 cm to 40 mm as directed by the Owner
- The maximum cover for reinforcement shall not be greater than that specified above

or shown on the drawings plus 10 mm except for bundled bars.

- For bundled bars, minimum, concrete cover shall be equal to the equivalent diameter of the bundle but need not be greater than 50 mm.
- Exposed reinforcement intended for binding with future extensions shall be protected from corrosion as shown in the drawings.

f. Material Report –

Prior to start of delivery of materials required, the following shall be submitted by the contractor to the Owner for approval:

- Suppliers and / or sources of all consumable materials including cement, steel, fine andcoarse aggregates, water additives, bricks and timber etc.
- Quality Inspection Plan to ensure continuing quality control of ingredients by periodic sampling, testing and reporting to the Owner on the quality of materials being supplied.

g. Plant and Equipment –

The contractor shall submit the following to the Owner well in advance:

- The proposed program, methods and details of plant and Equipment to be used to testingof ingredients and concrete samples.
- The proposed programme methods and details of plant & equipment to be used for concrete work.

h. Reports for Inspection and Testing –

During concreting operations, the contractor shall conduct inspection and testing as described under the list of mandatory tests in this volume and all reports thereon shall be submitted in summary form to the Owner.

i. Schedules –

Before commencement of the work the contractor shall prepare working schedules of concreting giving dates and rate of pour for each item of work and submit the same to the Owner for their approval.

d. Centering& Shuttering

Form work shall include all temporary or permanent forms or moulds required for forming the concrete which is cast-in-situ, together with all temporary construction required for their support.

a. Design & Tolerance in construction

Form work shall include all temporary or permanent forms or moulds required for forming the concrete which is cast-in-situ, together with all temporary construction required for their support.

- Deviation from specified dimension of cross section of columns and beams — (+12/-6)mm.
- Deviation from dimensions of footings
- Dimension in plan – (+50/-12) mm.
- Eccentricity in plan 0.02 times the width of the footing in the direction of deviation but not

- more than 50 mm.

b. General Requirement

It shall be strong enough to withstand the dead and live loads and forces caused by ramming and vibrations of concrete and other incidental loads, imposed upon it during and after casting of concrete. It shall be made sufficiently rigid by using adequate number of ties and braces, screw jacks or hard board wedges where required shall be provided to make up any settlement in the form work either before or during the placing of concrete.

Form shall be so constructed as to be removable in sections in the desired sequence, without damaging the surface of concrete or disturbing other sections, care shall be taken to see that no piece is keyed into the concrete.

c. Material for Form work

- **Centering/Staging**
  - Staging shall be as designed with required extension pieces as approved by Owner to ensure proper slopes, as per design for slabs/ beams etc. and as per levels as shown in drawing. All the staging to be either of Tubular steel structure with adequate bracings as approved or made of built-up structural sections made form rolled structural steel sections.
  - In case of structures with two or more floors, the weight of concrete, centering and shuttering of any upper floor being cast shall be suitably supported on one floor below the topmost floor already cast.
  - Form work and concreting of upper floor shall not be done until concrete of lower floor has set at least for 14 days.

- **Shuttering -** Shuttering used shall be of sufficient stiffness to avoid excessive deflection and joints shall be tightly butted to avoid leakage of slurry. If required, rubberized lining of material as approved by the Owner shall be provided in the joints.
  - For steel shuttering all works shall be done as specified in CPWD specification 2009.
  - For Ply shuttering all works shall be done as specified in IS 4990(2011) with 12 thick BSI marked (plywood) for concrete shuttering work with plastic coating) designated Plywood.
  - Form work shall be properly designed for self-weight, weight of reinforcement, weight of fresh concrete, and in addition, the various live loads likely to be imposed during the construction process (such as workmen, materials and equipment). In case the height of centering exceeds 3.50 metres, the prop shall be provided in multi-stages.
  - **Camber -** Suitable camber shall be provided in horizontal members of structure, especially in cantilever spans to counteract the effect of deflection. The form work shall be so assembled as to provide for camber. The camber for beams and slabs shall be 4 mm per metre (1 to 250) or as directed by the Owner, so as to offset the subsequent deflection, For cantilevers the camber at free end shall be 1/50th of the projected length or as directed by the Owner.

d. Removal of Form work (striping time) -

Note 1 - For other types of cement, the stripping time recommended for ordinary Portland cement (OPC) shall be suitably modified. Generally, If Portland pozzolana or low heat cement or OPC with direct addition of fly ash has been used for concrete, the stripping time will be 10/7 of the period stated for OPC with 43 grade cement and above.

Note 2 - The number of props left under, their sizes and disposition shall be such as to be able to safely carry the full dead load of the slabs, beam or arch as the case shall be together with any live load likely to occur during curing or further construction.
Note 3 - For rapid hardening cement, 3/7 of above periods for OPC 33/43 grade will be sufficient in all cases except for vertical side of slabs, beams and columns which shall be retained for at least 24 hours.
Note 4 - In case of cantilever slabs and beams, the centering shall remain till structures for counter acting or bearing down have been erected and have attained sufficient strength.
Note 5 - Work damaged through premature or careless removal of forms shall be reconstructed within 24 hrs.

e. **Surface Treatment -** A typical mould oil is heavy mineral oil or purified cylinder oil containing not less than 5% pentachlorophenol conforming to IS 716 well mixed to a viscosity of 70-80 centipoises. After 3-4 uses and also in cases when shuttering has been stored for a long time,it shall be recoated with mould oil before the next use.

f. **Inspection of form work -** The completed form work shall be inspected and approved by the Owner before the reinforcement bars are placed in position.

Proper form work shall be adopted for concreting to avoid honey combing, blow holes, grout loss, stains or discoloration of concrete etc. Proper and accurate alignment and profile of finished concrete surface will be ensured by proper designing and erection of form work whichwill be approved by Owner.
Shuttering surface before concreting shall be free from any defect/ deposits and full cleaned so as to give perfectly straight smooth concrete surface. Shuttering surface shall be therefore checked for any damage to its surface and excessive roughness before use.

g. Erection of form work (Centering & Shuttering) –

- Any member which is to remain in position after the general dismantling is done, shall be clearly marked.
- Material used shall be checked to ensure that, wrong items/ rejects are not used.
- The bearing soil shall be sound and well prepared and the sole plates shall bear well on the ground.
- Sole plates shall be properly seated on their bearing pads or sleepers.
- The bearing soil shall be sound and well prepared and the sole plates shall bear well on the ground.
- The bearing plates of steel props shall not be distorted.
- Safety measures to prevent impact of traffic, scour due to water etc. shall be taken. Adequate precautionary measures shall be taken to prevent accidental impacts etc.
- Bracing, struts and ties shall be installed along with the progress of form work to ensure strength and stability of form work at intermediate stage.
- When adjustable steel props are used. It shall not :
    - be undamaged and not visibly bent.
    - have the steel pins provided by the manufacturers for use.
    - be restrained laterally near each end.
    - Screw adjustment of adjustable props shall not be over extended.
    - All provisions of the design and/or drawings shall be complied with.
    - Props shall be directly under one another in multistage constructions as far as possible.
    - Supports shall be adequate, and in plumb within the specified tolerances.

e. Masonry Work –

The Contractor shall provide all labour, materials, scaffolding operations, equipment and incidentals necessary required for the completion of all brickwork called for in the drawings and documents and that which is fairly intended for smooth completion of the work.

a. Bricks – (Class A)

- Brick work with common burnt clay F.P.S. (non-modular)/Cement bricks of class designation 7.5 in foundation and plinth.
- Following are some Reference IS codes.
    - Method of sampling of clay building bricks IS 5454 – 1978
    - Method of test for burnt-clay building bricks. IS 3495 (Parts I TO iv) 1976
    - Common burnt clay building bricks. IS 1077 – 1992
    - Specification for sand for masonry mortars. IS 2116 – 1980
    - Code of practice for preparation and use of masonry mortar IS 2250 – 1981
- Providing and laying autoclaved aerated cement blocks masonry with 100 mm thick AAC blocks in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement: 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work. Following are some reference IS codes:
    - IS 2185 – 1 (2005).
    - ASTM C55(01).

b. Mortars –

All brick work shall have laid with specified mortar of good workable consistency.

For Cement –

Cement complying with any of the following Indian Standards shall be used:

- 43 grade ordinary Portland cement, conforming to 1S 8112,
- Portland slag cement conforming to IS 455,
- Portland pozzolana cement, fly ash based conforming to IS 1484 (Part 1),
- Portland pozzolana cement, calcined clay based conforming to IS 1484 (Part 2)
- Super sulphated cement conforming to IS 6909,
- Rapid hardening Portland cement conforming to IS 8041,
- White Portland cement conforming to IS 8042,
- Hydrophobic Portland cement conforming to IS 8043, and
- 53 grade ordinary Portland cement conforming to IS 12269.

When cement conforming to IS 269 orIS8112 or IS 12269 is used, replacement of cement by fly ash conforming to IS 3812 (Part 1) shall be permitted up to a limit of 25 percent. However, it shall be ensured -that blending of fly ash with cement is as intimate as possible, to achieve maximum uniformity.

Laying –

- Bricks shall be laid in English bond, unless otherwise specified. Half or cut bricks shall notbe used except where necessary to complete the bond. Closers in such cases shall becut to the required size and used near the ends of the walls.
- The walls shall be taken up truly plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in alternate courses shall come directly one over the other. The thickness of brick courses shall be kept uniform and for this purpose straight edge with graduations showing the thickness of each brick course including joint shall be used. Bricks shall be laid with frogs upwards.
- All iron fixtures pipes, outlets of water, holdfasts of doors and windows, etc., which are required to be built in walls, shall be embedded in cement mortar or in cement concreteas specified, in their correct positions as the work proceeds. Nothing extra shall be paidfor such extra cement mortar or of the nature stated above.

Joints –

Bricks shall be so laid that all joints are quite full of mortar. The thickness of the bed joints shall in no case exceed 3/8", unless otherwise specified. The face of joints shall be raked to a minimum depth of 0.5" by raking tool daily during the progress of work when the mortar is still green, so as to provide proper key for the plaster or pointing to be done. Where plastering or pointing is not required to be done, the joints shall be struck flush and finished at the time of laying. The face of brick work shall be cleaned daily and all mortar droppings removed.

Curing –

Green Work shall be protected from rain by suitable covering. Brick Masonry with cement or composite mortar shall be kept constantly moist on all faces for a minimum period of 7 (Seven) days. In case of fat lime mortar, curing shall commence two days after the laying of masonry and shall continue for 7 (seven) days. For reference follow the IS code IS 456.

Drying –

After curing the blocks, they shall be dried for a period of 4 weeks before being used on the work. In case of curing, the blocks shall -be dried at ambient temperature for a period ofseven days. The blocks shall then be stacked with voids horizontal to facilitate through passage of air. It shall be ensured that the blocks have been thoroughly dried and allowed to complete their initial drying shrinkage before supply to the work-site.

f. Scaffolding -

Double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong Tied together with horizontal pieces over which the scaffolding planks shall be fixed. In building up to two stories, single scaffolding shall be allowed. In this case, the inner end of the horizontal scaffolding pole shall rest in a hole provided in the header course only. Only one header or each pole shall be left out. The holds left in masonry work for supporting the scaffoldings shall be filled and made good, before plastering. The Contractor shall be responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

g. Plaster -

Plaster as herein specified shall be applied to all internal surface where called for All plaster work shall be executed by skilled workmen in a workman like manner and shall be of the best workmanship and in strict accordance with the dimensions on drawings subject to the approval of the Owner. The primary requirement of plaster work shall be to provide dense, smooth and hard enclosure and devoid of any cracks of the interior and/or exterior.

- **Preparation -**

Masonry and concrete surfaces which call for application of plaster shall be clean, free from dust and loose mortar. Efflorescence if any shall be removed by brushing and scrapping. For masonry surfaces the joints shall be raked out properly, while the concrete surfaces shall be roughed by wire brushing and hacking to provide the key, thereby ensuring proper bond to the satisfaction of the Owner. The surface shall then be thoroughly washed with water, cleaned and kept wet before plastering is commenced.

- **Chicken Wire Mesh -**

Galvanized chicken mesh (22-gauge, 12 mm size) shall be provided at junctions of brick masonry and concrete members, to be plastered and other locations as called for, properly stretched and nailed with galvanized wire nails, ensuring equal thickness of plaster on both sides of the mesh. The

width of the mesh shall be as approved by the Owner. The chicken mesh wherever. Specified, shall be fixed in place before plastering.

- **Mortar -**

The mortar of the specified mix shall be used Mortar shall be prepared as specified under" Brick Work". It shall be made in small quantities, as required, and applied within 15 minutes ofadding water to the plaster mix.

- **Cement -**

Cement shall be as per the specifications provided in the Scope of Work unless otherwise specified / approved in design / Drawing.

- Sand -

For plaster work normally, clean fineriver sand shall be used. However, if specified in the drawing or schedule of finishes, coarse sand conforming to the specifications under Concrete work" shall be mixed with fine river sand in proportion specified or directed by the Owner.

- Celling Plaster –
    - 6mm thick Ceiling plaster shall be completed before commencement of wall plaster.
    - Plastering shall be started from the top and worked down towards the floor. To ensure even thickness and true surface, plaster about 15 x 15 cm shall be first applied, horizontally and vertically, at not more than 2 meters intervals over the entire surface to the plaster to serve as gauges. The surface of these gauged areas shall be truly in placeof the finished plaster surface. The mortar shall be laid between the gauges with a trowel ensuring through filling of joints. The mortar shall be applied in a uniform surface slightly more than the specified thickness and then brought to a true surface, by working a wooden straight edge reaching across the gauge, with small upward and side movements at a time. Finally, the surface shall be finished off true with trowel or wooden float according as a smooth or a sandy granular texture is required. Excessive trawling or over working the float shall be avoided.
    - All corners arise angles and junctions shall be truly vertical or horizontal as the case shall be and shall be carefully finished. Rounding or chamfering corners, arises, junctions etc. shall be done as per requirement without any extra payment. Such rounding shall be carried out with proper templates to the sizes required. No portion of the surface shall be left out initially to be patched up late on. Grooves shall be provided at the junction of ceiling and wall plaster without any extra cost.

- Finish -

The plaster shall be finished to a true and plumb surface and to the proper degree ofsmoothness as required the work shall be tested frequently as the work proceeds with a true straight edge not less than 2.5 m long and with plumb bobs All horizontal lines and surfaces shall be tested with a level and all jambs and corners with a plumb as the work proceeds.

- **Curing -**

Curing shall be started as soon as the plaster has hardened sufficiently not to be damaged when watered. The plaster shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages.

- **Material Report –**

Prior to start of delivery of materials required, the following shall be submitted by the contractor to the Owner for approval Suppliers and / or sources of all consumable materials including cement, steel, fine and coarse aggregates, water additives, bricks and timber etc. Quality Inspection Plan to

ensure continuing quality control of ingredients by periodic sampling, testing and reporting to the Owner on the quality of materials being supplied.

- Reports for Inspection & Testing –

During Masonry work, the contractor shall conduct inspection and testing as described under the list of mandatory tests in this volume and all reports thereon shall be submitted insummary form to the Owner.

h. Flooring –

a. Polished Granite Stone Slabs for Flooring, Steps, Stairs, Cladding on Pantry and Wash Basin Counters

- Providing & fixing granite of approved quality and colour of required size mm double polished M/C cut of 20mm thick over floor surface in proper line. Level in CM 1:4 including finishing the joint with matching colour cement, polishing the top surface etc., complete as per instruction of the Owner.
- Granite stone shall be of best quality machine polished, Machine Cut and of approved colour, dense and homogenous in texture free from cracks, decay, weathering and flaws. The stone shall be of required size and shall be 20 mm thick. The material shall have to be approved by the Owner before and after procurement. Before laying flooring, the surface shall be paved and thoroughly hacked, cleaned off all mortar scales, loose materials etc., unless and until the surface is approved by the Owner, the laying shall not be done. The bedding with CM 1:4 proportion as directed by the Owner with minimum thickness of 30 mm layer shall be laid evenly and to the required slope. The granite shall be truly and evenly set in thin paste of next cement apply to the bottom and to the prepared base. The stone then shall be temped down with wooden mallet until they are exactly in true plane and in line with adjacent stone

Finishing

The finishing of the surface shall follow immediately after the cessation of beating. The surface shall be left for some time, till moisture gets dried from its joints or top, Excessive trowel ling shall be avoided. Use of dry cement or cement and sand mixture sprinkled on the surface to stiffen the concrete or absorb excessive moisture, shall not be permitted.

b. Ceramic tiles glazed & matt finish.

- Ceramic tiles in toilets and other areas where called for shall be non-slip ceramic tiles of approved make and shade. The tiles shall be laid to the pattern as approved by the Owner. The tiles shall be of uniform colour, true to size and shape and free from cracks, twists, uneven edges, crazing and other defects. The size and thickness of the tiles shall be as specified.
- The tiles shall be laid as per the pattern shown in the drawings over a bed of specified thickness of cement mortar levelled to a true surface. The surface of the bedding mortar shall be left rough to provide bond for the tiles. A floating coat of thick cement slurry shall be laid over the screed to proper levels and the tiles set over the same firmly to correct line and levels.
- The joints shall be filled and finished neat with cement paste pigmented to the shade of the tile. The joints shall be finished neat as directed and shall be straight, regular and uniform. On completion, the surface shall be washed with water, rubbed with fine saw dust and left clean. The finished floor surface shall be true to required levels.

c. Vitrified Tiles.

- The tiles shall generally conform to latest IS standards shall be procured by the contractor. They shall be flat, true to shape and free from cracks, crazing spots, chipped edges and corners. The glazing shall be of uniform shade and colour shall be as shown in the drawings.
- The tiles shall be of specified size and thickness as per drawing. The tolerance on facial

dimension value shall be +/- 1.0mm and +/- 0.5 mm in thickness.

- The top surface of the tiles shall be glazed. The glazed shall be either glossy or matt as specified. The underside of the tiles shall be completely free glazed in order that the tile adhere properly to the base. Type edges of the tiles shall be preferably free form glaze, however, and glazed if unavoidable, shall be permissible on any one edge of the tile.
- Approved makes- Somany/ Kajaria/ Nitco/ Orient Bell

Laying

- The Vitrified tiles shall be laid over furrow cement slab & it shall be cleaned, wetted Mortar of specified mix shall be spread to required thickness over a small area. The slab, washed clean, shall be laid on the mortar, pissed tapped, with a wooden mallet, and brought to required level The tiles shall be laid as per the pattern shown on the drawings or as approved by Owner.
- It shall then be removed and laid a side. The top of the mortar shall then by corrected by adding fresh mortar at hollows. The mortar is then allowed to harden and cement slurry of paste like consistency shall be spread over the same at the rate of 1 bag per sq. mt. area. The edges of the tile already laid shall be buttered with slurry of cement and pigment to match the shade of slabs. The tile to be laid shall then be placed back in position, pressed and properly bedded in level with adjoining tiles with as fine a joint as possible. Other tiles are also laid in similar manner to correct levels with fine joints. The surplus slurry on the surface shall be cleaned off. The tiles shall be soaked in water, washed clean, and a coat of cement slurry applied liberally at the back of tiles and set in the bedding mortar. The tiles shall be tamped and corrected to proper plans and lines.
- The tiles shall be set in required pattern and butt jointed. The joints shall be as fine as possible. Where full size tiles cannot be fixed these shall be cut to the required size and their edges rubbed smooth.

d. Curing & Finishing

The joints shall be cleaned off of the grey cement grout with soft wire brush or trowel to a depth of 2mm to 3mm and all dust and loose mortar removed Joints shall then be flush pointed with white cement added with pigment if required to match the colour of tiles. The surface shall then be kept wet for 7 days. After curing, the surface shall be washed and finished clean. The finished work shall not sound hollow when tapped with wooden mallet.

5.4 Specification of Plumbing and Sanitary Installation

a. SCOPE OF WORK

- The scope of work under this contract shall comprise of providing and installation of all material, equipment and labour as described in detail under various heads of specificationand as shown on drawings.
- The contractor"s work shall include all materials, tools and plants, scaffolding and everything necessary for the completion of the work to the satisfaction of The Owner. All materials and workmanship used in the execution of the work shall be the first quality unless otherwise stated. All materials used in the work shall conform to the current CPWD (Central Public Works Department) specifications whether or not specific mention is made thereof. The contractor shall be responsible for and shall replace or make good at his own expense, any materials lost or damaged or of quality not approved.
- Excavation in all types of soil refilling and carting away surplus materials to contractors own dump or as directed, for manholes, inspection chambers, gully traps water supply.
- Two coats of approved ready mixed paint over red oxide primer to all exposed iron or woodwork including G.I.(Galvanized Iron) Pipes and C.I(Cast Iron) gratings. All G.I(Galvanized Iron) Pipes whether laid in ground or concealed in walls or floors shall be coated with bitumen.
- Work shall be inclusive of making holes through concrete / masonry, making good the work and redoing and re-plastering the same to match the surroundings.
- For all pipes, work shall be inclusive of all fittings and specials such as coupling, bends, unions, cleaning eyes, tees, plugs, reducer etc., and making joints and connection to valves, tanks, pumps and existing pipelines etc as required.

- Cutting chase for concealing pipes in walls and floors and making good with cement plaster 1:3.

b. DRAWINGS

- All water supply, sanitary and drainage drawings are to be used as guidelines and need to be followed strictly.
- The contractor shall submit to the Owner the shop drawings to suit the water supply sanitary and drainage layouts.
- No dimensions to be measured on drawings and only written dimensions are to be followed.
- Contractor shall refer for further details, dimensions to the Constructional and structural detailed drawings.
- Two hard copies including the soft copy for each & every drawing shall be submitted to the Owner.
- NOC (no objection certificate)/Statutory approval drawings/certificate from all the necessary government bodies shall be submitted to The Owner before the trial run from start of LOI date.
- Discrepancies, variations changes in drawings shall be brought to the notice of the Owner and written approval shall be obtained by the Contractor before starting the work.

c. AS BUILT DRAWINGS

- Contractor shall submit as built drawings on completion of work, one complete set of original reproducible tracings and three prints to the Owner.
- A run of all open/concealed piping, with diameters from terrace to tapping points with various controls for water supply, clean outs access panels, soils waste, vent, rainwater piping at all levels.
- Complete water supply layout, location of inspection chambers, diameter of drainage pipes, from WC(Water closet) to chamber, from Gully trap to chamber, should be mentioned in Plumbing design & drawing.

d. WATER SUPPLY (GI PIPE CLASS `B"):

- All GI pipes fittings and valves of rising main from finished Ground level to overhead tanks as indicated in the drawings.
- All GI pipes with fittings and valves from overhead tank to all taps, wash basins, cisterns, sinks.
- The pipes shall be galvanized mild steel tubes medium grade conforming to BIS (Indian Standard) 1239. All pipes shall be electric resistance welded screwed with taper, threads and sockets with paralleled threads, Threads shall conform to BIS (Indian standard) 554- 1964 The pipes and sockets shall be clearly finished, well galvanized in and out and free from cracks, surface flaws, laminations and other defects All screws threads shall be clean and well cut. The ends shall be cut cleanly and square with axis of the tube.

e. CUTTING, LAYING AND JOINTING OF PIPES AND FITTINGS

- Where pipes have to be cut or re-threaded, ends, shall be carefully filed out so that no obstruction to bore is offered. The ends of the pipes shall then be threaded conforming to requirements of BIS (Indian standard) 554- 1964 with pipe dies and tapes carefully in such a manner as will into result in slackness of joints when two pieces are screwed together. The pipe shall be clean and cleared of all foreign matters before being laid. All pipes and fittings shall be properly jointed to make the joints completely watertight and all pipes kept free from dust during fixing. Burr shall be removed from the joints after screwing.
- All GI pipes below ground shall be laid in trenches and shall have a minimum cover of 600 mm, painted with two coats anticorrosive bitumastic paint, filling 150 mm thick sand all-round the G.I(Galvanized Iron). pipes.
- The runs of the pipe shall be truly vertical and horizontal. Proper bends, elbows, tees at turning/ corners shall be used.
- All GI pipes with necessary fittings wherever they are laid on internal faces of the walls shall be concealed in chase, sand painted with two coats of anticorrosive bitumastic paint. On external faces they will be laid on walls fixed with GI (Galvanized iron) clamps.
- In the concealed portion of the piping no joint shall be provided in the pipelines except in the fittings i.e. bend, elbows, tees and nipples where required.

- As far as possible no GI (Galvanized iron) pipes shall be laid under floors of the toilet/kitchen
- No GI (Galvanized iron) pipe shall be laid in lime concrete, where required shall be embedded in PCC of 1:3:6 minimum 75 mm all around or as directed by the Owner.

- **SANITARY INSTALLATION**

Sanitary wares.

- EUROPEAN TYPE Water Closet (WC) PAN WITH LOW LEVEL FLUSHING CISTERN
- European type W.C(Water closet) pan shall be of white vitreous china first quality water closet
- „P" or „S" trap coupled with fittings, brackets, complete in all respects. The W.C pan shall be free from cracks, crazes, blisters, and shall have smooth surface.

- Fixing

W.C. pan shall be fixed to floor walls with CP (Chrome plated) brass screws or by means of 75 mm long 6.5 mm counter sunk bolts and nuts embedded in floor concrete. The base of the pedestal of the pan shall squarely rest on the finished floor Any gap between the finished floorand the pedestal shall be filled with white mastic mixed with pigment to match the shade of floor or as directed by the Owners.

STOPCOCK

Angle Stop cock shall be of CP (Chrome plated) brass/brass as specified in the drawing.

ANGLE VALVE

- Angle valve shall be of 15mm dia CP brass with 15mm dia GI supply pipe of required length with nuts and washers.
- The connection between angle valve and supply line laid in chase shall be made in a manner so that the flange is flush with finished face of the wall and no threaded portion of the angle valve or supply line is visible.

URINALS

- Half stall type / full size urinal shall be conforming to IS:2556 Part VI. Urinals shall be of single piece construction with integral flushing box rim. These shall be mounted on walls. The flushing inlet pipe shall be of CP brass 15mm dia and waste pipe 32 mm dia GI, 750 mm long shall be embedded in wall. Necessary unions and CP bottle trap shall be provided in the waste line. Rawle plugs with CP brass screws shall be used for fixing the urinal. Fixing shall ensure that no liquid is left over in the pan after flushing.
- Urinals shall be connected to sensor system as per manufacturer"s instructions. Rate quoted shall include cost of urinals inlet and outlet pipes, auto censor flushing cistern, breaking and making good the walls and flooring, making inlet and outlet connections, painting exposed brackets and GI pipes etc.

Washbasin.

Wash basins shall be 550 X 400 mm white vitreous china or Oval shape Counter Basin or as shown in drawing of 1st quality with three tap holes, or with single tap hole. These shall be free from cracks, crazes, blisters and shall have smooth surfaces.

FIXING

The basins shall be supported on a pair of CI(Cast iron) brackets cantilevering from wall face as directed by the Owners There shall be no gap between top edge of the basin and finished face of wall

PILLAR TAP

Pillar tap shall be 15mm dia CP (chrome plated) brass AOS make with auto censor.

WASTE

Waste shall be 32mm dia CP(Chrome plated) brass heavy type with solid rubber plug and bailchain.

BOTTLE TRAP

Bottle trap 32mm of approved quality

SINK

Sink shall be SS(stainless steel) sink with drain bolt and granite platform in sides built in 20mm thick. Polished granite of Black colour platform of size specified in schedule with integral overflow and shall have 40mm Dia outlet and shall be connected to 40 mm Dia. GI waste pipe.(Nirali or Equivalent)

C.P. BRASS FITTINGS

C.P(Chrome plated). Brass fittings shall be CP(Chrome plated) brass comprising of long body BIB cocks of 15mm, CP brass angle valves with CP inlet tube and CP brass cap.

TOILET REQUISITES

MIRROR

- Mirror shall be of approved make and of best quality. These shall be free from bubbles, ripples or any other defects. The glass shall be uniform silver plated at the back. Size shall be 450 x 600 mm or as specified in drawing. These shall have plastic frame all around with keyhole to wall with screw for hanging as directed by the Owner.

FIXING

- The mirror shall be fixed on wall face with wooden cleats, with CP(Chrome plated) brass screws and washers, above the lavatory basins at the height, as directed by the Owner.

TOWEL RAIL

- Towel rail shall be of CP(Chrome plated) brass 600 mm long, 20 mm dia with 2 CP brass brackets or size specified in drawing

FIXING

- Brackets shall be fixed to wall by means of CP brass screws to wooden plugs or raw plugs, embedded in the wall or as directed by the Owners

BIB COCK – TWO IN ONE HEALTH FAUCIT

- Bib cock of two in one shall be of 15mm CP brass with 1 long PVC pipe with health faucet.

5.5 <u>Soil, Waste, Rainwater, Vent and Anti-Siphonage Pipes & Fittings: Laying And Jointing PVC. Pipes (Internal Work)</u>

Solvent welded joints: Non heat application Method:

In this method instead of forming a socket on one pipe and an injection moulded socket fitting couplers is used with a provision to take in the pipes at both ends, the surface to be jointed and the joint is made at ambient temperature Injection moulded fitting only shall be used in preference to fabricated fittings only, solvent recommended by the

manufacturers of the pipes shall be used and full load on the joints applied only after 24 hours. The pipe shall be cut perpendicular to the axis of the pipe length with a metal cutting saw or an ordinary hand saw with small teeth. Pipe ends have to be bevelled slightly with a bevelling tool (Reamer) at an angle of about 30 degree. The total length of insertion socket (injection moulded socket or couplet) shall be marked on the pipe end could be inserted into fitting socket. Attempt shall be made to push the pipe to the marked distance if not possible it shall at least be pushed for 2/3 of this distance.

Flanged Joints

For jointing PVC pipes particularly of larger sizes to valves and vessels and larger size metal pipe where the tensile strength is required the joint is made by the compression of a gasket or ring sealset in the face of CI (Cast iron) flange. Flanges solvent welded to the P.V.C. pipes shall be supplied by the Contractor.

Rubber Ring Joints:

Rubber ring joints can provide a watertight seal but do not resist pull. As such these shall be used only as repairs collar and for jointing pipes larger than 110 mm. Such joints shall be provided on pipes which are buried in the ground and supported through out on a bedding so that they are not subjected to movement and longitudinal pull .The material of rubber ring shall conform to IS:5382 where aggressive soil are met with , synthetic rubbers perform better for jointing The ring shall be housed in a groove formed in plastic or metallic housing .The ring shape and the method of compressing the ring vary considerably in different types of joints . Most joints often require the application of lubricating paste which shall be procured from the manufacturers of P.V.C. pipes. Rubber rings shall be supplied by the Contractor. The rubber ring joints can be either of. With spigot and socket, or with separate collar pieces having two rubber rings one at either end.

Crossing Road or drain

Where the pipeline crosses a road or a drain, it shall be through C.I(Cast Iron). or RCC pipe.

Supports for Valve and Hydrant: -

Valve and hydrant tees shall be so that the torque applied in operating a valve is not transmitted to the pipeline.

Inspection and Testing

- Solvent welded pipe shall not be pressure tested until; at least 24 hours after the last solvent cemented joint has been done.
- All control valves shall be positioned open for the duration of the test and open end closed with watertight fitting. The testing pressure on completion of the work shall not be less than one and half time the working pressure of the pipes.
- Pressure shall be applied either by hand pump or power-driven pump. Pressure gauges shall be correctly positioned and closely observed to ensure that at no time are the test pressure exceeded. The system shall be slowly and carefully filled with water to avoid surge pressure or water hammer. Air vents shall be open at all high points so that air shall be expelled from the system during filling.

Connection to a water tap

Connection to a water tap shall be made by means of a G.I. adopter as shown. G.I. adopter shall preferably be supplied by the same manufacturer as that of P.V.C. pipe. In any threaded coupling between P.V.C. and GI it is preferable that P.V.C. is fitted inside the G.I. fitting. If, however greater projection is desired, same shall be achieved by joining a short piece of a GI pipe (Nipple).

5.6 Technical Specification of Electrical Fittings.

a. General

- The entire electrical installation shall be carried out in accordance with latest Indian Electricity Code and relevant IS Standards up to date. The work shall also comply with all statutory regulations of supply agencies, state inspection authorities and fire regulations. Contractor shall be responsible for obtaining all necessary statutory approvals, clearances, sanctions, drawing approvals and getting actual connections.
- Definition of terms pertaining to all technical requirements as per IEC / IS: 732 -1989 shall apply.
- Contractor shall submit all necessary drawings for scrutiny and approval by the Owner prior to commencement of work. Contractor shall immediately bring out the difficulties faced in execution of works to the notice of the Owner.
- All material, equipment, fittings used in the installation shall be of approved quality conforming to relevant IS specifications.
- On completion of works contractor shall carry out all necessary tests including but not limited to pressure test, insulation resistance test, continuity of conductors and earth resistance and

functional tests along with commissioning checks to the satisfaction of the Owner. Contractor shall employ services of specialist agency for testing of substation equipment, H. T. (High transmission/tension) Cables & H. T.(High transmission/tension) Joints, relays & for harmonic analysis.

- Contractor shall furnish necessary test certificates as required by authorities and the Owner. List of standards relevant to the works is enclosed.
- Installation of equipment shall include all necessary works and fixing accessories like hardware, clamps, round blocks supports boxes etc. required for completing installation satisfactorily.
- Complete location/room wise technical and functional testing will be done for equipment & installation before handing over and a consolidated acceptance test report shall be prepared by contractor based on standard formats along with test certificates of bought out items, certificates of testing carried out at site. All equipment & installation test will be done jointly with representatives of the Owner and signed jointly for the acceptance with remarks if any.

b. Earthing & Lighting Protection

a. All non-live metal parts of the electrical system and equipment shall be earthed with suitable size of earth conductors. 2 distinct earthing shall be provided for all 3-phase equipment.

b. Earthing shall be in confirming with IS 3043 and Lightning protection shall be with IS 2309.

c. Earth resistance of individual earth station shall not exceed 5 Ω and overall resistance shall be less than 1 Ω at all times. Earth resistance shall be taken with earth meggers for all earth points. All earth points shall be located 2.0mtrs away from the building and there will be a minimum distance of 3.0 meters between 2 earth points. All earth stations shallbe identified with number and using painted board.

d. Pipe Electrode Earthing: 50 mm dia. Class B GI Pipe 3.0 m long tapered at bottom and 12mm dia holes at 75mm c/c on all sides for bottom 2.0mtrs with top watering arrangement shall form earth electrode. The electrode has to be buried vertical in ground.

e. Plate Earthing: 600 x 600 x 6mm GI or 600 x 600 x 3mm Copper Plate with 50 mm dia. GI watering pipe with funnel at top. The construction shall be as per details given in the Latest edition of IS 3043.

f. In-case of rocky strata, bore earthing stations with 150mm bore and 100mm class B GI pipe shall be done. Depth of bore earthing shall be 6.0 m minimum. Soil resistivity test shall be done for deciding depth if necessary.

g. Bentonite or earth powder slurry shall be put along with pipe in the bore.

c. M.V panels & Distribution Board.

a. The panels shall be free standing, floor mounting compartmentalized cubicle type panels with framed structure and bottom channel frame of suitable section. The frame structure shall be rolled/folded sheet section of 2.0 mm thick sheet. Partitions shall be 1.6mm thick. Doors and gland plates shall be 2.0 mm thick. The panel shall be dust and vermin proof

with neoprene gasketing. All doors shall be provided with concealed hinges, necessary Earthing arrangement and shall be provided with bracings wherever required to avoid deformation.

b. Easily open-able door locks with common key shall be provided for all doors including alleys.

c. Bolts shall not be provided for fixing doors except for busbar chambers. Following minimum clearances shall be adhered to while such designs.

d. Cables & Cable Laying

All power and distribution cables shall be 1100V grade, PVC / XLPE insulated and sheathed, armoured, multi strand aluminium conductor cables unless otherwise specified. All control cables shall be 1100V grade PVC insulated and sheathed armoured multi-strand copper conductor cables unless otherwise specified. The cables shall confirm to IS 1554-1988 & IS 7098:1988 with up to date amendments. Type test certificates of the cables from manufacturers for the particular drums shall be provided. Shop inspection shall be offered for routine tests if specifically asked for.

Laying

- The cables shall be thoroughly inspected for transit damage and irregularity in sheath etc
- Sufficient manpower with necessary equipment like jacks, rollers shall be provided for unwinding and laying the cables and dragging and twisting shall be avoided. Proper unwinding methods shall be used to avoid twists & cable shall be meggered before starting laying.
- Cables shall be laid at a depth of at least 750mm from ground level with 50mm sand bedding, brick box with cushion for protection. Bending radius provision of at least 12 D(Dia) shall be kept while laying. The trenches shall be filled and reinstated layer by layer leaving a crown on top.
- H.T. and L.T. cables shall not be laid in same trench. When more than one cable is laid in same trench a gap of at least 150mm shall be kept between the cables.
- Cables laid on walls; trenches shall be supported at every 600mm for vertical run and every 450mm for horizontal run. Suitable clamps shall be provided for fixing and support. Vertical runs near ground level shall be protected by GI Pipes of suitable size up to the height of at least 1200 mm.
- The length of the cables in schedule will be approximate and actual site measurements shall be taken by contractor prior to cutting any cable.
- Cable identification tags shall be provided at appropriate location throughout length of cables and at both ends.

e. Jointing

- Jointing or end termination of cables shall be done by skilled person only. Straightthrough joints shall be avoided as far as possible. Heavy-duty compression type brass glands shall be used for all connections. Crimping type lugs with suitable brass/Chrome Plated hardware shall be provided for connections.
- The cables on panel side are connected to bus bars, Care shall be taken to avoid heating & corrosion at the joints. All LT cable joints in outdoor and humid atmospheres shall be done with double compression glands only / if done by Single Compression Gland shall be accommodated by pvc hood of Appropriate size.

Conduit Accessories & Joints

All conduits unless otherwise specified shall be hot dip galvanized ERW steel conduits 16SWG up to 25mm dia and 14SWG above 25mm dia size. All conduit accessories shall be screwed type and conduits shall be joined by means of threaded couplings only. Check nuts shall be provided at all joints for tightening and sealing. Ends of conduits shall be free from burs sharp edges. All threaded portions shall be cleaned of any oil and shall be coated with plastic adhesive. All M.S conduits and accessories if used shall be painted with 2 coats of Red Oxide before installation and accessible parts of conducting after installation shall be painted with enamel paint to match the wall paint. Capacity of conduits is separately given. In case of rigid FRPVC conduits, the conduits shall be at least 2.0mm thick. The accessories shall be similar quality. The joints shall be made using special

adhesives used for pressure pipe joints.

Surface Conduiting

The surface conduits shall be fixed with help of 20 SWG saddles on spacers at every 600mm for vertical run and every 450 mm for horizontal run. The runs shall be straight with pull boxes and inspection type bends as required. Contractors are required to provide suitable sleeves for structural member crossing at the time of casting. No elbows shall be allowed. In case of false ceilings, the conduits shall run on walls/trusses/slabs above false ceiling level as far as possible. The connections between such runs and fixtures shall be made with flexible conduits.

Concealed Conduiting

- The concealed conduit work shall be carried out along with construction of walls prior to plaster. The work covers chasing walls with wall cutters only if necessary, fixing the conduits, boxes, and accessories, redoing the damaged surface using chicken mesh. All horizontal conduit runs shall be straight at wall point light level to necessary junction/pull boxes and then straight vertical drop to switch box if necessary.
- The conduits shall be laid such that they are little below the brick level to avoid cracks. Elbow shall not be used, and bends shall be avoided as far as possible using offsets. Pull boxes shall be provided at suitable locations. All necessary sleeves shall be provided in beams, columns, and prior to casting. Deep junction boxes only shall be used in slabs.
- The pull and junction boxes shall not be clustered at one place and shall be so arranged that they shall not be easily seen from heavy movement areas. All cases shall be taken to secure joints and boxes in place. All vertical runs shall be sealed at top, while masonry civil works going on. Conduit with 25mm dia. minimum shall be used be used for all concealed work. In areas with false ceiling conduits will not be concealed in slab but willbe concealed below false ceiling area. Conduits above false ceiling in such cases shall run with proper supports / suspenders. Conduits shall not be rested on false ceiling grid in any case.
- Flexible conduits shall not be used in concealed work.

f. Switch Boards

The switchboards shall be readymade modular type metal boxes of approved makes as per attached list with all side"s knockouts except top. Top plate fixing arrangement shall be provided at all corners with tapped holes. At least 1No. earth stud shall be provided. Switchboard shall be at-least 50mm deep. M.S. Switch board shall be painted with 2coats of Red Oxide primer from inside and outside if not plated or galvanized. In case of surface mounted boards switchboards shall be powder coated with necessary treatment. Plate shall be 2mm thick while phenol-bonded sheet unless specified and shall be fixed with chrome-plated screws with cap washers. For modular switch range switch boxes shall be of same make. Metal boxes shall be used for concealed wiring whereas ABS plastic/Polyurethane boxes shall be used for surface mounting. Suitable readymade boxes & plates only shall be used.

Switches & Sockets

All 5/15 a switches shall be modular/fancy type 240 V grade of approved colour and of same shade throughout. 5A Sockets shall be 3pin & 15AMP Sockets shall be 5 pin (Universal). All switches shall be provided on phase wires only. For power points more than 20AMP capacity20/30AMP flush type DP Switches shall be provided, unless otherwise specified. All workstation sockets shall be universal multifunction.

g. Wires & Wiring Installation

All wiring shall be carried out with Non-PVC / ZHLS 1100V grade multistrand copper conductor wires of specified sizes. The conduits shall be ventilated and drained before drawing the wires. The circuit wires shall be laid in looped formation with suitable termination arrangement in junction boxes. T joints shall be used. No joints shall be allowed in drawn lengths. Crimping type lugs shall be used for switch interconnections. Colour codes shall be followed. Separate earth wire of same class and suitable size shall be drawn along with other wires. Mains and sub-mains shall be drawn in separate conduit of adequate capacities with separate earth wires. All circuit wires shall be meggered

for continuity and insulation resistance.

5.7 Field Inspections

5.7.1STRUCTURAL STEEL WORK - QUALITY CONTROL & TESTING REQUIREMENTS

a. General

Scope of Specification

The scope of work of these specifications is to establish the norms for ensuring the required Quality Control through established testing norms of the welded structural steelwork by Owner.

b. Codes / Standards

Tests and Standards of Acceptance:

- The materials shall be tested in accordance with relevant IS(Indian standards) specifications and necessary test certificates shall be furnished. The cost of these tests shall be borne by the contractor. Additional tests if required by the engineer in charge shall be got carried out from the approved testing laboratory. The cost of such additional tests shall be borne by the contractor if the test indicates failure and shall be borne by the department if the test indicates all satisfactory results.
- The fabrication, furnishing, erecting and painting of structural steel work shall be in accordance with these specifications.

c. Submittals

The Contractor shall submit the following:

- Proposed overall schedule for documentation of project drawings, plan/procedures and records, procurement of materials from approved suppliers, submission of procedure of fabrication and erection.
- The contractor shall himself inspect all materials and project work to satisfy the specified tolerance limits and Quality norms before the same are inspected by Owner or his authorized representative.

d. REPORTS FOR INSPECTION AND TESTING OF CONCRETE

- During concreting operations, the contractor shall conduct inspection and testing as described under the list of mandatory tests in this volume and all reports thereon shall be submitted in summary form to the Owner.
- Before commencement of the work the contractor shall prepare working schedules of concreting giving dates and rate of pour for each item of work and submit the same to the Owner for approval.
- Before bringing to the site, all materials for cement concrete shall be approved by the Owner. All approved samples shall be deposited in the office of the Owner before placing orders for the materials with suppliers the materials brought on to the work shall conformin every respect to their approved samples.
- Fresh samples shall be deposited with the Owner whenever type or source of any material changes the contractor shall check each fresh consignment of materials as it is brought on to the works to ensure that they conform to the specification and / or approved sample.
- Contractor has to submit procedure for Test carried out at their Factory/Site as per relevant IS codes:
  - Cube Test for RCC.
  - Slump Test.
  - Sand test for RCC/PCC/Cement mortar.
  - Compressive test for Concrete.
  - Sample Test.

- All Standard tests for Aggregates as per CPWD standards.
- Bricks Class designations, strength, water soaking, moisture tests etc.

5.8 Requirement of Environment, Health & safety (EHS) management system to be compliedby the Contractors.

The Contractor shall ensure that the Environment, Health & Safety (EHS) requirements are clearly understood & faithfully implemented at all levels at site.

The Contractor shall promote and develop consciousness for Safety, Health and Environment among all personnel working for the Contractor. Regular awareness, program site meetings shall be arranged on EHS activities to cover hazards involved in various operations during construction.

The Contractor shall arrange all suitable first aid measures such as First Aid Box, trained personnel to give First Aid, stand by Ambulance or Vehicle and shall install fire protection measures such as: adequate number of steel buckets with sand and adequate fire extinguishers to the satisfaction of the Owner.

Contractor shall ensure deployment of appropriate equipment and appliances for adequate safety and health of the workmen and protection of surrounding areas.

Hazardous and/or toxic materials such as solvent coating or thinners shall be stored inappropriate containers.

All hazardous materials shall be labelled with the name of the materials, the hazards associated with its use and necessary precautions to be taken.

Contractor shall ensure that during the performance of the work, all hazards to be health of personnel have been identified, assessed and eliminated.

All persons deployed at Site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials substances and wastes. Contractor shall not dump, release or otherwise discharge or dispose of any such materials without the express authorization of the Owner.
The Contractor shall ensure that all their staff and workers including their subcontractor(s) shall wear Safety Helmet, jacket and Safety shoes. Contractor shall also ensure use of safety belt, protective goggles, gloves etc. by the personnel as per job requirements. All these gadgets shall conform to relevant IS specifications.
Otherwise penalties shall be incorporated due to non-conformance.

Contractor shall ensure well equipped with trained caretaker and material for complementary nutrition, cleaning, personal hygiene, sleeping and medical aid.
All worker employed shall be screened and contagious disease free and shall have appropriate Personal Protective Equipment (PPE).

Site security

- Contractor shall make adequate security arrangement to ensure that the local inhabitants and the stray cattle are not exposed to the potential hazards of construction activities. Round the clock security personnel will be appointed to restrict entry of unwanted people to the site.
- Security personals shall maintain the register for materials, equipment & labour

5.9 Technical Specification of Silos

Parameters	Technical Specifications Required for Silos
Number of Silos	1
Capacity (MT)	5000
Total Capacity	5000
Product Density (Kg/cum)	800
No. of rings	14
Gauge Thickness (mm)	By Bidder
Sheet per ring	24
Eave Height (meter)	16.02
Diameter (Approx.)	20.63
Galvanization (gsm)	450
Wind Velocity (kmph)	177
Seismic Resilience	Depending on seismic zone
Corrugation pitch (inches)	4.09
Corrugation depth(inches)	0.47
No. of stiffeners	54
Inside ladder	Yes
Outside ladder with cage	Yes
Roof ladders with handrail	Yes
Aeration system with fans	Double H-type
Sweep Auger	10.31 meters with 7.5 HP motor
High Level sensor for auto cut-off during loading	Yes
Steel Grade for Wall sheet and stiffeners	ASTM A-653/Equivalent
Temperature Monitoring System	Yes
Roof Exhaust Fan	3/3 Silo

Discharge Gate	Yes
Receiving Hopper	Yes
Bucket Elevator	Yes
Conveyor	Chain
In feed speed (tph)	75
Outfeed speed (tph)	10
Pre-cleaner capacity (tph)	75
Chutes & Ducting	Yes
Catwalk with guiding rails	Yes
Electrical Panels, wiring with PLC	Yes
Delivery Time(weeks)	4 Months

5.10 List of approved vendors

a. Plumbing and Water Supply

Particulars	**Name of Vendors**	**Required approved make of HAFED for oil mill**
Plumbing & Water supply	C I. pipes & fittings -as per - is 1729:1979	B.I.C., NECO or equivalent
	Vitreous chinaware - sanitary appliances as per is:2556 – 1974	Hindustan Sanitary ware/ Parryware/ Neycer/ CERA / Jaquar/Kerovit –Kajaria/ H&R Johnson
	Taps & faucets	Seiko/ Senior/ Nice/ CERA/ Hindware PREMIUM MAKE - Jaquar/ Hindware/ Plumber/ Parryware/ H & R Johnson /Swastika enterprises
	G.I. pipes & fittings	Pipes -Tata, Sail, JSW, Jindal: Fittings - HB:Valves – Zoloto, Sant valves/ JSW/
	PVC pipes & fittings	Sintex for PVC tanks, Pipes and Fittings — Prince/ Finolex / Supreme/ Astral or any ISI Brand, LLC Tanks - Parry ware, Slim line, CERA/ UNIFLEX / ASTRAL UPVC & CPVC pipes
	Centrifugal cast iron pipes & fittings as per is: 3989 — 1984	B.I.C., NECO - ISI brand
	Miscellaneous	Special Taps and CP Fittings - Jaquar / Jupiter Aqua Lines-JAL/ CERA/ & PVC Pipes, /

Particulars	Name of Vendors	Required approved make of HAFED for oil mill
		Supreme, ASTRAL UPVC & CPVC pipes/ Ashirvad, Prince, Kisan.

b. Electrical Supply

Particulars	Equipments	Required approved make of HAFED for oil mill
Utilities	Package type substation including VCBs, Transformer, LT Panel, APFCR	ABB/ Schneider/ Siemens/ L&T
	Ammeter/ Voltmeter/ Other metering device	Conzerv / Siemens/ L&T/ AE
	Rotary Selector switch, Push buttons	GE/ L&T/AE/BCH/Legrand/ Bosch
	CTs & PTs	Kappa / Altran
	HRC Fuses	L&T/ GE/ SIEMENS/ ABB
	LT Panel and Feeder pillars	L&T/ Siemens/ ABB
	MCCBs	ABB / Schneider / Siemens / Legrand
	MCB /RCBO	ABB / Schneider / Siemens / Legrand
	MCB distribution board	ABB / Schneider / Siemens / Legrand
	FRLS Wires	Finolex / V-guard / Havells/ Polycab
	Telephone tag block	I.T.I or KRONE/approved make
	Telephone wires, cables	Delton / Polycab /AMP
	Metal conduit pipes ISI Marked	Vimco /Steel Krafts/BEC
	Switch/Switchbox/Socket/ Fan Regulator	Legrand (Mosaic) / Crabtree (Athena) / MK (Wraparound)
	Exhaust fans	Bajaj/ Havells / Crompton Greaves
	Ceiling fan/ Wall Bracket fan	Bajaj/ Havells / Crompton Greaves
	Terminal Blocks/ Cage clamp/ Connectors	Wago& Controls / Phoenix Contacts
	Multi-function meter	ABB/ Siemens / L&T
	Light fixtures	Wipro / Bajaj / Havells
	Lamps & Tubes	Osram/ Havells/ Bajaj /Philips
	Contactors & Protection Relays	Siemens / L & T/ Schneider/ ABB
	Indicating lamps holder"s filament lamps with resistors	Siemens / L & T/ Schneider/ ABB
	Indicating Instruments	L&T/ Enercon/AE
	Capacitor" banks	Schneider/ L&T/GE

Particulars	Equipment"s	Required approved make of HAFED for oil mill
	Power Factor Correction Relay	Schneider/ L&T/GE
	Control Switches, Protective relays	L&T / Siemens /GEC/Alstom
	Load Manager	Conzerv/ Siemens/ L&T
	V.F.D for all 40HP & 60HP motors (Variable frequency drive)	L & T / Siemens
	HT & LT cables, Control cables	Universal / Gloster / Polycab
	H.T cable termination kits	Raychem / M Seal/ 3M/ Denson
	Cable Glands and Lugs	Dowells / Raychem/ Comet
	Battery pack	Exide / AMCO/ HBL
	Batteries	Exide / AMCO/ HBL
	DG Set i) Engine	Kirloskar/ Cummins/ Caterpillar / Perkins
	ii) Alternator	Kirloskar / Stamford / Lareysomer
	iii) acoustic enclose	Jakson/ Subash/ Bhaskar
	Load break switch & switch fuse units, fuse base HRC fuses, HRC control fuses	Siemens/L&T/ABB
	Changeover switches	L&T/ABB/Siemens
	Reyrolle metallic plug & socket	Legrand / Schnieder / MK
	PVC Tapes	Bhor /Steel Grip
	Junction boxes & Accessories	PEI – IS quality
	Lightning preventer	INE/LPI/ERICO
	Cable gland (brass) Nickle Plated, (double compression For Flame proof area)	BALIGA/SUDHIR/FCG
	UPS	Emerson/ Consul/ APC/
	LAN Cables UTP Cat-5	AT & T/ Amp/ D link/ Delton
	20A Metal Clad Industrial 3 pin socket outlet & plug with 20A M.C.B. controlling socket outlet. All housed in 16 SWG CRCA sheet steel painted with 2 coats of final paint.	Legrand / Schnieder / MK
	PVC Rigid Pipes	AVON NOVA PLAST/ FINOLEX/VIP
	Hot Dipped Galvanized Octagonal Street Light Poles	Bajaj / Transrail/ Surya/ Schreder
	Electronic Ballast	Wipro / Bajaj / Havells
	Pumps	Crompton/ Kirloskar

Package – 2 Plant and Machinery

	150 Mt. Oil Mill Machine Descriprtion			
S.No	Machine Description	Quantity	Rate	Amount
1	Seed Unloadin Plateform Size 15 feet x 15 feet	1		
2	Alivator 12" Bucket 8 Mtr. Hight	1		
3	Seed Cleaner	1		
4	Alivator 12" Bucket 8 Mtr. Hight	1		
5	Silo 5000 Mt, Capcity G.I	2		
6	Silo bottom Belt convyer	1		
7	Elivator 6 Mtr Hight 8" Bucket	1		
8	Day Bin 150 Mt, Capacity	1		
9	Alivator 8" Bucket	1		
10	Raidlor Convyer over head 150 feet day bin to plant	1		
11	Cracker 2 Nos for 300 Mt. capacity	2		
12	Elivator 6 Mtr Hight 8" Bucket	1		
13	Storage tank 25Mt. each capacity M.S for flack seed storage	3		
14	Elivator 6 Mtr Hight 8" Bucket	3		
15	Over Head Screw convyer on kolhu line 600 feet	6		
16	Kolhu Donga M.S 25 kg capacity	300		
17	Motor 40 HP @ 2.5 Lakh	6		
18	Ghani Raidlor Approx 600 feetx3800	1		
19	Main Ghani Raidlor 100 feet x 3800	1		
20	Bulk Flow for final Ghani Convey to Plateform 40 feet x 6000Rs	1		
21	Expeller Plate form 50 x 70 feet @ 600	1		
22	Expeller screw conveyor for all expeller press 60 feet x 6	6		
23	Expeller first press 48" x 8"	6		
24	Expeller Second Press 48" x 7/1.5	5		
25	Expeller Thied Press 48" x 7	5		
26	Expeller Fourth Press 48" x 6.5"	5		
27	Expeller Fifth Press 48" x 6"	5		
28	Elevator for all presses	5		
29	Raidlor Chain for all press 250 feet x 3800	5		
30	Motor 75 HP	6		
31	Motor 60 HP	5		
32	Motor 40 HP 15 @ 2.5 Lakh	15		
33	Filter 30"x 30"	8		
34	Bottle Filling fully Machine Automatic	1		
35	Pouch M/C Single Head Samarpan	1		
36	R/O Plant 250 Ltr/hr	1		
37	Air compressure	1		
38	V.FD @ 5 lakh	32		

39	G.L.C Machine (Oil testting)	1		
40	Storage Tank 50 Mt. /M.S	2		
41	Storage Tank M.S 400 Mt./M.S	2		
42	Charan 10 Mt. for blending oil	2		
43	Motor 5 H.P	18		
44	Motor 3 H.P	30		
47	Mono block pump	5		
48	Kolhu patta , counter shaft topi,Upper hopper	150		
49	Kolhu base plate, Nali,	300		
50	Kolhu fitting charge	300		
Total				**0**

The Plant and Machinery for proposed plant is considered as per latest technology. The proposed capacity for plant from 150 MTPD

Some of major Plant and Machinery details

S. No	MACHINERY AND EQUIPMENTS	Capacity	Qty.
1.	**Silos with Pre-Cleaning Section (5000MT X 2 Nos)** **Material of silos „"Galvanization Iron""** Material Holding Capacity: 5000 MT of mustard seeds Dia Approx: 22.85 to 31.97 meter Bin total Height approx.22 to 23meter Bulk density: 769 Kg/CuM Silo Design Standard: ANSI / ASAE 2008 Thickness : 450 GSM Material: Galvanized Iron Ladders for inside and outside (with cage) Temperature monitoring system, double H type Aeration system with fans, high level cutoff, Sweep Auger, roof Exhaust system, Discharge Gate, Receiving Hopper, Bucket Elevator, Chutes & Ducting Catwalk with guiding rails, Electrical Panels, wiring with PLC Conveyor In feed speed (tph): 100 Outfeed speed (tph): 10 Pre-cleaner capacity (tph): 75 Wind Velocity (kmph): 177	10000 MT	1 Set

2.	**Pre-Cleaning Hopper with Loading conveyor with Metal Separation** Hopper Storage Capacity: 5 tons Shape: Rectangle Cone shape bottom Hopper Material of Construction- All MS Structure body With Spill Protection Guard and sensor Loading speed of Conveyor: 15 ton per hour Material of Construction: All MS Structure body Speed: Digital with variable speed Controller Closed Conveyor Dimensions: 3000 X 3000 X 5000 MM Thickness : 2-3 mm All Wire Mess: SS 304 This hopper will intake the raw Mustard seeds from Silo and put in tin to Vibrating Sieve for first stage of cleaning to remove the large particles from the mustard.	300 TPD	1 Set
3.	**Conveyors in Pre-Cleaning system** These conveyors move Mustard Seeds from one Machine to	30 TPD	1 Set

S. No	MACHINERY AND EQUIPMENTS	Capacity	Qty.
	another one in the Pre-Cleaning Process and after pre-cleaning is completed moves the mustard Seeds to Kachi Ghani Oiling Section Material handling Capacity :15 tons per hour Mustard Seed Material of Construction: All MS Structure body. Cover Sheet Thickness: 1.5 mm Speed: Digital with variable speed ControllerClosed Conveyor Set of Bucket conveyor, drag conveyor, screw conveyor, chain conveyor to be installed as per requirement		
5.	**Kachi Ghani Mustard Oil Machine (Kolhu)** Seed Crushing capacity of Single kohlu: 500 kg per day 300 kohlu to make 150 tons per day Material of Construction Drum: All MS, Material of Construction of Body: Cast Iron, Material of Construction other parts MS with Food Grade Paint Coating. Dimensions: 750 X 750 X height 1200 mm Hopper Sheet Thickness: 3 mm Speed: Constant Speed. **Make : Maruti Engineering/Balaji Engineering/Krishna Kolhu Agra**	150 Tons/Day	1 Set
6.	Raidllor Chain used in oil mill & cake for transfer MS Chain of suitable size based on hopper width **365mm X 4 mm thickness**	1000 kg/ hour	400 meter
7.	**Kachi Ghani Mustard Oil Collection System** 1 pipe for each machine connected with large common pipe of Iset of machines each with gravity collection mechanism Material of Construction: MS All pipes lead to a central collection tank of 5 tons. These underground tanks are in kohlu block. Pipe Dia 50 mm to 100 mm Pipe Sheet Thickness: 2 mm to 4 mm Pipe support system also in MS	As Per Requirement	1 Set

S. No	MACHINERY AND EQUIPMENTS	Capacity	Qty.
8.	**Oil Expeller for Second stage final Extraction** **OIL EXPELLER 48×8** • Double reduction gear box with double bearing bracket. • Heavy duty branded ball and roller bearing of ZWZ brand. • Hard material case hardened warm. • Vertical hinged steel fabricated gear. • Long Kettle. • Motor required 75 HP. • Chamber Size 48"" with 8"" bore. **Make: Goyal Expeller/ Guruteg Ludhiana/P.Rai Delhi**	30 tons/Each Expeller/day	6 Nos
9.	**OIL EXPELLER 48×7.1/2** • Double reduction gear box with double bearing bracket. • Heavy duty branded ball and roller bearing of ZWZ brand. • Hard material case hardened warm. • Vertical hinged steel fabricated gear. • Long Kettle. • Motor required 75 HP. • Chamber Size 48"" with 7.1/2"" bore. **Make: Goyal Expeller/ Guruteg Ludhiana/P.Rai Delhi**	25 tons each/day	5 Nos
10.	**OIL EXPELLER 48×7** Double reduction gear box with double bearing bracket. • Heavy duty branded ball and roller bearing of ZWZ brand. • Hard material case hardened warm. • Vertical hinged steel fabricated gear. • Long Kettle. • Motor required 60HP. • Chamber Size 48"" with 7"" bore. **Make: Goyal Expeller/ Guruteg Ludhiana/P.Rai Delhi**	22 tons each/day	5 Nos
11.	**OIL EXPELLER 48×6.1/2** Double reduction gear box with double bearing bracket. • Heavy duty branded ball and roller bearing of ZWZ brand. • Hard material case hardened warm. • Vertical hinged steel fabricated gear. • Long Kettle. • Motor required 60HP. • Chamber Size 48"" with 6.5"" bore. **Make: Goyal Expeller/ Guruteg Ludhiana/P.Rai Delhi**	22 tons each/day	5 Nos
12.	**OIL EXPELLER 48×6.1/2** Double reduction gear box with double bearing bracket. • Heavy duty branded ball and roller bearing of ZWZ brand. • Hard material case hardened warm. • Vertical hinged steel fabricated gear. • Long Kettle. • Motor required 60HP. • Chamber Size 48"" with 6.1/2"" bore. **Make: Goyal Expeller/ Guruteg Ludhiana/P.Rai Delhi**	18 tons each/day	5 Nos

S. No	MACHINERY AND EQUIPMENTS	Capacity	Qty.
13.	**Mustard Oil Storage Tanks** Underground Oil tank 50 MT (2 Nos) Oil overhead tank - 400 MT (2 nos) Overhead Tank for Packaging 50 MT (1) Churn Tank with agitator capacity 10 MT (2 Nos) MS sheet- Thickness – 4 MM Close tank with lid on top and climbing ladder for cleaning purpose.	970 tons	1
14.	**Pumping System for oil transport in tanks and out of tanks in whole Unit** 4 Nos foot mounting 5HP monoblock pump 4 nos Plunger pump used in 4 filter press and 3 kholu blocks (300) kholu These pumps with transfer oil within the unit and to the central storage tanks and transfer the oil till the packaging Line Pumps vary from 1000 liter per hour to 10,000 liter per hour With all sensors valves and fittings complete set with flow meter SCADA Automation System **Make: Kirloskar/Siemens/Texmo**	5 tons/hour	4 Set

S. No	MACHINERY AND EQUIPMENTS	Capacity	Qty.
15.	**Industrial fan cum cooler for cake dryer system in cake go-down** **Make :HVLS Fans/Alfa Fans/Awasthi Industrial Fans**	4 tons/hour	4 Nos
16.	**Mustard Cake filling Line with Hopper and Truck Loading conveyor** Hopper capacity: 15 tons Bag Stitching machine (Manual) Material handling Capacity :5 tons per hour Mustard Cake Material of Construction: All MS structure.	100 tons /Day	1 Set
17.	**Bucket Elevator** **To be used in oil mill seeds and cake section and for other machine**	1000 kg/hour	16 Nos
18.	**Cracker cum Flacker (75 MT each capacity)**	75 TPD	2 Nos
19.	**Oil press filter for mustard oil** **30 Inch X 36 Plates** **Capacity : 15 Ton each** **Make: Guruteg / Goyal Expeller/Sri Ram Engineering**	15 TPD each	8 Nos
20.	MS platform for expeller section Thickness: 10 mm Make : Local fabrication	150 TPD	1
21	**Motor of different Capacities** 75 HP - Expeller first press and second Press 60 HP – Expeller 3rd, 4th, and 5th per expeller 40 HP motor – One motor for Kolhu block 50 Kolhu **Make: ABB / Simens / Crompton/ Kirloskar**	 75 HP Motor 60 HP Motor 40 HP Motor	 11 15 6
22.	**Automatic Bottle filling Line for 1L, 2L, 5L & 15 L Single Bottle Filling line for 1L & 2LAnother Bottle Filling Line for5L & 15 L** **Bottling** Oil Filling, Capping and Labeling line ±1 % Filling accuracy on a single pour Zero Bottle, Zero Filling. Contact Parts made of S.S.304 Versatile and Dynamic Scaling from one size to another container or fill	34-36 BPM for 1 Liter 28-30 BPM for 2 Liter 14-16 BPM for 5 Liter 6-8 BPM for 15 Liter	1 Set each

S. No	MACHINERY AND EQUIPMENTS	Capacity	Qty.
	size, Self-lubricating UHMW-PE guide profile for S.S. slat chain provides low friction wear surface, smooth and tranquil conveying. Safety guard for conveyor gearbox, motor, and pneumatic cylinders. Inbuilt protection against over current, voltage fluctuation, short circuit in A/c frequency drive. **Capping**: Screw capping mechanism **Sticker**: Vertical Sticker Labeling Machine, The machine is used for full/partial wrap around labeling on different size of round bottles 5 liter and 15 liter Can labeling machine Make: **Spheretech Packaging India/Felix Solution**/ GTech Ahmedabad/ Suvina Enterprises/Samarpan/ Felsipack		
23.	**Pouch Packaging Machine for 1 L** Make: Spheretech Packaging India/Felix Solution/ Samarpan/ GTech Ahmedabad/ Suvina Enterprises/ Felsipack	1000 to 1200 Pouches per Hour	1 Set
	Utilities		
24.	Air Compressor Operating at a pressure of 32 Kg/cm2. **Make: Ingersoll/J D Engineers/ELGI/Atlas Copco**	80 cfm	2 No
25.	RO Plant Including Media and Piping **Main body Make: WTE Infra/ Thermax/JD Engineers/Kent**	500 LPH	1 Set
26.	VFD for all 40 HP and above motors. **Make: L**&T / Simens / Havells / Shnidier / ABB	3 phase 230 volt or 420 volt	As required
27.	**Insta Lab with testing facility for Mustard Seed and oil with NIR and GLC Machine**		1 Complete set

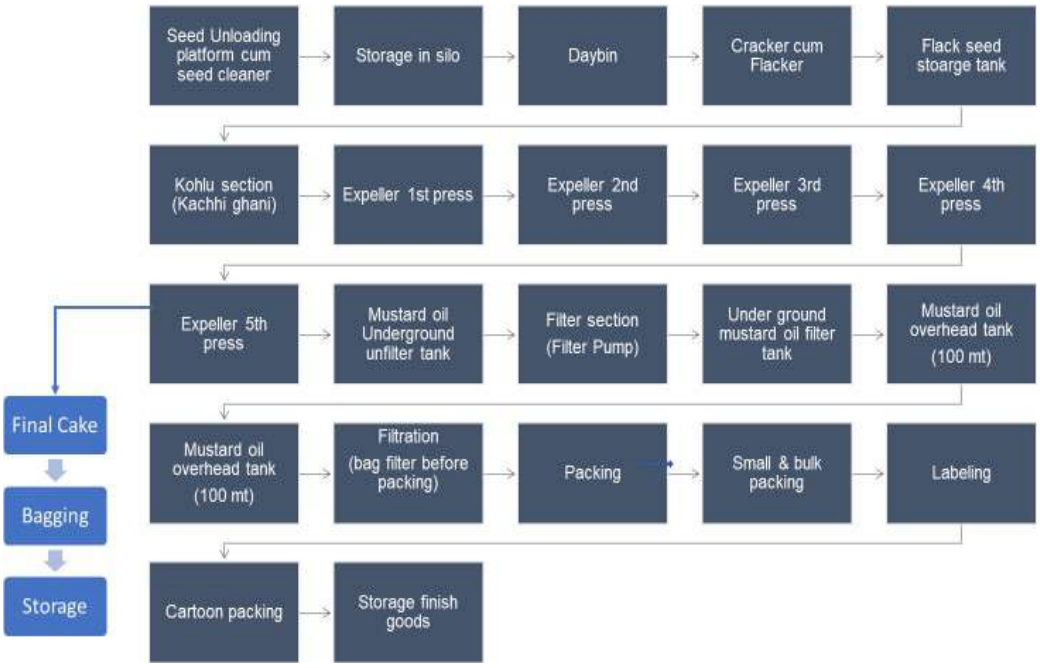
Note: -

- ***The above-mentioned quantities are tentative. The same needs to be finalized by the bidder. No extra cost will be given by the client on supply of any additional of any equipments. As the tender itself explain planning, designing, and engineering of 150 MTPD crushing plant. The bidder has to design themselves to make it operational.***

- ***All the equipment mentioned above should be of latest technology***

- ***All the oil packaging machines should be fully automatic which includes feeding of bottles, filling, capping, labelling, printing, wrapping, etc.***

Kachi Ghani Process Flow Chart



SECTION – 6: CONTRACT AGREEMENT

This Contract Agreement (hereinafter, together with all Annexures attached hereto and forming an integral part hereof, called the "**Contract Agreement"** executed on this___ day of _____ at Panchkula, Haryana by and among:
The Haryana State Cooperative Supply and Marketing Federation Limited, having its registered office at HAFED- Head Office, Sector 5, Panchkula, Haryana- 134108, India (hereinafter referred to as "HAFED" which expression shall unless repugnant to the context or the meaning thereof, be deemed to mean and include its successors and permitted assigns).

AND

_____, a company incorporated and existing under the Companies Act and having its registered office at _____ (hereinafter referred to as "**Contractor**" which expression shall unless repugnant to the context or the meaning thereof, be deemed to mean and include its successors and permitted assigns).

HAFED and Contractor are collectively referred to as the "**Parties**" and individually referred to as a "**Party**".

WHEREAS

A. Therefore, HAFEDhad invited bids from eligible Bidders against Notice Inviting Tender ("**NIT**") vide Adt No._____dated_____for selection of Bidders for planning, engineering, procurement, construction, erection, commissioning, trial run of Mustard Oil Mill having crushing capacity of 150 MTPD expandable to 300 MTPD at Rampura, Rewari on Turnkey Basis ("**Project**").

B. Thereafter, upon evaluation of such bids received, HAFED had issued a Letter of Intent no. _____dated_____("LOI") to the selected Bidder_____at the contract price amounting to Rs._____inclusive of all taxes including goods and services tax ("GST") ("**Contract Price**").

C. Further, the Contractor has also deposited a performance bank guarantee of Rs. _____ with HAFED pursuant to _____ of_____Bank amounting Rs. _____; towards performance guarantee for the due execution of this ContractAgreement.

D. In furtherance of the Contract Agreement, the Parties hereby agree that 5% (five percent) of the total bill value due to the Contractor shall be retained from each approved bill. The said amount shall be released to the Contractor upon the successful completion of the Defect Liability Period.

E. HAFEDhas accepted the bid of the Contractor for the Scope of Work as per Annexure 3 to this Contract Agreement for the sum of Rs._____in accordance with the terms and subject to the conditions herein mentioned.

NOW, THEREFORE, in consideration of the mutual covenants and agreements set forth herein and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereto agree as follows:

1. Definitions and Interpretation

Defined Expressions

Words and expressions defined in the Annexure 1 (GCC), Annexure 2 (SCC) and Annexure 3 (Scope of Work), unless the context otherwise requires, shall have the same meanings when used in this Contract Agreement.

Definition

In this Contract Agreement, except where the context otherwise requires, the following terms shall have the following meanings:

"**Agreement Date**" has the meaning given to such term in the Preamble to this Agreement.

"**Bidding Documents**" means documents submitted by the Contractor pursuant to the Tender Document along with all addendums to the Tender Document and minutes of meeting between the Parties.

"**Contract**" means this Contract Agreement together with all its appendices, attachments, exhibits and schedules and including all modifications between the Parties.

"**GCC**" means Section 3 - General Conditions of Contract of NIT attached as Annexure 1 to this Contract Agreement.

"**SCC**" means Section 4 - Special Conditions of Contract of NIT attached as Annexure 2 to this Contract Agreement.

"**Scope of Work**" means Section 5 — Scope of Work of NIT attached as Annexure 3 to thisContract Agreement.

Interpretation

In this Contract Agreement, unless the context requires otherwise:

a) the headings are inserted for ease of reference only and shall not affect the constructionor interpretation of this Contract Agreement.

b) any reference to any enactment, rule, regulation, notification, circular or statutory provision is a reference to it as it may have been, or may from time to time be, amended, modified, consolidated or re-enacted (with or without modification) and includes all instruments or orders made under such enactment.
c) words in the singular shall include the plural and vice versa.
d) the terms "hereof", "herein", "hereto", "hereunder" or similar expression used in the Contract Agreement mean and refer to this Contract Agreement and not to any particular Clause of this Contract Agreement.
e) In the Contract unless the context otherwise requires any reference to a "Sub-Clause", "Clause" or a "Schedule" is a reference to a sub-clause, clause or a schedule in the Contract Agreement.
f) the words "include" and "including" shall be construed as being by way of illustration or emphasis only and shall not be construed nor shall they take effect as limiting the generality of any foregoing words; and
g) If there is any conflict between any of the provisions in the main body of this Contract and the Schedules, the matter shall be determined in accordance with the following order of priority:
   - the body of this Contract.
   - the Schedules and Appendices; and
   - any change order issued hereunder.

2. Performance of Services

a) The Parties hereby agree that the Contractor shall perform services in relation to the Projectat Rewari, District Rewari. The district Rewari is a city in Indian state of Haryana.
b) The Parties hereby agree that this Contract Agreement shall be governed by the terms and conditions as attached in Annexure 1 (GCC), Annexure 2 (SCC) and Annexure 3 (Scope of Work).

3. Commencement of Contract

a) This Contract shall come into force from the date of acceptance of LOI ("**Start Date**").
b) Until the Agreement Date, the LOI in conjunction with the NIT and Bidding Documents shall constituted the legally binding contract.

4. Commencement of Services

The Contractor shall commence the Services immediately on the Start Date.

5. Expiration of Contract

Unless terminated earlier pursuant to SCC or GCC hereof, this Contract shall expire after the Contractor has performed all his Services as per the terms and conditions envisaged in this Contract Agreement.

IN WITNESS WHEREOF, each of the Parties hereto have caused this Contract to be duly executed by their duly authorized representatives on the day and year first hereinabove written.

For the Haryana State Cooperative Supply and Marketing Federation Limited,

By:_____
Name: _____
Title: _____

For_____

By:_____
Name: _____
Title: _____

In the presence of name, full address & signatures:

i)

SECTION – 7: Appendix

6. Appendix -1- Master Layout Plan

The Site layout plant is placed at Annexure-D

7. Appendix –2: Formats

#	Particulars
Appendix 2 (a)	Checklist Performa for Technical bid
Appendix 2 (b)	Format for Performance Bank Guarantee
Appendix 2 (c)	Power of Attorney for signing of Bid
Appendix 2 (d)	Pro forma for Financial Proposal
Appendix 2 (e)	Pro forma for Bid Letter
Appendix 2 (f)	Details of Bidder
Appendix 2 (g)	List of Working Professionals
Appendix 2 (h)	Declaration of Compliance
Appendix 2 (i)	Details of Similar Projects Carried in last 10 years[1]
Appendix 2 (j)	Format of Bank Guarantee of Mobilization Advance
Appendix 2 (k)	Financial/ Price Bid

Appendix 2 (b)

Format for Performance Bank Guarantee

Performance Bank Guarantee

Note: To best amped in accordance with stamp Actor on stamp paper worth of Rs.100/-(Non-Judicial).

Date.....

Bank Guarantee No.:-
Amount of Guarantee:
Guarantee Cover from: xx.xx.2023 Guarantee
Valid up to: ..... (Extendable)

In consideration of an agreement dated .....(herein after called the said agreement) has been executed between The Haryana State Cooperative Supply and Marketing Federation Limited (HAFED) (herein after called the HAFED) and (herein after called the Contractor)for the work .....on the terms and conditions set out internalizing the said agreement. As mandated by the said Agreement, the Contractor having agreed to produce a bank guarantee for the faithful performance of the entire contract including warranty obligations /liabilities under the said agreement for amounting to Rs.....(- in words).

We (Name & Address of the Bank) having its head office at ..... (hereinafter Referred to as the Bank) do hereby guarantee and undertake to pay. The Haryana State Cooperative Supply and Marketing Federation Limited (HAFED) on demand any and all the amount due and payable by the Contractor against any **loss or damage** caused to or would be caused to or suffered by the HAFED by reason of **breach of any of the terms and conditions** contained in the said agreement by the Contractor to the extent of an amount of Rs.....as aforesaid at any time upto (days/month/year)without any demur, reservation, contest, recourse or protest and/or without any reference to the Contractor.

- We undertake to pay the said. The Haryana State Cooperative Supply and Marketing Federation Limited (HAFED)any amount so demanded shall be conclusive and binding, not with standing any difference between the HAFED and the Contractor or any dispute pending before any court, Tribunal or Arbitrator or any other authority relating there to, our liability under this present being absolute and unequivocal.

  The payments made by us under this band shall be valid discharge of our liability for payment there under and the Contractor has no claim against us for making such payment.

- We under take **not to revoke** this guarantee during its currency **without previous consent of the HAFED** and further agrees that the Guarantee here in contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to been force able till all the dues of the said Agreement and that it shall continue to been force able till all the dues of HAFED under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till the HAFED certified that the terms and conditions of the said Agreement have been fully and properly carried out by the Contractor and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing till the date of it enforcement, we shall be discharged formal liability under this guarantee there after.
- We further agree with the HAFED that the HAFED shall have the fullest liberty without our consent and without effecting in any manner, obligations here under this guarantee to vary any of the terms and conditions of the said agreement or to extend the time of performance of the contract by the Contractor. The HAFED shall have the fullest liberty without effecting this guarantee, to postponed from time to time the exercise of any powers vested in the more of any right which they might have against the Contractor and to exercise the same at any time in any manner and either to enforce or to for beaten force any covenants, contained or implied in the contract between the HAFED and the Contractor or any other course or remedy or security available to the HAFED. The bank shall not be released of its obligation under these presents by any exercise by the HAFED of its liberty with reference to the matter aforesaid or any of them or by reason of any other acts of commission or commission on part of the HAFED or by any other matter or thing what so ever which under law would, but for the provision, have the effect of so relieving the bank.
- The bank also agrees that the HAFED 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 not withstanding any security or other guarantee the HAFED may have in relation to the Contractor"s liabilities.
- This guarantee will not be discharged due to change in the constitution of the bank or the Contractor.
- We_____lastly undertake not to revoke this guaranty during its currency except with the previous consent of the Managing Director of the said HAFED in writing.
- Notwithstanding anything contained herein, this bank guarantee shall be valid till the completion of warranty period or may be extended/ renewed till the completion of the contract or for some other period as may be mutually agreed upon by the HAFED and the Contractor.

Dated the.....Day.....2023 for.....

WITNESS

1 ..... SIGNATURE.....

(Signature with the name in block letters and with designation)

2..... Bank`s Common Seal: -
(Signature with the name in block letters and with designation)

Appendix 2 (c)

Power of Attorney for signing of Bid

Power of Attorney

(To be executed on non-judicial paper of appropriate value as per Stamp Act relevant to place of execution)

Know all men by these presents, We, ... (name of the firm and address of the registered office) do hereby irrevocably constitute, nominate, appoint and authorise Mr/ Ms (name), ... son/daughter/wife of ....and presently residing at ...., who is presently employed with us and holding the position of .... , as our true and lawful attorney (hereinafter referred to as the "**Attorney**") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Bid for the planning, engineering, procurement, construction, erection, commissioning, trial run at Rewari, (the "**HAFED**") pursuant to the NIT document no.__________issued by HAFED" , including but not limited to signing and submission of all applications, Bids and other documents and writings, participate in Bidders and other conference and providing information/ responses to HAFED, representing us in all matters before HAFED , signing and execution of all contracts including the Contract Agreement and undertakings consequent to acceptance of our Bid, and generally dealing with the "HAFED" in all matters in connection with or relating to or arising out of our Bid for the said Project and/or upon award thereof to us and/or till entering into the Contract Agreement with HAFED.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done byus.

IN WITNESS WHEREOF WE, ... , THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS ....DAYOF 2023.

For ....

(Signature, name, designation and address of person authorized by Board Resolution (in case of Firm/ Company)/ partner in case of Partnership firm

Witnesses:

1.

2.

Accepted Notarised

- -

(Signature Name, designation and address of Attorney)

Notes:

- *The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants (s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.*
- *Wherever required, the Applicant should submit for verification the extract of the charter documents and documents such as a board or shareholders' resolution/ power of attorney in favour of the person executing*

this Power of Attorney for the delegation of power hereunder on behalf of the Applicant

□ *For a Power of Attorney executed and issued overseas, the document will also have to be legalized by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney is being issued. However, the Power of Attorney provided by Bidders from countries that have signed the Hague Legislation Convention, 1961 are not required to be legalized by the Indian Embassy if it carries a conforming Appostille certificate.*

Appendix 2 (d)

Pro forma for Financial Proposal

To

Subject: "Planning, engineering, procurement, construction, erection, commissioning, trial run of Mustard Oil Mill having crushing capacity of 150 MTPD expandable to 300 MTPD at Rampura Rewari, District Rewari on Turnkey Basis -RFP– Submission of Financial Bid

Dear Sir,

I,_____, present the financial proposal for the bid for planning, engineering, procurement, construction, erection, commissioning, trial run at Rewari, on EPC work in response to NIT document No._____, confirming that:

I agree to all the terms and conditions set forth in this NIT document. If awarded the Project, theimplementation of the Project shall also conform to the terms and conditions, as well as specifications indicated inthe NIT documents and as finally indicated by the Evaluation Committee.

Rates quoted in this Bid is for destination process inclusive of all taxes, levies duties (except service tax), packing, forwarding, freight, insurance, loading, unloading, supply, installation, commissioning, and any/all charges for successful Engineering, Construction of Supply & Installation of "Project" Site.

Under no circumstances shall escalation in the prices quoted against various items of this NIT Document be entertained. The details quoted herein stand valid for at least six months from the date of submission of the Bid:

(A) Table 5.A: Price Quote for EPC Work Contract

S. No	Particulars
1	Basic Price, GST and other taxes etc

Note:

i. Total EPC work Contract Price including all taxes and duties shall be considered for evaluation of bid (excluding tax).
ii. Detailed BOQ has been attached herewith as an Annexure.
iii. No variation due to change in forex rate shall be admissible.
iv. Necessary deductions would be applicable as per the applicable laws of income tax and work contract tax
v. Payment shall be made in Indian National Rupees (INR) only. Bidder(s) has to quote their rate in INR only
vi. Arithmetical errors will be rectified on the following basis: If there is a discrepancy between words and figures, the amount written in words will prevail.
vii. The Bidder shall provide:

a. Details of recovery/yield of product
b. Details of utility consumption of each component shall be provided

viii. The above taxes and duties quoted by the Bidder will be only on account of direct transaction between HAFED("HAFED") and Contractor. Any other expenditure on account of taxes and duties by Bidder and transaction between Contractor and their Supplier/Sub-Contractor etc. shall not be quoted separately in Financial Proposal. In case any Bidder does not mention anything on account of taxes in the Financial Proposal under any column that will be considered to be NIT.

Appendix 2 (e)

Pro forma for Bid Letter

Date: / /

To

Dear Sir,

We, the undersigned, have considered and complied with the "instruction to Bidders" and have accepted the terms stipulated in the NIT documents. The scope of work shall include but not be limited to planning, engineering, procurement, construction, erection, commissioning, trial run at Rewari.

Also, we have familiarized ourselves with the local site condition, metrological, climatological and environmental conditions which may exist in the installations area. In full cognizance and compliance with these aforesaid conditions and the regulations of local government authorities, we the undersigned do hereby offer for the planning, engineering, procurement, construction, erection, commissioning, trial run at Rewari. The work covered under the Bid shall be completed to the entire satisfaction of yourselves or your representative in conformity with the NIT documents at the prices accompanying this Bid.

It is a term of our Bid that the Project shall be handed over installed, interconnected, tested, commissioned and modified and shall achieve commissioning not later that.....Days from the date of issue of LOI. This shall be the essence of Contract between us.

We further agree and stipulate as follows:

1. Until the final Contract Documents are prepared and executed, the NIT documents, with any modification, additions, and deletions agreed with the The Haryana State Cooperative Supply and Marketing Federation Limited ("HAFED") and your written acceptance thereof, shall constitute a binding Contract between us, upon terms contained in aforesaid documents and the Financial Proposal accompanying the Bid.
2. That the "HAFED" will not supply and material. In all respects we shall be fully self-sufficient in the Performance of the Work.
3. I/We understand that you are not bound to accept the lowest of the Bid you may receive.
4. I/We shall make available to the "HAFED" any additional information it may find necessary or require supplementing or authenticate the qualification statement.
5. I/ We acknowledge the right of the "HAFED" to reject our Bid without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever
6. I/ We understand that you may cancel the bidding process at any time and that you are neither bound to accept any Application that you may receive nor to invite the Applicants to Bid for the Project, without incurring any liability to the Applicants.
7. I/ We further certify that in regard to matters relating to security and integrity of the country, we or any of our Associates have not been charge-sheeted by any agency of the Government or convicted by a Court of Law.
8. I/ We further certify that no investigation by a regulatory authority is pending either against us.
9. I/ We undertake that in case due to any change in facts or circumstances during the bidding process, we are attracted by the provisions of disqualification in terms of the provisions of this NIT; we shall intimate the "HAFED" of the same immediately.
10. We understand that the selected Bidder shall be an existing Company incorporated under the Indian Companies Act, 1956.

11. I/ We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the “HAFED” in connection with the selection of Applicants, selection of the Bidder, or in connection with the selection/ bidding process itself, in respect of the above-mentioned Project and the terms and implementation thereof.
12. I/ We agree and undertake to abide by all the terms and conditions of the NIT document.
13. We also undertake not to vary/ modify the Bid during the validity period or any extension thereof.
14. We represent that we have fully satisfied ourselves as to the nature and location of the Project having in mind the general and local conditions and other factors incidental to the Performance of the works and the costs there of.
15. We further represent that from our own investigation of the Site of the Project we have fully satisfied ourselves as to the character, quality other soil conditions to be encountered in the Performance of the works and we understand and represent that any failure to acquaint ourselves in respect of these matters and the other factors and conditions as set forth shall not relieve us from any responsibility for estimating properly the difficulty and cost of successfully performing the works.
16. We also acknowledge and accept that you shall not pay for any discontinuance or low Performance rate resulting from malfunction of / or inadequacy of our equipment, instruments or personnel.
17. We agree to return to you all reports and technical data provided for our use in preparing this Bid and in the subsequent conduct of the works. We undertake that we will not use the same for any other work/purpose.
18. We further represent that we have familiarized ourselves with all the terms and provisions of the various parts of the bidding documents and that in making our Bid, we do not rely upon any representation made by any agent or employee of yourselves in respect of the terms of the bidding documents or the nature of the Performance of the works.
19. We submit this Bid with the full understanding that our Bid fully complies with all the terms and conditions of the NIT documents including Bid evaluation criteria and that no deviation/exception to the NIT documents have been taken by us. We also agree that in case we have taken any exceptions/ deviations to the NIT documents, the “HAFED” will be free to reject our offer on account of such exceptions/deviations.

Date: ……/……/2023

Signatures: _____

In the capacity of: -

Duly Authorized to Sign Tenders for and on behalf of (Name & Address)

Appendix 2(f)

Details of Bidder

1. General
   a. Name of Company:
   b. Country of Incorporation:
   c. Address of the corporate headquarters and its branch office(s), if any, in India:
   d. Date of incorporation and/or commencement of business:

2. Brief description of the company including details of its main lines of business and proposed role andresponsibility in this project.
3. Details of Joint Venture/Consortium member & Lead Bidder.

4. Details of individual (s) who will serve as the point of contact/communication for the Company:
   a. Name:
   b. Designation
   c. Company:
   d. Address:
   e. Telephone Number:
   f. E-Mail Address:
   g. Fax Number:

5. Particulars of the Authorized Signatory of the Bidder:
   a. Name:
   b. Designation:
   c. Address:
   d. Phone Number:
   e. Fax Number:

Appendix 2 (g)

List of Working Professionals

No.	Name of person	Designation	Qualification	Experience

Appendix 2 (h)

Declaration of Compliance

Date:__/__/____

To

Subject: Declaration of Compliance for the bid for planning, engineering, procurement, construction, erection, commissioning, trial run at Rewari, on EPC.

Dear Sir,

This is to certify that I,_____, am the duly authorized signatory appointed on behalf of my organizationto submit this bid. The Power of Attorney along with Board Resolution is attached herewith.

I agree to all the terms and conditions set forth in this NIT Document.

If awarded the job, the job work shall also conform to the terms and conditions, as well as specifications indicated in the NIT documents and as finally indicated by the Evaluation Committee.

I further certify that all the information provided in this document in accurate to the best of my knowledge.

Signature:	Designation:
Name:	Organization:
Address:	Phone:
Email:	Seal of the Company

Appendix 2 (i)

Details of Similar Projects

S No	Project Name	Name of the Employer	Description of the services provided.	Project Value	Total Payment Received	Date of completion	Capacity/ Details of the line	Remarks

(Signature)
Note:

1. The above details shall be certified by Authorized Signatory who has PoA for signing the bid.
2. The Applicant should enclose completion certificates in support of the project experience.
3. Project Experience without Completion Certificates shall not be considered for evaluation
4. Completion Certificates issued by Executive Engineer and above shall be considered for evaluation in case of projects executed for Government Entities
5. In case of projects Executed for Private Sector, Certificates signed by the Officials representing Senior Management Shall be considered
6. Similar project shall be as per the eligibility criteria mentioned in the RFP

Appendix 2 (j)

Format of Bank Guarantee of Mobilization Advance

Note: To be stamped in accordance with Stamp Actor on stamp paper worth of Rs.100/-(Non-Judicial).

Date…

Bank Guarantee No.:

Amount of Guarantee:

Bank Name & Address:

Applicant
Beneficiary

Guarantee Cover from:

Guarantee Valid upto: (Extendable)

This Deed of Guarantee made this_____day of_____,2023 by Bank of _____Constituted and established under the banking companies(Acquisition and Transfer of undertakings) Act,1970 having its head office at_____and one of our branches at_____hereinafter referred to as the "Bank" which expression shall unless repugnant to the context and meaning thereof be deemed to mean and include its successor in business and assigns in favour of The Haryana State Cooperative Supply and Marketing Federation Limited (“HAFED”) having its registered office at Sector 5, Panchkula, Haryana(here in after referred to as "HAFED") which expression shall unless repugnant to the context and meaning there of be deemed to mean and include its success or in business and assigns.

Whereas,_____having its registered office at _____Here in after called" contractor" has under taken in pursuance of an agreement dated.....(herein after called the said agreement) has been executed between The Haryana State Cooperative Supply and Marketing Federation Limited (“HAFED”)for purchase of _____on the terms and conditions set out inter-alia in the said agreement. As mandated by the said agreement we understand that, according to the conditions of the contract, an **advance payment** of Rs……(Rupees…….only) [representing ……..**age%** of the amount of the contract,] is to be made against an advance payment guarantee.

We (Name & Address of the Bank) having its head office at…….

(herein after referred to as the Bank) do hereby guarantee and undertake to pay The Haryana State Cooperative Supply and Marketing Federation Limited ("HAFED") on demand and all the amount not exceeding in total the ABG amount of Rs……at any time upto…..(days/month/year) without anyemur, reservation, contest, recourse or protest and/or without any reference to the contractor.

- We undertake to pay the said The Haryana State Cooperative Supply and Marketing Federation Limited ("HAFED") any amount so demanded shall be conclusive and binding, notwithstanding any difference between the HAFED and the Contractor or any dispute pending before any court, Tribunal or Arbitrator or any other authority relating there to, our liability under this present being absolute and unequivocal.
- The payment so made by us under this bank shall be valid discharge of our liability for payment there under and the Contractor has no claim against us for making such payment.
- This guarantee is not assignable or transferable without our and applicant"s prior written consent.
- We undertake nor to revoke this guarantee during its currency without previous consent of the HAFED and further agrees that the Guarantee herein contained shall remain in full force and effect during the period. Unless a demand or claim under this guarantee is made on us in writing till the date of its enforcement, we shall be discharged from all liability under this guarantee the reafter. The original of this guarantee shall be returned to us upon expiry. However, after our payment of the whole of the Guarantee Amount or the, whichever comes first, his guarantee will be come null and void, whether returned to us or not.
- Bank also agrees that the HAFED 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 not with standing any security or other guarantee the HAFED may have in relation to the Contractor"s liabilities.
- This guarantee will not be discharged due to change in the constitution of the bank or the contractor.
- We_____lastly undertake not to revoke this guaranty during its currency except with the previous consent of the Managing Director of HAFED in writing.
- Notwithstanding anything contained herein, this bank guarantee shall be valid till the completion of warranty period or may be extended / renewed till the completion of the contractor for some other period as may be mutually agreed upon by the HAFED and the contractor / bidder.
- This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG), 2010 revision, ICC Publication No. 758.

"Notwithstanding anything contained herein above"

1. Our Liability under this Guarantee is restricted to Rs……. /-(Rupees.....).
2. This Bank Guarantee shall remain in force upto..... , 2023.
3. We are liable to pay the guaranteed amount or any part thereof under the bank guarantee only if you serve upon us written claim on demand on or before claim dated……, 2023 and unless a demand orclaim is made on or before dated_____, 2023 all your rights under this guarantee shall stand extinguished and we shall be discharged from all liabilities thereafter.
4. This Guarantee will be operative when accompanied with advice (SFMS) issued from the "Advising Bank".

Dated the…….Day……..2023 for……

Signatures & Seal of Guarantor / Bank

WITNESS

1 ……

(Signature with name in block letters and designation)

2……

(Signature with name in block letters and designation)

Annexure A: Specification for Kachchi Ghani Mustard Oil

Sr. No.	Parameter	Value	Quality Cut
1	Moisture & Insoluble Impurities %age by wt.	0.25 Max.	---
2	Colour in 1/4" cell (Y+5R)	50 Units Max.	---
3	Specific gravity (30/30c)	0.907-0.910	---
4	Refractive index at 40 ^{O} c	1 .4646-1 4662	---
5	Saponification value	168-177	---
6	Iodine value	98-112	---
7	USM %age by wt.	1.20 Max	---
8	Acid value (%age by wt.)	1.5 Max	> 1 5% to 1.8% quality cut beRs.100/- per MT &> 1.8 to 2.0%- quality cut be Rs.200/- MT
9	Bellier test (Turbidity Temp)	23 -27.5 ^{o}c	---
10	Poly Bromide test	Negative	---
11	Test for Hydrocyanic Acid	Negative	---
12	Test for Argemone Oil (TLC)	Negative	---
13	Test for Mineral Oil (TLC)	Negative	---
14	Test for Rancidity	Negative	---
15	Suspended and Foreign Matter	Negative	---
16	Taste and flavour	Characteristic	---
17	%age of Natural Oil (as ATC) wt. %age	0.27-0.60	Below 0.27% to 0.25% quality cut be Rs,100/- per MT. Below0.25% to 0.20 quality cut be Rs.200/- per MT
18	Shelf life	12 months	---

Annexure B: Key Performance Parameters

1. Crushing Capacity Mustard Seed (MT/Day): 150 Tonnes per day (TPD) expandable to 300 Tonnes perday (TPD)
2. Recovery of Oil per qtl. Of Mustard Seed: 33-36%
3. Oil Percentage in Mustard Cake: Less than 4 to 5%
4. Oil cake: 62-67% on weight basis
5. Thickness of Mustard Cake 3 to 4 mm
6. Quality of Mustard Oil Produced: As per the design E.O - 0.26
7. Process Loss in percentage: 0 %
8. Capacity Utilization: 85-95%

Annexure C: Bill of Quantities (BoQs)

	NAME OF WORK : HAFED OIL MILL- RAMPURA			
	SUB WORK : BILL OF QUANTITIES			
Sl.No.	Description	Unit	Rate	QTY
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing f sides and ramming of bottoms, lift up to 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.			
a	All kinds of soil.	cum		9106.25
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work below plinth level and up to Floor IV level:			
a	1 :4: 8 (1 Cement : 4 coarse sand (zone-III) : 8 graded cum stone aggregate 40 mm nominal size)	cum		1913.17
3	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement-All work up to plinth level:			
a	1 : 1. 5: 3 (1 cement : 1. 5 coarse sand (zone-III): 3 cum graded stone aggregate 20 mm nominal size)	cum		329.00
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm indepth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	cum		2670.82
5	Excavating, supplying and filling of local earth (including royalty) cum by mechanical transport up to a lead of 1 km also including ramming and watering of the earth in layers not exceeding 20 cm in trenches, plinth, sides of foundation etc. complete.	cum		11859.30
6	Carriage for 5.0 km lead by Mechanical Transport including loading, Unloading and stacking.	cum		11859.30
7	Construction of granular sub-base by providing Material as per Grading III (Table 400-1 of MORT&H 5th revision) mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per technical clause 401 of MORT&H specifications			
a	Grading I material	cum		4184.00
8	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of			

	Engineer-in-charge.(Note :- Cement content considered in this item is @ 330 kg/cum. Less cement used as per design mix is recoverable. However no extra payment shall be made if excess cement is used as per design mix).			
a	All works up to plinth level	cum		4685.13
9	All works above plinth level up to floor IV level	cum		589.40
10	Centering and shuttering including strutting, propping etc. and removal of form for			
a	Foundations, footings, bases of columns, etc. for mass concrete	sqm		6583.83
b	Suspended floors, roofs, landings, balconies	sqm		1234.72
c	Lintels, beams, plinth beams, girders, bressumers and cantilevers	sqm		4133.29
d	Columns, Pillars, Piers, Abutments, Posts and Struts	sqm		4535.81
11	Steel reinforcement for R.C.C. work, where not included in the complete rate of RCC, including straightening, cutting, bending, placing in position, binding, wastage, overlaps, welded joints,spacer bars, chairs, stays, hangers and annealed steel wire etc.complete in all respect below and above plinth level			
a	Thermo-Mechanically Treated bars of grade Fe-500D kg or more.	kg		576088.72
12	Brick work with common burnt clay modular bricks of class designation 7.5 in foundation and plinth in:			
a	Cement mortar 1:4 (1 cement: 4 coarse sand)	cum		277.28
13	Brick work with common burnt clay non-modular bricks of class designation 7 .5 in superstructure above plinth level up to floor IV level in all shapes and sizes in :			
a	Cement mortar 1:4 (1 cement: 4 coarse sand)	cum		829.05
14	Half brick masonry with common burnt clay non-modular bricks of class designation 7 .5 in superstructure above plinth level up to IV level.			
a	Cement mortar 1:4 (1 cement: 4 coarse sand)	sqm		534.74
15	15 mm cement plaster on rough side of single or half brick wall of mix:			
a	1 :6 (1 cement: 6 coarse sand)	sqm		7591.39
16	12 mm cement plaster of mix :			
a	1 :4 (1 cement: 4 coarse sand)	sqm		5433.07
17	6 mm cement plaster of mix			
a	1 :3 (1 cement : 3 fine sand)	sqm		995.95

18	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	sqm		9789.39
19	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	sqm		2926.31
20	Wall painting on a cement plaster surface with acrylic emulsion paint of approved brand and manufacture to give an even shade :			
a	Two or more coats on new work	sqm		5440.31
21	Finishing walls with Acrylic Smooth exterior paint of required shade			
a	New work (Two or more coat applied @ 1.67 litre/1 O sqm over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm)	sqm		7591.39
22	Painting two coats excluding priming coat with synthetic enamel paint in all shades on new wood work or metallic or plastered or concrete surfaces to give an even shade.	Sqm		162.00
23	Providing and injecting chemical emulsion for PRE- sqm CONSTRUCTIONAL anti termite treatment and creating a chemical barrier under and around the column pits, wall trenches, basement excavation, top surface of plinth filing junction of wall and floor, along with the external perimetre of building, expansion joints surrounding of pipes and conduit etc, complete (plinth area of the building at ground floor only shall be measured) using Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	sqm		886.60
24	Providing and laying damp-proof course with cement concrete 1 :2:4 (1 cement : 2 coarse sand (zone-III): 4 graded stone aggregate 12.5mm nominal size)			
a	40mm thick	sqm		280.96
25	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1 :3 (1 cement : 3 coarse sand) and jointing with grey cement slurry@ 3.3kg per sqm, including pointing in white mixed with pigment of matching shade complete.	sqm		1115.33
26	Providing and laying Ceramic glazed floor tiles of size 300x300 mm (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick bed of cement mortar 1 :4 (1 Cement : 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including pointing the joints with white cement and matching pigments etc., complete.	sqm		125.77
27	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS: 15622, of			

	approved make, in all colours and shades, laid on 20mm thick cement mortar 1 :4 (1 cement : 4 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.			
a	Size of Tile 600x600 mm	sqm		817.99
28	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1 :4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge.			
a	Polished Granite stone slab jet Black, Cherry Red, Elite Brown, Cat Eye or equivalent.	sqm		172.19
29	Providing and fixing ISi marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.			
a	35 mm thick including ISi marked Stainless Steel butt hinges with necessary screws	sqm		26.41
30	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / panelling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge.			
a	For fixed portion			
b	Powder coated aluminium (minimum thickness of powder coating 50 micron)	kg		1058.66
31	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item):			
a	With float glass panes of 5 mm thickness (weight not less than sqm 12.50 kg/sqm)	sqm		365.61
32	For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be			

	paid for separately)			
a	Powder coated aluminium (minimum thickness of kg powder coating 50 micron)	sqm		90.93
33	Providing and fixing aluminium tubular handle bar 32 mm outer dia, 3.0 mm thick & 2100 mm long with SS screws etc .complete as per direction of Engineer-in-Charge.			
a	Powder coated minimum thickness 50 micron aluminium tubular handle bar	each		21.00
34	Providing and fixing aluminium tower bolts, ISi marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete			
a	200x10 mm	each		26.00
35	Providing and fixing ISi marked aluminium butt hinges anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with necessary screws etc. complete:			
a	100x63x4 mm	each		81.00
36	Providing & fixing false ceiling at all heights with GRG (Glass Fibre Reinforced Gypsum) false ceiling tiles of Size 595x595 mm of approved texture, design and patterns having moisture content less than 2%, humidity resistance of 99%, NRC0.50 to 0.75 as per IS 8225:1987, Non combustible as per BS 476 (part 4)-1970 and light reflectance of 85% (minimum) to be laid in true horizontal level suspended on inter-locking metal T-Grid of hot dipped galvanised iron section of 0.33mm thick (galvanized @ 120 grams per sqm including both sides) comprising of main-T runners of size 15x32 mm of length 3000 mm, cross - T of size 15x32 mm of length 1200 mm and secondary intermediate cross- T of size 15x32 mm of length 600mm to form grid module of size 600 x 600 mm, suspended from ceiling using galvanised mild steel items (galvanizing@ 80 grams per sqm) I.e. 50 mm long, 8 mm outer diameter M-6 dash fasteners, 6 mm dia fully threaded hanger rod up to 1000 mm length and L-shape level adjuster of size 85x25x2 mm. Galvanised iron perimeter wall angle of size 24x24x0.40 mm of length 3000 mm to be fixed on periphery wall / partition with the help of plastic rawl plugs at 450 mm centre to centre and 40 mm long dry wall wood screws. The work shall be carried out as per specifications, drawing and as per directions of the Engineer-in-Charge.			
a	With semi perforated 12 mm thick micro tegular edged GRG false ceiling tiles.	sqm		796.44
37	Providing and laying in situ seven course water proofing treatment with APP (Atactic poly-propylene) modified Polymeric membrane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 Kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 1.5 mm thick of 2.25 Kg/sqm weight consisting of five layers prefabricated with centre core as 20 micron HMHDPE film sandwiched on both sides with	sqm		1443.68

	polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 1 O grouted with cement mortar 1 :3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1 :3 (1 cement : 3 fine sand) and finished neat .			
38	Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement sluny mixed with water proofing cement compound consisting of applying (a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound@ 0.253 kg/ sqm This layer will be allowed to air cure for 4 hours. (b) Second layer of sluny of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours. The rate includes preparation of surface, treatment and sealing of all joints corners, junctions of pipes and masonry with polymer mixed slurry.	sqm		127.77
39	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary tainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners , stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge, (for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.).	kg		50.00
40	Making plinth protection 50mm thick of cement concrete 1 :3:6 (1 sqm cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and consolidated and grouted with fine sand, including necessary excavation, levelling & dressing & finishing the top smooth.	sqm		300.00
41	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	kg		444956.02
42	Providing corrugated PPGL(Pre-painted Galvalume). sheet roofing including vertical / curved surface fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead, complete , excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required. as per the Engineer In-charge			
a	0.63 mm thick	sqm		12093.00
43	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside lockingwith push and pull operation complete, including the cost of providing andfixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and			

	M.S. top cover of required thickness for rolling shutters.			
a	80x1 .20 mm M.S. laths with 1.20 mm thick top cover	sqm		137.00
44	Providing and fixing 15 cm wide, 45 cm overall semi-circular plain PPGL sheet gutter with iron brackets 40x3mm size, bolts, nuts and washers etc., including making necessary connections with rain water pipes complete.			
a	0.63 mm thick	Rmtr		520.00
45	Providing and fixing of Turboventilator size 600mm high, 2540 mm perimeter weight 6.60 kg made of shaft 16mm dia M.S bar crome plated, Fins made of aluminium Top plate and bottom ring made of stainless steel 304 grade, base of fibre UV rays stablilzed STD quality size 2mtr x 1mtr weight 8.5 kg including cost of fixing arrangement complete in all respect and to the entire satisfaction of Engineer-inCharge.	No.s		78.00
46	Extra for providing and mixing hardening compound of approved quality as per manufacturer's specification in cement concrete.	kg		30144.00
47	Providing & applying non-shrink grout of Fibrex Make ;The work shall be carried out all complete as per specification and the direction of the Engineer-in-charge. Providing and pouring Fibgrout HF2 of Fibrex make on the Surface to be treated which should be free from all dust dirt debris and unsound materials.Grout material have Tensile strength 3.5MPa (ASTM C - 496) and Compressive Strength 68 MPa (ASTM C -109), Fib grout HF2 is best mixed in forced action mixer. Powder is gradually added to the pre-measured water and mixed mechanically with slow speed drill until a smooth and consistent mix is obtained. The water addition: Mix water@ 13.5% to 14% by weight of powder into Fibgrout HF2 until smooth consistency is obtained. Grout should be placed at a minimum of 25 mm thick and a miximum of 150 mm per lift when placed in a large mass.	kg		39000.00
48	Groove cutting and filling for concrete flooring to avoid crack in the construction joints. Cutting (5mm width x 20mm depth) is made in the construction joints and it is filled with the polysulohide/ Bitumen. Groove cutting is done in both vertical and horizontal directions to avoid cracks during expansion and contraction of floors. The item to paid in running meter	rm		6800.00
49	Painting two coats excluding priming coat with synthetic enamel paint in all shades on new wood work or metallic or plastered or concrete surfaces to give an even shade.	Sqm		8500.00
50	Excavation for Roadway Mechanical means and in Soil Tippers by with Disposal up to 1000 metres.			
a	Excavation for roadwork in soil by mechanical means including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead up to 1000m as per technical clause 301 of MORT&H specifications	cum		1695.00
51	Construction of Embankment with Material Deposited from Roadway Cutting or Excavation :	cum		2219.00

	Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.as per technical clause 305 of MORT&H specifications			
52	Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density as per technical clause 406 of MORT&H specifications	sqm		888.00
53	Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.85 kg/sqm using mechanical means as per technical clause 503 of MORT&H specifications	sqm		6778.00
54	Providing and applying tack coat with penetration grade bitumen VG-10 pressure distributor at the rate of 1.0 kg per sqm on the prepared granular surface cleaned with mechanical broom as per technical clause 503 of MORT&H specifications	sqm		4438.00
55	Dense Graded Bituminous Macadam 50 mm to 75 mm thickness (Grading II) Providing and laying 50mm - 75 mm dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder VG 30 @ 4.5% by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction complete, as per technical clause No. 505 of MORT&H specifications	cum		333.00
56	Bituminous Concrete with Batch type HMP			
a	Providing and laying 30mm - 45 mm bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder VG - 30 @ 5.4% per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction complete as per technical clause 507 of per MORTH specifications	cum		178.00
57	Providing and laying 60mm thick factory made cement concrete inter1ocking paver block of M -30 grade made by block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over (BIS 15658:2006) and including 50mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.	sqm		2388.00
58	STONE SOLING- Supplying , Providing , laying and compacting of stone size range 100 mm to 150 mm STONE	sqm		1356.00

	SOLING - SIZE RANGE			
59	SAND PILE,, BORING Providing, driving and installing driven Sand piles of 100 mm dia piles	NOS		900.00
60	Green area along road side as per drawing and as per the instruction given by engineer - in-charge .	sqm		300.00
61	supply and laying of 400 G polythene sheet .	sqm		1356.00
61.1	EPOXY FlooringProviding & laying Epoxy Flooring 2mm thick (overall thickness) with self sqm levelling with Hi-build epoxy primer 100 micron thickness, self leveling epoxy screed 900 micron thickness, FQ sand and self levelling epoxy top coat having thickness 1000 microns with all materials as mentioned l required to provide desired finish to the entire satisfaction of the Engineer in charge,	sqm		9800.00
	SERVICES			
62	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m:			
a	All kinds of soil			
63	Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia	RM		3034.00
64	Providing, lowering, laying, aligning, fixing in position and jointing at all level/ depths ISi marked HDPE pipes of PE-100 grade and PN- 8 for sewer application as per IS 14333-1996 (amended up to date) in trenches in complete including cost of HDPE 'Specials, labour, sectional hydro testing (including the cost and conveyance of water to site for testing) and commissioning as per Technical Specifications and as per direction of Engineer Note: E/w to be measured and paid separately. Rate includes cost of all specials like bends, tees required during laying of pipe line along required alignment.			
a	200 mm Outside Dia	RM		300.00
b	250 mm Outside Dia.	RM		300.00
65	Providing and fixing in position singel socket SWR UPVC soil waste or antisyphonage pipes as per IS 13592 of E.D.C manufacture or of any other reputed firm including cutting, jointing, wastage, but excluding cost of jointing.			
a	160mm old SWR UPVC pipe lines laid complete	RM		300.00

b	110mm o/d SWR UPVC pipe lines laid complete	RM		710.00
c	90mm old SWR UPVC pipe lines laid complete	RM		200.00
d	75mm o/d SWR UPVC pipe lines laid complete	RM		260.00
66	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1: 2 (1 cement: 2 fine sand) including testing of joints etc. complete:			
a	150 mm dia. R.C.C. pipe	RM		105.00
b	250 mm dia. R.C.C. pipe	RM		300.00
c	300 mm dia. R.C.C. pipe	RM		240.00
67	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISi marked K-9 grade S&S pipes as per 15:8329- 2000 (amended up to date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.			
a	100 mm i/d	RM		300.00
68	Providing and fixing Unplasticised fabricated PVC, (Unplasticised polyvinyl chloride) couplers (4kg/cm2) on PVC pipes used for potable water supply IS-4985:1988 including cost of adhesive, carriage, loading, unloading etc. complete in all respects to the satisfaction of Engineer-in-Charge.			
a	Size 90mm o/d	RM		40.00
	PE-AL-PE COMPOSITE PRESSURE PIPE			
69	Providing and fixing Polyethylene-Aluminium-Polyethylene PE-AL-PE Composite Pressure Pipes conforming to IS - 15450, U.V. stabilized with carbon black having thermal stability for hot & cold water supply, capable to withstand temperature up to 80°C, including all special fittings of composite material (engineering plastic blend and brass inserts wherever required) e.g. elbows, tees, reducers, couplers & connectors etc., with clamps at 1.00 metre spacing. This includes testing of joints complete as per direction of the Engineer-in-charge.			
	INTERNAL WORK • EXPOSED ON WALL			
a	1216 (16 mm OD) pipe	RM		100.00
b	1620 (20 mm OD) pipe	RM		500.00
c	2025 (25 mm OD) pipe	RM		500.00
d	2532 (32 mm OD) pipe	RM		200.00

e	3240 (40 mm OD) pipe	RM		400.00
f	4050 (50 mm OD) pipe	RM		200.00
70	Providing and fixing Polyethylene-Aluminium- Polyethylene PE-AL-PE Composite Pressure Pipes conforming to IS - 15450, U.V. stabilized with carbon black having thermal stability for hot & cold water supply, capable to withstand temperature up to 80°C, including all special fittings of composite material (engineering plastic blend and brass inserts wherever required) e.g. elbows, tees, reducers, couplers & connectors etc., with clamps at 1.00 metre spacing. This includes the costs of cutting chases and including testing of joints complete as per direction of the engineer in charge.			
	Concealed work, including cutting chases and making good			
a	1216 (16 mm OD) pipe	RM		200.00
b	1620 (20 mm OD) pipe	RM		150.00
c	2025 (25 mm OD) pipe	RM		200.00
d	2532 (32 mm OD) pipe	RM		150.00
71	Providing and fixing Polyethylene-Aluminium- Polyethylene PE-AL-PE Composite Pressure Pipes conforming to IS - 15450, U.V. stabilized with carbon black having thermal stability for hot & cold water supply, capable to withstand temperature up to 80°C, including all special fittings of composite material (engineering plastic blend and brass inserts wherever required) e.g. elbows, tees, reducers, couplers & connectors etc., with trenching, refilling and testing of joints complete as per direction of the engineer in charge.			
	External work			
a	2532 (32 mm OD) pipe	RM		300.00
b	3240 (40 mm OD) pipe	RM		300.00
c	4050 (50 mm OD) pipe	RM		200.00
72	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall			
a	15 mm nominal outer dia Pipes	metre		240.00
b	20 mm nominal outer dia Pipes	metre		370.00
c	25 mm nominal outer dia Pipes	metre		422.00

d	32 mm nominal outer dia Pipes	metre		435.00
73	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. Concealed work, including cutting chases and making good the walls etc.			
a	15 mm nominal outer dia Pipes	metre		80.00
b	20 mm nominal outer dia Pipes	metre		130.00
c	25 mm nominal outer dia Pipes	metre		125.00
d	32 mm nominal outer dia Pipes	metre		125.00
74	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge. External work			
a	50 mm nominal outer dia Pipes	metre		200.00
75	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge. External work			
a	40 mm nominal outer dia Pipes	metre		100.00
b	50 mm nominal outer dia Pipes	metre		60.00
76	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks and S.W. drain pipe 100 mm diameter, 1.Bm long complete as per standard design.			
a	With common burnt clay non-modular bricks of class designation 7.5	each		2.00
77	Constructing masonry Chamber 60x60x75 cm inside, in brick work in cement mortar 1 :4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 160 mm deep (inside) with chained lid and RCC top slab 1 :2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) , i/c necessary excavation, foundation concrete 1:5:10 (1 cement			

	: 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1 :3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :			
a	With common burnt clay non-modular bricks of class designation 7.5	each		16.00
78	Constructing masonry Chamber 90x90x100 cm inside, in brick work in cement mortar 1 :4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1: 2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement: 5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1 :3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :			
a	With common burnt clay non-modular bricks of class designation 7.5	each		18.00
79	Constructing masonry Chamber 120x120x100 cm inside, in brick work in cement mortar 1 :4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1 :2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) , i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1 :3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :			
a	With common burnt clay non-modular bricks of class designation 7.5	each		6.00
80	Constructing masonry Chamber 60x60x75 cm, inside in brick work in cement mortar 1 :4 (1 cement: 4 coarse sand) for fire hydrants, with C.I. surface box 350x350 mm top and 165 mm deep (inside) with chained lid and RCC top slab 1: 2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) , i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand: 1 O graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1: 3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design:			
a	With common burnt clay non-modular bricks of class designation each 7.5	each		21.00
81	Constructing masonry Chamber 60x45x50 cm inside, in brick work in cement mortar 1: 4 (1 cement : 4 coarse sand) for water meter complete with C.I. double flap surface box 400x200x200 mm (inside) with locking arrangement and RCC top slab 1: 2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) , i/c necessary excavation, foundation concrete 1:5:10 (1 cement: 5 fine sand:10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1 :3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of			

	neat cement complete as per standard design :			
a	With common burnt clay non-modular bricks of class designation each 7.5	each		2.00
82	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with bricks in cement mortar 1 :4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x61 O mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg), R.C.C. top slab with 1: 1.5:3 mix (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size), foundation concrete 1:5:10 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1 : 3 (1 cement : 3 coarse sand), finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design:			
a	Inside dimensions 455x610 mm and 45 cm deep for single pipe line :			
b	With common burnt clay non-modular bricks of class designation 7 .5	each		10.00
83	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1 :4 (1 cement : 4 coarse sand) including 500x450 mm pre cast R.C.C. horizontal grating with frame complete as per standard design :			
a	With common burnt clay non-modular bricks of class designation 7.5	each		8.00
84	Constructing brick masonry manhole in cement mortar 1 :4 (1 cement : 4 coarse sand) with R.C.C. top slab with 1 :1.5:3 mix (1 cement : 1.5 coarse and (zone-III) : 3 graded stone aggregate 20 mm nominal size), foundation concrete 1 :4:8 mix (1 cement : 4 coarse sand (Zone-III) : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1 :3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1 :2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design :			
a	Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) :			
b	With common burnt clay non-modular bricks of class designation 7 .5	each		12.00
85	Inside size 120x90 cm and 90 cm deep including C.I. cover with frame (medium duty) 500 mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)			
a	With common burnt clay non-modular bricks of each 2211 14097 class designation 7 .5	each		12.00

b	Extra for depth for manholes :			
86	Size 90x80 cm			
a	With common burnt clay non-modular bricks of class designation 7 .5	metre		10.00
b	Size 120x90 cm			
c	With common burnt clay non-modular bricks of class designation 7 .5	metre		6.00
87	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56m dia at top in cement mortar 1 :4 (1 cement : 4 coarse sand), inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1 :3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1 :2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design:			
a	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1: 2:4 (1 cement: 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete.			
b	With common burnt clay non-modular bricks of each 1055 5512 class designation 7 .5	each		4.00
88	1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1: 2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete.			
a	With common burnt clay non-modular bricks of class designation 7 .5	each		4.00
89	Providing and fixing on wall face Unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes.			
a	110 mm diameter	Rmtr		629.00
90	Providing and placing on terrace (at all floor levels) polyethylene water litre storage tank, IS: 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	Litre		23000.00
a	Providing, lowering, laying, aligning, fixing in position and jointing at all level/ depths ISi marked HOPE pipes of PE-100 grade and PN- 8 for sewer application as per IS 14333-1996 (amended up to date) in trenches in complete including cost of HOPE 'Specials, labour, sectional hydro testing (including the cost and conveyance of water to site for			

	testing) and commissioning as per Technical Specifications and as per direction of Engineer. Note: Rate includes cost of all specials like bends, tees required during laying of pipe line along required alignment.			
b	200 mm Outside Dia for etp	per metre		300.00
c	250 mm Outside Dia.	per metre		40.00
	C.I. SLUICE VALVES			
91	Providing and fixing C.I. sluice valves (with cap) complete with bolts, nuts, rubber insertions etc.			
	100 mm diameter			
	Class I	each		4.00
	AIR VALVE			
92	Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete			
a	50mm dia	each		2.00
b	80mm dia	each		2.00
c	100mm dia	each		2.00
93	Supplying, fixing, testing and commissioning of Butterfly valves PN 16 rated without insulation for water circulation as per specifications.			
a	100mm dia.	each		2.00
b	100mm dia.	each		2.00
	RAIN WATER HARVESTING			
94	Boring with 100 mm diameter casing pipe for hand pump / tube well, in all soils except ordinary hard rocks requiring blasting, including removing the casing pipe after the hand pump / tube well is lowered and tested			
a	Up to 6 metres depth	RM		30.00
b	Beyond 6 m and up to 12 m depth	RM		30.00
c	Beyond 12 m and up to 18 m depth	RM		30.00
d	Providing and placing in position filters of 40 mm diameter G.I.pipe with brass strainer of approved quality.	RM		30.00
e	Providing and fixing to filter and lowering to proper levels 40 mm G.I. pipe for tube well including cleaning and priming the tube w	RM		30.00
f	Supplying, filling, spreading & levelling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of	CUM		10.00

	Engineer-incharge			
g	Supplying, filling, spreading & levelling gravels of size range 5 mm to 1 O mm, in the recharge pit, over the existing layer of boulders, in required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	CUM		10.00
h	Supplying, filling, spreading & levelling coarse sand of size range 1.5 mm to 2 mm in recharge pit, in required thickness over gravel layer, for all leads & lifts, all complete as per direction of Engineer -in-charge.	CUM		10.00
	TUBEWELLS			
95	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/ bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer -in-charge, beyond 90 metre & up to 150 metre depth below ground level.			
a	All types of soil			
b	300 mm dia	RM		180.00
96	Supplying, assembling, lowering and fixing in vertical position in bore well, Unplasticised PVC medium well casing (CM) pipe of required dia, conforming to IS: 12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer -in-charge			
a	100 mm nominal size dia	RM		180.00
b	150 mm nominal size dia	RM		90.00
97	Supplying, assembling, lowering and fixing in vertical position in bore well Unplasticised PVC medium well screen (RMS) pipes with ribs, conforming to IS: 12818, including hire & labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer-in-charge.			
a	100 mm nominal size dia	RM		180.00
98	Gravel packing in tube well construction in accordance with IS: 4097, including providing gravel fine/ medium/ coarse, in required grading & sizes as per actual requirement, all complete as per direction of Engineer-in-charge	CUM		20.00
99	Providing and fixing suitable size threaded mild steel cap or spot welded plate to the top of bore well housing/ casing pipe, removable as per requirement, all complete for bore well of			
a	100 mm dia	each		2.00
b	150 mm dia	each		2.00

100	Providing and fixing M.S. clamp of required dia to the top of casing/ housing pipe of tube well as per IS: 2800 (part I), including necessary bolts & nuts of required size complete.			
a	100 mm clamp	each		2.00
b	150 mm clamp	each		2.00
101	Providing and fixing Bail plug/ Bottom plug of required dia to the bottom of pipe assembly of tube well as per IS:2800 (part I).			
a	100 mm dia	each		2.00
b	150 mm dia	each		2.00
102	Development of tube well in accordance with IS : 2800 (part I) hour 592 561 1153 and IS: 11189, to establish maximum rate of usable water yield without sand content (beyond permissible limit), with required capacity air compressor, running the compressor for required time till well is fully developed, measuring yield of well by "V" notch method or any other approved method, measuring static level & draw down etc. by step draw down method, collecting water samples & getting tested in approved laboratory, i/c disinfection of tube well, all complete, including hire & labour charges of air compressor, tools & accessories etc., all as per requirement and direction of Engineer-in-charge.	each		24.00
	SANITARY INSTALLATIONS			
103	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require:			
q	White vitreous chinaware Flat back wash basin size 550x 400 mm with single 15 mm C.P. brass pillar tap	each		13.00
104	Providing and fixing Stainless Steel A ISi 304 (18/8) kitchen sink as per IS:13983 with C.I. brackets and stainless steel plug 40 mm, including painting of fittings and brackets, cutting and making good the walls wherever required			
a	Kitchen sink with drain board			
b	510x1040 mm bowl depth 225 mm	each		2.00
105	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete.			
a	Flexible pipe	each		29.00
b	32 mm dia			
106	Providing and fixing white vitreous chinaware pedestal type water closet (European type) with seat and lid, 10 litre low level white vitreous chinaware flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40 mm flush bend, overflow arrangement with specials of standard make and mosquito proof coupling of approved municipal design			

	complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required :			
a	W.C. pan with ISi marked white solid plastic seat and lid	each		14.00
107	Providing and fixing white vitreous chinaware flat back half stall urinal of size 580x380x350 mm with white PVC flushing cistern, with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS : 2556, C.I. trap with outlet grating and other couplings in C.P. brass, including painting of fittings and cutting and making good the walls and floors wherever required			
a	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern	each		14.00
108	Providing and fixing partitions for different type of urinals.			
a	Vitreous Chinaware Partition plate.			
b	Small size 680mm x 330 mm			
c	White	each		9.00
109	Providing and fixing toilet paper holder:			
a	C.P. brass	each		11.00
110	Providing and fixing 8 mm dia C.P. I S.S. Jet with flexible tube up to 1 metre each 10 260 270 long with S.S. triangular plate to European type W.C. of quality and make as approved by Engineer - in - charge.	each		20.00
111	Providing and fixing G.I. inlet connection for flush pipe connecting with W.C. pan.	each		8.00
112	Providing and fixing 100 mm sand cast Iron grating for gully trap.	each		8.00
113	Providing and fixing CP Brass 32mm size Bottle Trap of approved quality & make and as per the direction of Engineer-in-charge.	each		20.00
114	Providing and fixing soil, waste and vent pipes :			
a	75 mm diameter			
b	Centrifugally cast (spun) iron socketed pipe	metre		60.00
115	Providing and fixing 600x450 mm bevelled edge mirror of superior glass approved quality) complete with 6 mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	each		6.00
116	Providing and fixing in position best Indian make (to the approval of the engineer-in-charge) storage type automatic electric water heater, pressure/non-pressure type thermostatically controlled, suitable for operation on 230 volts, 50 cycles single phase vertical wall mounting fitted with-draw able and adjustable type AC, thermostat. Thermostat knob to be readily accessible through the			

	opening of suitable cover for and adjustment of temperature in the installed position of heater and the thermostat should be withdrawn without having to drain the water, electric heating element made out of copper tube (heating element should be easily removed and replaced in the installed position of heater) A neon indicator 1 AMP, inner container made out of copper tinned both from inside and outside, outer container made out of mild steel sheet finished in gleaming white stove enamel paint, insulated between the inner and outer with fibre glass wool with 1 metre length of suitable capacity 3 core flexible cord with plug and non return valve plastic/lead connections or pressure release valve (where required). Complete including fixing and testing for a week (as required by Engineer-incharge.			
a	25 Litres capacity kitchen	each		1.00
	SUB HEAD - I - (PUMPING EQUIPMENTS)			
117	Supplying, Installation, Testing and Commissioning of **Electric Driven Pressurization Pump (Jockey Pump)** suitable for auto operation and consisting of following: complete in all respects as required.			
	Horizontal type, centrifugal end suction type,multistage pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal, gland packing and flow of 180 lpm at 70 mtr. head confirming to IS:1520.			
	Suitable HP (Minimum 15 HP) squirrel cage induction motor TEFC type 2900 RPM suitable for operation on 415 volts, 3 phase 50 Hz. AC with IP-55 class of protection for enclosure, horizontal foot mounted type with Class - 'F' insulation, confirming to IS:325.			
	Common base frame fabricated out of M.S channel of suitable size, flexible coupling, coupling guard, foundation bolts and pressure gauge with valve etc. Suitable cement concrete foundation duly plastered, with anti vibration pads etc. complete as per manufacturer's design & standards and as per detailed specifications.	Set		2.00
	PUMPS & EQUIPMENTS			
118	Supplying, installing, testing & commissioning Horizontal centrifugal pump set suitable for operation on 220 volts, single phase 2900 RPM electric motor,100 mm dia pressure guage, G.M. isolation cock complete as required.			2.00
	Water Pump	Set		
	Location - Inside underground			
	water tank			
	Capacity 1 LPS			

	Head 25Mts			
	RPM 2900			
	No. of pump-2no (1kw-appx)			
	For supply,installation, testing & commissioning of item as per above details.			
	Level Controller with sufficient nos. of low / high level alarms, contacts with electrodes and control wiring for the automatic operation of water supply pump to achieve the functional requirement shall be provided. Control wiring between the pump and water tank shall be provided. Dry running protection shall be provided for all the pumps.Domestic water pump must start at low level of water in overhead domestic water tank & stop at high water level in that tank.			
119	Supplying, installing, testing & commissioning horizontal pump with S.S. casing, S.S. impeller directly coupled to motor suitable for operation on 220 volts, single phase 2900 RPM. TEFC electronic motor mounted on a common channel baseplate 100mm dia pressure gauge, G.M. gauge, G.M. isolation cock and cement concrete foundation with plaster.Flexicon rubber expansion bellow shall be provided at discharge header of hydro. pump.			1.00
	Control panel with pressure switch, electrical wiring, cabling from panel to pumps, level controller complete with all accessories.			
	Valve at suction & discharge side of pump & non return valve at discharge of pump.			
	Set of accessories such as Pressure Switch, Connecting Power & Control Cabling etc.			
	Hydropneumatic system as described above	Set		
	Hydropneumatic system for domestic water supply system-- For feeding domestic water to toilets with 1 No. Precharged vessel of capacity of 24 Lts with interchangeable butyl rubber membrane connected to outlet pipe with necessary nuts, bolts etc. complete.Location- Terrace level.			
	pressure Water Pump(water from			
	overhead water tank to toilets)			
	Capacity 3.6 cum/hr			
	Pressure 3 to 5 kg/sqcm			
	RPM 2900			
	No. of pump 1 - hp-appx.			
120	Fabricating, Supplying, Installation, Testing and Commissioning **Air Vessel** of continuous welded construction with flanged discharge header on the top of	Each		1.00

	each riser fabricated out of 10 mm thick dished ends and 8 mm thick MS sheet, Air Release Valve complete with suitable drain arrangement with 25 mm dia gun metal wheel valve complete with all accessories etc. as required of the following sizes:			
	1.2 Meter high and 250 mm dia.			
121	Fabricating, Supplying, Installation, Testing and Commissioning **Air Vessel** of continuous welded construction with flanged discharge header in pump house fabricated out of 10 mm thick dished ends and 8 mm thick MS sheet, Air Release Valve, complete with drain arrangement with 25 mm dia gun metal wheel valve complete with all accessories etc. as required of the following sizes:	Each		1.00
	2 Meter high and 450 mm dia suitable to operate Jockey Pump, Main Fire Pump & Diesel Engine Driven Fire Pump			
122	Supply, Installation, testing and commissioning of pressure switches for Hydrant / Diesel Engine Driven Pump / Jockey Pumps, diaphragm type, adjustable range from 0-9 bar and a regulation range of 0.1 1.5 bar direct mounted SNAP acting type made from die cast aluminium with epoxy powder coated finish and SS316 diaphragm and other wetted parts, including necessary wiring upto control panel & other materials as required as per specifications.	Each		3.00
	SUB WORK : ESTIMATE OF FIREFIGHTING WORKS			
123	FIRE DETECTION SYSTEM INTELLIGENT FIRE ALARM SYSTEM Supplying, installation, testing and commissioning of micro processor based intelligent addressable main fire alarm panel, central processing unit with the following loop modules and capable of supporting not less than 240 devices (including detectors) and minimum 120 detectors per loop and loop length up to 2 km,network communication card, minimum 320 character graphics/ LCD display with touch screen or other keypad and minimum 4000 events history log in the non volatile memory (EPROM), power supply unit (230± 5% V, 50 hz), 48 hrs back-up with 24 volt sealed maintenance free batteries with automatic charger. The panel shall have facility to connect printer to printout log and facility to have seamless integration with analog/digital voice evacuation system (which is part of the schedule of work under SH: PA System) and shall be complete with all accessories . The panel shall be compatible for IBMS system with open protocol BACnet/ Modbus over IP complete as per specifications. Two Loop Panel.	each		2.00
124	Supplying, installation, testing & commissioning of central graphical fire alarm management system to centrally monitor and operate the fire alarm system complete as required.	each		2.00
125	Supplying, installation, testing & commissioning of repeater panel wih 320 character/ Touch screen LCD display with inbuilt reset, acknowledge and silence switches complete as required.	each		2.00

126	Supplying, installation, testing & commissioning of intelligent analog addressable photothermal detector complete with mounting base complete as required.	each		80.00
127	Supplying, installation, testing & commissioning of response indicator on surface/recessed MS Box having two LED, metallic cover complete with all connections etc as required.	each		80.00
128	Supplying, Supplying, installation, testing & commissioning of intelligent addressable programmable sounder complete as required.	each		20.00
129	Supplying, installation, testing & commissioning of fault isolator complete with base as required.	each		8.00
130	Supplying, installation, testing & commissioning of intelligent aspiration detector for area coverage of minimum 5000 sq. ft. complete as required.	each		6.00
131	Supplying, installation, testing & commissioning of intelligent addressable thermal detector with rate of rise cum fixed tempreature thermistor complete with base as required.	each		20.00
132	Supplying, installation,testing & Commissioning of addressable fire control module complete as required.	each		20.00
133	Supplying,Supplying, installation, testing & commissioning of addressable phone control module as required.	each		20.00
134	Supplying, installation, testing & commissioning of addressable beam detector with short circuit isolator (inbuilt or seperate) complete with emitter and receiver including connections with remote test features etc complete as required.	each		8.00
135	Supplying, installation, testing & commissioning of intelligent addressable duct detector including suitable Photo detector complete with base as required.	each		8.00
136	Supplying,Supplying, installation, testing & commissioning of addressable mannual call point complete as required.	each		20.00
137	Supplying,Supplying, installation, testing & commissioning of addressable horn cum strobe as required	each		20.00
138	Supplying,Supplying, installation, testing & commissioning strobe complete as required.	each		20.00
139	Supplying, installation, testing & commissioning of fire fighter telephone handset complete as required.	each		20.00
140	Supplying, installation, testing & commissioning of intelligent interface unit BACnet/ Modbus protocol i.e. supplying communication links between building management system and fire alarm control panel complete as required.	each		2.00
141	Supplying, installation, testing & commissioning of fire fighter phone jack complete as required.	each		20.00
142	PUBLIC ADDRESS SYSTEM Supplying, installation, testing & commissioning of 6 zone, voice alarm controller with USB, MP3 player (including 6 zone button paging station) with seamless integration facility with main fire alarm panel for	each		2.00

	voice evacuation complete as required.			
143	Supplying, installation, testing & commissioning of 1.5/3/6W ceiling speaker complete as required.	each		20.00
144	Supplying, installation, testing & commissioning of 1.5/3/6W metal box ceiling/wall speakers complete as required.	each		20.00
145	Supplying,Supplying, installation, testing & commissioning ceiling of /wall mounted loud speaker, 3/1.5 Watt in ABS enclosure as required.	each		20.00
146	Supplying, installation, testing & commissioning of 6 inchesdia, 2 watts, 70/100 volts ceiling speaker complete as required.	each		40.00
147	Supplying, installation, testing & commissioning of digital audio amplifier 50 Watt, 25V rms operating at 240 volt AC supply complete as required.	each		2.00
148	Supplying, installation, testing & commissioning of digital audio amplifier 75 Watt, 25V rms operating at 240 Volt AC supply complete as required.	each		2.00
149	Supplying, installation, testing & commissioning of exit point directional sound speaker with voice and integral audio amplifier with selectable sound pulse patterns complete as required.	each		10.00
150	Supplying, installation, testing & commissioning of Voice command keypad 6 zone, with microphone assemblycomplete as required.	each		1.00
151	FIRE PUMPS, EQUIPMENT, PIPING, VALVES & ACCESSORIES : Electric Motor Driven Pump (Location - Plant Room) Supplying, installing, testing and commissioning of Fire authority approved Electrical driven fire pump suitable for automatic/ manual operation consisting of the following: Horizontal mounted End Suction type fire pump having cast iron body, bronze impeller, stainless steel shaft & capable of delivering 2850 LPM against a total head of 65M while running at 2900 RPM complete with mechanical seal pressure gauge with GM cock on the delivery side of pump and including 50 mm by pass arrangement (with 50 mm valve and up to 5 meter GI class 'B' pipe) for periodical testing of working of pumping test. Squirrel cage, induction motor TEFC type suitable for 415 + 10%V, 3 phase, 50 Hz, AC supply, of suitable HP rating for the above pump with synchronous speed of 2900 RPM with flexible coupling and coupling guard . Common bed plate for mounting pump and motor fabricated of mild steel channel as per manufacturer's recommendation with heavy duty Anti Vibration pads (4 Nos., heavy duty). Coupling and coupling guard for direct coupling of pump and motor. Drain Pipe with Valve (50 mm dia) Main Fire Pump/Sprinkler Pump Discharge : 2850 LPM App. Head : 65 M	Set		2.00
152	Diesel Engine Driven Fire Pump [Stand by pump] (Location - Plant Room :) Supplying, installing, testing & commissioning of fire authority approved Diesel Engine driven fire pump suitable for automatic/manual operations consisting of the following:	Set		1.00

	Horizontal mounted End Suction type fire pump having cast iron body, bronze impeller, stainless steel shaft.Discharge: 2850 LPM App. Head: 65 M			
153	"Electrical Motor Driven Jockey Pump Location - Plant Room :" Supplying, installing, testing & commissioning of fire authority approved electrically driven Jockey pump suitable for automatic/manual operation consisting of the following: Horizontal mounted end suction jockey pump having cast iron body, volute bronze impeller, stainless shaft capable of delivering 180 LPM against total head of 65M while running at 2900 RPM complete with mechanical seal pressure gauge with mechanical seal GM cock on the delivery side of pump including bypass arrangement (with 25 mm GM stop valve and up to 5 meter G.I. class 'B' pipe) for testing of working of the pumping set as required. Squirrel cage induction motor suitable for 415 + 10%V, 3 phase, 50 Hz, AC supply of suitable HP rating for the above pump with synchronous speed of 2900 RPM T.E.F.C type connected to pump with flexible coupling and coupling guard . Common bed plate for mounting pump and motor fabricated of mild steel channel as per manufacturer's recommendation with heavy duty 4 Nos. Anti Vibration pads.(Cushy foot) Drain pipe with valve (25 mm dia) Jockey Pump :- Discharge : 180 LPM (3 LPS) App Head : 55 M	Set		1.00
154	Supply, installation, testing and commissioning of Pressure switch of approved make for Hydrant pump, jockey pump and Diesel Engine Driven pump including necessary wiring and cut off valve up to central panel & other material as described in specifications.	each		4.00
155	Supply, installation, testing and commissioning of Fire authority approved suitable pressure vessel with air release valve (minimum 450 mm dia & 1500 mm height) with all fittings including two nos. pressure gauge on the delivery side, 80 mm dia flanged inlet and 50 mm dia drain line with 50 mm dia G.M. gate valve.	each		1.00
156	Providing, fixing, testing and commissioning of heavy class MS pipe, IS : 1239 marked with all necessary fittings like tees, elbows, flanges, reducers, gaskets, nuts and bolts etc. welded or screwed joints as required including fixing the pipe with necessary structural supports including painting of two coats of synthetic enamel paint over two coats of red oxide primer including all civil breakages and making good the same (Location: Plant room). 150 mm dia (Nominal Bore)	running meter		100.00
157	Providing, fixing, testing & commissioning of heavy class MS pipe, IS : 3589 marked with all necessary fittings like tees, elbows, flanges, reducers, gaskets, nuts and bolts etc. welded or screwed joints as required including fixing the pipe with necessary structural supports (for delivery/suction manifold relating to the pumps) including painting of two coats of synthetic enamel paint over two coats of red oxide primer including all civil breakages and making good the same [Location : Plant room]. 200 mm dia (6.35 mm thick) with necessary supports etc. as required. (Nominal Bore)	running meter		20.00
158	Providing, fixing, testing & commissioning of following dia C.I. Double flanged 'Y' typed Strainer including nut, bolts and 3 mm thick gasket as required.	each		2.00

	200 mm dia			
a	150 mm dia	each		2.00
b	100 mm dia	each		2.00
159	Providing, fixing, testing & commissioning of C.I. Butterfly valve conforming to IS : 13095 with flanges, nuts, bolts and washers complete for following sizes :- [PN 1.6 rating]. 200 mm dia (Gear operated)	each		2.00
a	150 mm dia	each		8.00
b	100 mm dia	each		4.00
c	80 mm dia	each		4.00
d	65 mm dia	each		4.00
e	50 mm dia	each		4.00
160	Providing, fixing, testing & commissioning of dual plate non-return valve complete with nuts, bolts and washers. 200 mm dia	each		2.00
a	150 mm dia	each		3.00
b	80 mm dia	each		1.00
c	65 mm dia	each		1.00
161	Providing, fixing, testing & commissioning of 100 mm dia Burden type, Stainless Steel dial type pressure gauge (in Pump Room) including brass isolation valve and pipe having caliberation of 0-15 Kg/cm^2.	each		4.00
162	Providing and fixing exhaust, Diesel engine driven pump exhaust M. S. pipe class 'C' 150 mm dia including fitting like flanges, bends, reducers, etc. 50 mm thick fibre wool insulation aluminium cladding, 24 gauge, necessary excavation, fixing of silencer connections at engine exhaust, necessary supports, back filling, cutting and making good, bird proof and weather proof flap complete in all respect as directed.	running meter		20.00
163	Providing and fixing M.S. structural work fabricated from standard sections, (MS rounds, angles, channels etc.) including cutting to size, drilling welding including cost of fasteners clamps in R.C.C. structural members as directed, including two or more coats of synthetic enamel paints over one coat of primer after surface preparation including cutting and making good walls.	kilogram		1000.00
164	Excavation of required width for fire fighting pipes including excavation for sockets and dressing of sides, ramming of bottom depth upto 1.5 m including getting out the excavated soil and then returning the soil as required in layer not exceeding 20 cms in depth including consolidating each deposited layers by ramming, watering etc. and disposing of surplus excavated soil as directed within a lead of 100m for all kinds of soil. Pipes, exceeding 80 mm dia but not	running meter		600.00

	exceeding 300 mm dia.			
165	Supply, Installation testing & commissioning of Black Mild Steel Class 'C' (Heavy Duty) pipes conforming to IS : 1239 Part-I including cutting, threading, welding & all fittings like flanges, tees, elbows, bends junctions, reducers, ball valves etc. welded or screwed joints, clamps structural steel supports (as per TAC norms) or as required/ directed at site including cutting & making good the walls, floors, RCC work etc cutting chases & filling the same with cement concrete 1:3:6 (1 cement :3 coarse sand :6 graded stone aggregate 20 mm nominal size) (For Internal work). Note: Pipes upto and 50 mm dia shall be threaded joints, above 50 mm shall be welded joints.			
a	25 mm dia (Nominal Bore)	running meter		1000.00
b	32 mm dia (Nominal Bore)	running meter		1200.00
c	40 mm dia (Nominal Bore)	running meter		600.00
d	50 mm dia (Nominal Bore)	running meter		600.00
e	65 mm dia (Nominal Bore)	running meter		700.00
f	80 mm dia (Nominal Bore)	running meter		1200.00
g	100 mm dia (Nominal Bore)	running meter		900.00
h	150 mm dia (Nominal Bore)	running meter		722.00
i	200mm dia (Nominal Bore)	running meter		100.00
166	Supply and painting for M.S. Pipe with a coat of red oxide Primer and two or more coats of synthetic enamel paint of approved colour to give an even shade including surface preparation and cleaning of pipe from all external material. 25 mm dia (Nominal Bore)	running meter		1000.00
a	32 mm dia (Nominal Bore)	running meter		1200.00
b	40 mm dia (Nominal Bore)	running meter		600.00
c	50 mm dia (Nominal Bore)	running meter		600.00
d	65 mm dia (Nominal Bore)	running meter		700.00

e	80 mm dia (Nominal Bore)	running meter		1200.00
f	100 mm dia (Nominal Bore)	running meter		1000.00
g	150 mm dia (Nominal Bore)	running meter		722.00
h	200mm dia (Nominal Bore)	running meter		100.00
167	Providning and fixing butterfly valve			
a	Butterfly Valve 200mm dia	each		2.00
b	Butterfly Valve 150mm dia	each		4.00
c	Butterfly Valve 100mm dia	each		6.00
d	Butterfly Valve 80mm dia	each		15.00
167	Providing and applying two coat of 4 mm thick 'PYPKOTE' antirust protection including primer and lap of 25 mm on M.S. pipe in trenches or complete including surface preparation coating and wrapping shall be confirm to ISI 10221 including conducting required Test. 80 mm dia	running meter		20.00
a	100 mm dia	running meter		50.00
b	150 mm dia	running meter		50.00
168	Providing & Fixing of gun metal double headed hydrant valves with 100 mm dia flanged inlet & 63 mm dia female outlet complete with rubber blank cap and chain as per IS : 5290 (For internal hydrant). [ISI marked should be embosed]	each		8.00
169	Providing & Fixing of gun metal single headed ISI marked oblique pattern hydrant landing valves with 80mm dia flanged inlet & 63 mm dia female outlet complete with gun metal cap and GI chain twist release type plugh and all accessories as per IS : 5290-1983 Type A	each		40.00
170	Providing & Fixing of 63 mm dia 15 m long non-percolating flexible hose (RRL- type A) as per IS : 636. Type A with Gunmetal male & female instantaneous type coupling (IS 903)	each		40.00
171	Providing & Fixing of standard gun metal 63 mm dia branch pipe with nozzle of 20 mm nominal bore outlet as per IS:903 suitable to fit with standard instantaneous type 63mm dia coupling ISI marked (IS:903) complete.	each		40.00
172	Providing & Fixing of standard Fireman's Axe with heavy insulated handle conforming to (IS:926).	each		30.00

173	Providing & Fixing of wall mounting swinging type first aid fire hose reel with drum, hanging bracket, 36.5 Mtr. length x 20 mm dia high pressure hose reel tubing as per IS: 444 with gun metal (GM) shut off nozzle having 5 mm dia orifice. The hose reel shall be conforming to IS : 884-1985. Rate shall include 25 mm dia M.S. pipe connection from Riser to hose reel, sockets, nipples, elbows and ball valve (25 mm dia). Drum shall be fixed on adjoining wall through anchor fasteners / cement concrete block as and when required.	each		30.00
174	Providing & Fixing of 100 mm dia gun metal fire brigade suction hose coupling of (gunmetal draw off connection) with 100 mm dia M.S. 'C' Class suction pipe with 100 mm dia C.I. foot valve. (Pipe max. 10 m long). Cost shall include a wall mounted box of M.S. construction (16 SWG) with glass door (4.0 mm thick) to house the above mentioned component to be connected to static water tank.	Set		1.00
175	PORTABLE FIRE EXTINGUISHERS : Providing & fixing of ISI marked (IS:940) portable chemical Fire Extinguisher, water (gas pressure) type capacity 9 ltrs with gun-metal cap. and nozzle and complete in all respects including initial fill and wall suspension bracket.	each		30.00
176	Providing & fixing of ISI marked (IS:2878) portable fire extinguisher, carbondioxide type flat base including valve, discharge hose of not less than 10 mm dia. 1 M long & complete in all respects including initial fill with CO2 gas confirming to IS:307-1966 filled to a filling ratio of not more than 0.667 of not more than 0.667 and wall suspension bracket. Capacity 4.5 kg	each		30.00
177	Providing & fixing of ISI marked (IS: 13386-1992) mechanical foam type fire extinguishers 50 kg consisting of welded M.S. trolley mounted cylindrical body, squeeze lever discharge valve fitted with pressure discharge hose, discharge nozzle, trolley etc., finished externally with red enamel paint and fixed to wall with brackets complete with internal charges.	each		8.00
178	Providing and fixing of carbon-di-oxide fire extinguishers (22.5 kg) trolley mounted with all accessories internal discharge tube, high pressure discharge hose, discharge nozzle, ISI marked as per IS:2878 finished externally with red enamel paint and fixed to wall with brackets complete with internal charge.	each		8.00
179	Providing and fixing of self illuminated / auto glow **"EXIT" signs** printed on photoluminescent sheet containing self illuminated base chemical, of appropriate size not less than 400 x 150 mm, suspended from ceiling or fixed to the walls with accessories as required and as directed at site.	number		24.00
180	"SUB HEAD-B (FIRE HYDRANT ACCESSORIES) Providing and fixing SS304 Single headed landing valve conforming to IS -5290 (Type-A) with 63 mm dia. single instantaneous female coupling on the outlet SS304 metal blank cap and chain, necessary companion flanges, nuts, bolts, washer and gasket complete as per specification. (ISI marked). All parts and body shall be of SS304 as per IS:5290." Single outlet	number		8.00

181	Providing and fixing first aid **fire hose reel** drum wall mounting, swinging type(Powder coated finish in fire red) fitted with 20 mm dia. 30 m long high pressure hose(IS:444, Type-2) with 5 mm outlet SS nozzle with shut off valve (IS:8090). Name of Manufacturer should be embossed on the drum and complete hose reel drum shall be conforming to IS:884)	number		8.00
182	Providing and fixing **63 mm dia**. 15m long rubberized lined hose including SS304 male and female instantaneous type coupling approved by fire authority, machine wound with copper wire complete in all respects. Hose shall conform to IS 636 Type-A and coupling to IS 903 -1975 (ISI marked)	number		20.00
183	Providing and fixing standard short size SS304 **branch pipe with gunmetal nozzle 16 mm dia**. outlet with standard instantaneous type 63 mm dia. coupling. (ISI marked, IS:903)	number		8.00
184	Providing and fixing door with frame for all internal fire hydrants fabricated from 20x20x3 mm and 40x20x3 mm aluminium hollow box sections mounted with 3 no. of 100 mm Aluminium butt hinge on Aluminium angle frame of 45x45x5 mm size with hold fasts fixed to wall with P.C.C. (1:2:4) blocks 100x100x100 mm including 2 nos allen key lock for locking along with padlock arrangement & fully glazed with 4 mm thick float glass approved by local Fire Authority, powder coated fire red finish with " fire hose' written on front suitable to house 15 mm long two length of canvas hose with couplings, one no of branch pipe, one fire mans axe and two numbers of portable extinguishers, first aid fire hose and supports for hoses, branch pipes, Axe and hose reel. Size 2100x 900 mm complete as per approved design including necessary fixing arrangement for hoses & axe and branch pipe.)	number		6.00
185	Providing and fixing **fire hose cabinet** fabricated from 16 gauge M.S. Sheet with single or double glazed fro	number.		2.00
186	Providing and fixing gunmetal fire brigade inlet head as per IS:904 Specification tested for 20 Kg/cm2 with 63 mm dia. instantaneous type inlet and 100/150mm dia.. flanged outlet with built-in check valve for fire brigade connection to under ground tanks and fire risers including companion flanges as portable " E" including nuts, bolts & washers etc. Three way	number		1.00
187	Providing and fixing gunmetal fire brigade suction 150 mm dia. for fire tank complete with PVC Cap companion flange as per table "E" nuts, bolts, gasket etc 150 mm	number.		1.00
188	Supplying and fixing of Fire Man's Axe with heavy insulated rubber tested upto 20 KV and confirming to IS :926.	number.		12.00
189	Air Cushion Tank for Risers Providing and fixing of air vessel of the following specifications fabricated with MS Pipe of thickness specified. specifications a. Diameter : 200 mm b. Shell Thickness: 6.35 mm c. Dish Ends : 10 mm d. Height : 1000 mm e. Finishing: Two coats of red enamal paint over primer out	each		1.00

	side and two coats of epoxy coating inside. f. Material of construction: M.S g. Test Pressure: 20 Kg/Sq.Cm. i. Height of supporting legs: 400 mm j. Quantity Note: Contractor should submit general arrangement drawings before fabrication of vessel and ultrosonic test report to be submitted on supply of vessel and test to be conducted at the presence of Plumbing-In- Charge. Also cost shall include two nos. Gunmetal NRV(ISI Marked)			
190	SUB HEAD-C (SPRINKLERS ACCESSORIES) Providing and fixing 15 mm gunmetal sprinkler head with quartz bulb and set to operate at specified temperature pendent/ upright/ side wall /quick response as per instruction fixed with loctite. Temperature of operation 68 deg.C K-80 Normal response Pendent type/ upright type	number		400.00
191	Normal response Pendent type	number		1500.00
192	Normal response Side wall type	number		100.00
193	Extended throw normal response Side wall type.	number		50.00
194	Providing & fixing 25mm dia. UL listed gunmetal inspector test and drain valve with integral sight glass connected to drain line complete in all respects.	number		5.00
195	Providing and fixing electrically operated flow indicating switches model System Sensor in sprinkler branch line on each floor with necessary junction box installed in accessible place (Wiring from switches to panel and stair case pressurization not included) Providing and fixing electrically operated flow indicating switches model System Sensor in sprinkler branch line on each floor with necessary junction box installed in accessible place (Wiring from switches to panel and stair case pressurization not included) 100/65/50 mm dia.	number		5.00
196	Providing and fixing gunmetal installation valve with turbine type automatic alarm to be connected with control valve , drain valve, test valve and piping as per manufacturer's specifications complete in all respects. 150 mm dia.	number		1.00
197	Providing and fixing UL/Fm listed powder coated finish Escutcheon plate complete including fixing in position on pipe and ceiling complete in all respects. (Size=15NB)	each		400.00
198	Providing and fixing UL/Fm listed SS braided flexible pipe with accessories complete with all accessories specified in technical specifications(Size=15B) a. 780mm long	each		30.00
a	b. 1000mm long	each		30.00
199	Wiring for Light/Fan/call bell point with modular type switch/socket and GI box, Modular type face plate etc in 1.5 sqmm FRLS PVC insulated copper conductor cable in 1.6 mm thick PVC conduit pipe.			
a	Group B	Each		86.00

200	Point wiring for DB controlled light points with 2x2.5 sq.mm. (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enameled 25mm dia 2 mm thick PVC conduit recessed and / or surface conduiting system including the cost of cutting / making good chases in brick work and including the cost of loop earthing with 2.5 sq.mm.FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires complete as per specifications and as required. (Cost of MCB included in DB)	Each		109.00
201	Wiring for Twin control light point with 2 nos , 2-ways, 5 amp. Modular switch GI box and modular face plate in 1.5 sqmm FRLS PVC insulated copper conductor cable in 1.6 mm thick PVC conduit pipe.			
a	Group B	Each		4.00
202	Wiring for Light/Fan/call bell point in 1.5 sqmm FRLS PVC insulated copper conductor cable in 1.6 mm thick PVC conduit pipe, without separate control switch			
a	Group B	Each		121.00
203	Wiring in PVC conduit system for 3-pin 5amp. Plug point by using 2 no 1.5 sqmm FRLS copper wire and 1 no 1.5 Sqmm FRLS copper wire , including providing 1 no 5/6 Amp 3/5 pin Modular type socket and 1 no 5/6 Amp Modular type switch required GI Box ,modular face plate etc complete as required			
a	Group B	Each		45.00
204	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providng and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	Each		20.00
205	Wiring in PVC conduit system for 3-pin 15amp. Plug point by using 2 no 4 sqmm FRLS copper wire and 1 no 4 Sqmm FRLS copper wire for earthling , including providing 1 no 15/16 Amp 3/6 pin Modular socket and 1 no 15/16 Amp Modular switch required GI Box , modular face plate etc complete as required			
a	Group B	Each		89.00
	Main & sub Main Cables			
206	Wiring main and sub mains in two single core for phase and neutral wire and one single core for earth wire PVC insulated Copper conductor cable 1100 Volts grade in PVC Conduit etc as required.			
a	1 run of Size 6 Sqmm(1/2.80mm)	metre		165.00
b	1 run of Size 10 Sqmm(1/3.50 mm)	metre		480.00
c	3 run of Size 2.50 Sqmm(1.1.80mm)	metre		4400.00

	LIGHT FIXTURE			
	SUPPLY LIGHT AND FAN			
207	Suppling and fixing single wall mounted 40 watt LED type batten fitting compelet with electronic driver and LED Tube etc directly wall/ ceiling including conecttion with 1.5 SQMM FR PVC insulated copper conductor and earthing the body etc as requirede. PHILIPS : BN 021 LED40S- 6500 PSU GR (4 ft)	Each		39.00
208	Supply and fixing of HIGHBAY 200 W LED Next generation, energy saving, environment friendly & robust highbay LED with PDC housing suitable for ceiling (Surface/Suspended) mounting with system efficacy upto 150 lm/W. LED Fitting complete with electronic deiver with PVC Unsheathed copper leads from terminals to the fitting and earthing the body etc as requirede. PHILIPS : BY515P LED200S 5700 NB PSU GR	Each		44.00
209	Supply and fixing of HIGHBAY 100 W LED Next generation, energy saving, environment friendly & robust highbay LED with PDC housing suitable for ceiling (Surface/Suspended) mounting with system efficacy upto 150 lm/W. LED Fitting complete with electronic deiver with PVC Unsheathed copper leads from terminals to the fitting and earthing the body etc as requirede. PHILIPS : BY515P LED100S 5700 NB PSU GR	Each		26.00
210	Supplying and fixing 45 watt LED type street light with die cast aluminium housing for ingress protection of IP65 and complete with all accessories etc, on pole/building including connection with FR PVC insulated copper conductor cable and earthing the body etc. as required. **PHILIPS : BRP 052 LED 045 CW SLMR FG S1 PSU GR**	Each		55.00
211	Supply and installation of 600 mm, 230 V A.C. wall mounted Air circulator, heavy duty fan including fixing the bracket, making connection, testing, commissioning etc as required. HAVELLS: Turbo Force	Each		34.00
212	Supply and erection of 32mm dia metre 1.5 m long bracket (B-class) each 573 making an angle of 10° to 15° with horizontal plane for mounting street light fitting fixing of GI. bracket on wall with 2 nos. 32 mm x 3 mm thick M.S. clamps including cost of cutting, welding of G.I. pipe complete with cement sand mixture, bolts and nuts etc. including necessary connections.	Each		29.00
213	Supplying and fixing indoor recess mounting 30 watt LED flat panel luminaire suitable for armstrong / grid ceiling and complete with electronic driver etc. directly on false ceiling including connection with 1.5 sq.mm FR PVC insulated copper conductor cable and earthing the body etc. as required. PHILIPS : RC140B LED30S-6500 PSU WH OD	Each		68.00
214	Supplying and fixing indoor Surface mounting 30watt LED flat panel luminaire suitable for armstrong / grid ceiling and complete with electronic driver etc. directly on false ceiling including connection with 1.5 sq.mm FR PVC insulated copper conductor cable and earthing the body etc. as required.PHILIPS : SM200C LED16S 6500	Each		20.00

	PSU OD WH			
215	Supplying and fixing recess mounting 12 watt LED downlighter complete with integrated electronic driver & LED directly on ceiling including connection with 1.5 sq.mm FR PVC insulated copper conductor cable and earthing the body etc. as required. .PHILIPS : DN296B LED12S-6500 PSU WH	Each		22.00
216	Supplying and fixing Surface mounted 12 watt LED downlighter complete with integrated electronic driver & LED directly on ceiling including connection with 1.5 sq.mm FR PVC insulated copper conductor cable and earthing the body etc. as required. PHILIPS : SM250C LED12S- 6500 PSU WH	Each		10.00
217	Supply and installation of regular /standard model A.C ceiling fanof 1200mm sweep including wiring the down rods of standard length (up to 30cm) with 1.5sq mm FR PVC insulated copper conductor etc. as required HAVELLS: Pacer			
218	1200 mm sweep	Each		60.00
219	Supply and installation of 300mm, 230V A.C exhaust fan in the existing opening including making good the damage connection testing commissioning etc as required HAVELLS: Ventil Air - DSP	Each		21.00
220	Supply and installation of 400 mm, 230 V A.C. wall mounted Air circulator, heavy duty fan including fixing the bracket, making connection, testing, commissioning etc as required. HAVELLS: Swing	Each		5.00
221	Providing and fixing modular type accessories of approved make in existing box including fixing and making necessary connections, complete in all respect.			
a	step type Fan Regulator 2 modules 300 watt	each		60.00
	ERECTION OF LIGHT FAN			
222	Erection of exhaust fan in existing opening ,complete with necessary earthling of fan including carriage from PWD store to the site of work.	each		36.00
223	Fixing of LED Tube light/ 2*2 ft square panel fitting directly on wall /ceiling or false ceiling including making connections etc as required	each		4.00
224	Fixing of LED Down lighter 7 to 45Watt on ceiling or in false ceiling including each cutting/making hole in ceiling including making connections etc as required	each		327.00
	DISTRIBUTION BOARDS, MCB's, RCCB's			
225	Supply and erection of sheet steel enclosures 1 pole/2 pole/4 pole on walVon existing pedestal complete as required.			

a	S.P.N. or DP enclosure suitable for DP MCB	each		399.00
226	Supply and erection of double door sheet steel enclosure distribution board suitable for MCBS and ELCBS etc. recessed in wall including bonding to earth with all labour and material required to complete the job in all respect up to the entire satisfaction of the Engineer-in-Charge of the work.			
a	TPN DB Horizontal type Double Door 4 way (8 incoming and 3phase*4 outgoing)	each		3031.00
b	Vertical TPN DB Double Door 6 way (8 incoming 3phase*6 outgoing)	each		8089.00
227	Supply and erection of miniature circuit Breaker 240/415 V in the existing distribution board including making necessary connections:-			
a	6 amp. to 32 amp Single Pole	each		170.00
b	6 amp. to 32 amp Double POLE	each		5.00
c	40 amp to 63 amp. Double pole	each		9.00
d	6 amp. to 32 amp MCB's TRIPLE POLE	each		24.00
e	40 amp to 63 amp. MCB's FOUR POLE	each		24.00
228	Supply and erection double pole/Four pole Residual (RCCB/ELCB) on 240/415V, 5Hz. AC supply installed in existing sheet steel enclosures including making necessary connections and bonding to earth with all labour and material required to complete the job in all respect up to the entire satisfaction of the Engineer-in-Charge of the work.			
a	DP RCCB 30ma sensitivity , 40 A	each		33.00
b	DP RCCB 30ma sensitivity , 63 A	each		14.00
c	SPN DB Double Door 8 way	each		1.00
d	SPN DB Double Door 12 way (2 incoming and 10 outgoing)	each		1.00
e	TPN DB Horizontal type Double Door 6 way (8 incoming 3phase*6 outgoing)	each		3.00
229	Supply and erection of double door sheet steel enclosure distribution board suitable for MCBS and ELCBS etc. recessed in wall including bonding to earth with all labour and material required to complete the job in all respect up to the entire satisfaction of the Engineer-in-Charge of the work.			
a	TPN DB Horizontal type Double Door 6 way (8 incoming 3phase*6 outgoing)	each		1.00
	EARTHING			

230	Earthing with G.I. earth plate 600 mmx 600 mm x 6 mm thick including accessories and providing masonry enclosures with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required.	each		60.00
231	Extra for charcoal or coke and salt for G. I. plate or copper plate earth electrode.	each		60.00
232	Supplying and laying 25mm x 3mm G.I. strip at 0.5 metre below ground as strip earth electrode including soldering etc. as required.	Mtr		575.00
233	Supplying and laying 25mm x 3 mm G.I. strip in 40 mm dia,GI pipe as/from earth electrode including soldering etc. as required.	Mtr		200.00
234	Providing and fixing 25 mm x 3mm G.I. strip on surface or in recess for connections etc. as required with all labour and material.	Mtr		2300.00
	LT CABLE			
235	Supply, following sizes of PVC sheathed PVC/XLPE insulated Aluminium conductor multicore control armoured cable of 1.1 KV grade.			
a	4C- 10 sq mm Aluminium	Metre		50.00
b	4C- 16 sq mm Aluminium	Metre		1050.00
c	4C- 25 sq mm Aluminium	Metre		270.00
d	3.5C- 35 sq mm Aluminium	Metre		50.00
e	3.5C- 50 sq mm Aluminium	Metre		100.00
f	3.5C- 70 sq mm Aluminium	Metre		200.00
g	3.5C- 95 sq mm Aluminium	Metre		100.00
h	3.5C- 150 sq mm Aluminium	Metre		400.00
i	3.5C- 300 sq mm Aluminium	Metre		250.00
236	Laying of underground cable 0. 75 metre below ground level covered with sand and bricks including excavation and refilling of trenches.:-			
a	16 Sq mm to 35 sqmm 2 to 4 Core	metre		1050.00
	Note: additional cable in same trench : 50% of Main cable cost			
237	Laying of underground cable in pipe /existing open/closed trench etc as			
a	16 Sq mm to 35 sqmm 2 to 4 Core	metre		200.00

238	Laying and fixing of cable on surface/ cable tray etc as required:-			
a	16 Sq mm to 35 sqmm 2 to 4 Core	metre		200.00
239	Supply and erection of suitable compression type brass cable glands for underground Cable :-			
a	10 sqmm to 16s qmm Cable 2 to 4 Core	SET		6.00
240	S/E mark double walled corrugated (DWC) HOPE, pipe 10 Kg/Cm2 ,laid 0.75 Metre below ground level including digging and refilling of earth including cost of suitable size socket/coupler for HOPE pipe including the cost of labour and material required to complete the job in all respect up to the entire satisfaction of Engineer in charge of the work.			
a	DWC/HOPE pipe 63/50 mm outer dialinner dia	metre		250.00
241	Supply and erection of weather proof M .S. box of size 20 cm x 15 cm x 1 O cm. covered with 3.00 mm thick M.S. sheet hinged cover, locking arrangement , housed in wall , including the cost of 1 no. 16 amp. 415 volts SP MCB and 2 nos. 63 amp. 415 volts neutral links fixed on hard wood board/1 O mm Bakellite sheet in the M.S. box including painting and necessary connections .	SET		16.00
a	Laying and fixing of cable on surface/ cable tray etc as required:-			
b	16 Sq mm to 35 sqmm 2 to 4 Core	metre		420.00
c	50 Sq mm to 150 sqmm 2 to 4 Core	metre		800.00
d	185 sqmm to 240 sqmm 3 to 3½ Core	metre		100.00
e	300 sqmm to 400 sqmm 3 to 3½ Core	metre		250.00
242	Supply and erection of suitable compression type brass cable glands for underground Cable :-			
a	Up to 6 Sq mm cable 2 to 4 Core	SET		
b	1O sqmm to 16s qmm Cable 2 to 4 Core	SET		4.00
c	25 sqmm to 50 sqmm Cable 2 to 4 Core	SET		20.00
d	70 sqmm to 95 sqmm Cable 3 to 3½ Core	SET		12.00
e	120 sqmm to 185 sqmm Cable 3 to 32 Core	SET		20.00
g	300 sqmm to 400 sqmm Cable 3 to 3½ Core	SET		250.00
	CABLE TRAY			
243	Supply and erection of MS cable tray , duly pained as required including erection of the same on wall or ceiling with necessary fixture and other material required to complete the job in all respect up to the entire			

	satisfaction of Engineer-in Charge of the work.			
a	MS perforated cable tray painted with powder coating 100 X 50X2mm	**metre**		100.00
b	MS perforated cable tray painted with powder coating 200 X 50X2mm	**metre**		100.00
c	MS perforated cable tray painted with powder coating 375 X 50X2mm	**metre**		350.00
d	MS perforated cable tray painted with powder coating 600 X 50X2mm	**metre**		400.00
244	Supply and erection of weather proof M .S. box of size 20 cm x 15 cm x 1 O cm. covered with 3.00 mm thick M.S. sheet hinged cover, locking arrangement , housed in wall , including the cost of 1 no. 16 amp. 415 volts SP MCB and 2 nos. 63 amp. 415 volts neutral links fixed on hard wood board/1 O mm Bakellite sheet in the M.S. box including painting and necessary connections .	SET		25.00
	Telephone , and Data			
245	Providing and fixing GI concealed sheet metal boxes with inner and outer face plate including concealing the box in wall and fixing in position with inner plate and face plate with all labour and material required for the job complete in all respects			
a	1 & 2 Modules including combined plate for Telephone and data	each		32.00
246	Providing and fixing modular type accessories of approved make in existing box including fixing and making necessary connections, complete in all respect.			
a	Telephone Socket outlet modular type	each		16.00
b	Blanking plate	each		20.00
247	Supply and laying of multicore telephone cable conductor size 0.51 mm bright annealed copper conductor PVC insulated and sealed in existing pipe/channel and making necessary connection complete in all respect up to the entire satisfaction of the Engineer-in charge of the work.			
a	2 pair telephone wire	metre		350.00
248	Supplying and drawing PVC insulated, PVC sheathed multicore un-armored taped telephone cables of 0.61 mm dia size in existing conduit pipe, of the following sizes.			
a	20 Pair	RM		100.00
249	Supplying and fixing of telephone distribution board (tag block) in hinged type MS box duly powder coated complete with bakelite sheet with terminal nation of incoming and			

	outgoing telephone wire etc. complete as required.			
a	20 Pair	Nos.		4.00
b	RJ 45 Computer DATA socket outlet for CAT 6 or CAT6e cable Modular type	each		16.00
c	Supplying and drawing of 1 no UTP 4 pair CAT 6 LAN Cable in the existing surface/recess MS/PVC conduit as required	metre		350.00
250	Supply and erection of PVC CONDUIT ISi marked (Medium) recessed in walVceiling etc. including the cost of PVC bends, inspection boxes, iron hooks and cement concrete etc. complete in all respect up to the entire satisfaction of Engineer-in-Charge of work.			
a	PVC pipe of 25 mm dia.	metre		200.00
b	PVC pipe of 32 mm dia.	metre		50.00
	SUB WORK : ESTIMATE OF EXTERNAL LIGHTING WORKS			
	EXTERNAL LIGHTING WORK			
	FEEDER PILLAR			
251	Design, manufacturer, supply, testing and commissioning of approx size 1200 mm heightx1000mm wide x 450mm deep of 2.5mm thick sheet metal enclosure, powder coated, weather proof, double door type feeder pillar with godown lock and padlock complete with interconnection with copper wires, LED indicating lights, providing holes for the glands. The base frame shall have angle iron of 50mm x 50mm x6mm of size 1000mm x 450mm with 600mm long legs of MS angle and coverage of underground cable under feeder pillar with 2.5 mm thick sheet, 450mm in width all round the base frame including grouting the feeder pillar in 1:4:8 cement concrete complete as required. Feeder Pillar shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required. Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be Galvanized and Zinc passivated)			
	Feeder Pillar			
	INCOMER			
	1No. 100 A TPN MCCB			
	Protection Istrument			
	One (1) Nos. (0-500V) 96 x 96 Sq.mm voltmeter with control Fuse & selector switch.			
	1 Set of (0-100 Amps) 96 x 96mm CT operated Ammeter with 3 way selector switch and 100 /5A, CL-1, 10VA CT.			

	One (1) Set of Phase Indication & ON/OFF Lamp with 2A Fuse.			
	1 Nos.TIMER suitable for 24Hrs. Setting with Auto/Manual Selector switch			
	1 No. 25A TP CONTRACTOR			
	BUS-BAR			
	1 Set of 100A TPN Aluminium Bus Bar with colour coded PVC Sleeves (Heat Shrinkable sleeve)			
	OUTGOINGS			
	8 No. 20 A DP MCB			
	Feeder pillar-1 as described above	No.		1.00
	All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbar insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided.			
	The feeder pillar shall be complete with all interconnections, risers, internal wiring, labels etc.			
	Lighting pole			
252	Supply and erection of Hot Dip Galvanized octagonal pole of 3mm thickness, with base plate including cost of nut and bolts , earthing studs, Integral Cable termination arrangement 5 mm thick Bakelite base plate on suitable welded MS/GI bracket 32 A four way connector 2 no 1 O A SP MCB , end cover and all accessories as supplied by the manufacture including Providing RCC foundation of M25 grade (1 Cement:1 Stone aggregate: 2 Coarse sand) i/c excavation, steel reinforcement (Fe 500) @80 kg/cum of concrete contents, concrete cover 50mm, anchor bolts etc. over a bed of PCC 1 :5: 1 O of required dimensions for octagonal poles of various heights aser following specifications complete in all respects and as per directions of Engineer-in-charge			
	9 Metre Long pole with top dia 100 mm and bottom 200 mm with base plate of size 350 x 350 x 20 mm.	Each		30.00
253	Supply and erection of GI bracket made of 32 mm dia medium class GI pipe, having 15 deg angle from horizontal, suitable for fixing on top of Street Light pole			
	150 cm long, with 30 cm high suitable size pole cap	Each		30.00
254	Erection of street light fitting on the pole including the cost of petty material required (irrespective of height/length of bracket)			
	At Pole above 7 metres but up to the height of 9 metres.	Each		30.00
	Light Fixture			

255	Supplying and fixing 84 watt LED type street light with die cast aluminium housing for ingress protection of IP65 and complete with all accessories etc, on pole/building including connection with FR PVC insulated copper conductor cable and earthing the body etc. as required. **PHILIPS : BRP062 LED 84 CW SLC S1 PSU**	Each		30.00
	LT CABLE			
256	Supply, following sizes of PVC sheathed PVC/XLPE insulated Aluminium conductor multicore control armoured cable of 1.1 KV grade.			
	4C- 25 sq mm Aluminium	Metre		50.00
	3C- 16 sq mm Aluminium	Metre		800.00
	3C- 10 sq mm Aluminium	Metre		125.00
257	Laying of underground cable in pipe /existing open/closed trench etc as			
	2.5 Sq mm to 10 Sq mm 2 to 4 Core	metre		125.00
	16 Sq mm to 35 sqmm 2 to 4 Core	metre		850.00
258	Supply and erection of suitable compression type brass cable glands for underground Cable :-			
	Up to 6 Sq mm cable 2 to 4 Core	SET		1.00
	1O sqmm to 16s qmm Cable 2 to 4 Core	SET		82.00
	25 sqmm to 50 sqmm Cable 2 to 4 Core	SET		2.00
259	S/E mark double walled corrugated (DWC) HOPE, pipe 10 Kg/Cm2 ,laid 0.75 Metre below ground level including digging and refilling of earth including cost of suitable size socket/coupler for HOPE pipe including the cost of labour and material required to complete the job in all respect up to the entire satisfaction of Engineer in charge of the work.			
	DWC/HOPE pipe 63/50 mm outer dialinner dia	metre		975.00
260	Wiring main and sub mains in two single core for phase and neutral wire and one single core for earth wire PVC insulated Copper conductor cable 1100 Volts grade in existing MS/PVC Conduit etc as required.			
	3 run of Size 2.50 Sqmm(1.1.80mm)	metre		300.00
	Notes :			
	The cable quantities given are approximate and to cover various sizes. The contractor shall measure the cables required and procurement order shall be placed accordingly. The quantities shall be confirmed before start of work.			

	Single Compression glands to be used for internal area, while double compression cable glands to be used for outdoor installation.			
	Hume Pipe:			
261	Providing, laying and fixing following dia RCC pipe NP2 class (light duty) in ground complete with RCC collars, jointing with cement mortar 1:2 (1 cement : 2 fine sand) including trenching (75 cm deep) and refilling etc as required			
	100 mm dia	RM		50.00
	EARTHING			
262	Earthing with GL earth pipe 4.5 m long and 40 mm dia with masonry enclosures on the top etc. (but without charcoal or coke and salt) as required.	each		2.00
263	Extra for using salt and char coal/coke for pipe earth electrode as required.	each		2.00
264	Supplying and laying 25mm x 3mm G.I. strip at 0.5 metre below ground as strip earth electrode including soldering etc. as required.	each		25.00
265	Providing and fixing 25 mm x 3mm G.I. strip on surface or in recess for connections etc. as required with all labour and material.	each		25.00
	SUB WORK : ESTIMATE OF ELECTRICAL SUBSTATION AND EXTERNAL DEVELOPMENT			
	630A 11 kV vaccum circuit breakers			
266	Supplying, installation, testing & commissioning of H.V. air insulated distribution switchgear **extendable type H.T. Board** suitable for indoor installation for use on 11 KV 50 Hz earthed system having a symmetrical breaking capacity of 350 MVA at 11 KV comprising of 630A 11 kV vaccum circuit breakers. Cable box with single compression brass glands suitable size to receive 11 KV XPLE cable of 3 core 240 sq.mm. The panel shall be equipped with following accessories as per SLD and specification compete as required.			
	INCOMINGING PANELS - 1 Nos. & EACH SHALL COMPRISING OF:			
	1No. -Metal Clad housing with having 630 A Vacumm circuit breaker with Manual & Electric operated mechanism (spring charged motor - 230V AC)			
	1Set- Tripping coil & closing Coil 24V DC			
	1 - Set of isolating plug and receptacle			

	1 - Set of Automatic safety shutter			
	1- Set of breaker control switch (TNC)			
	1 -Set of dual core CT's as follows:			
	Core I -75/5-5A class 5P-10 (15 VA)			
	Core II - 150/5-5A class -1 (15 VA)			
	1set of 11KV /√3 / 110/√ 3 Volt, 100 VA burden & accuracy class 1, 3 nos. single phase construction, dry type cast resin PT			
	1 - No. Ammeter(150A) with selector switch (Built-in)			
	1 - KW, KVA, KWH ,PF, HZ & KVAH Meter			
	1 - Set of ON/OFF/Trip/ Spring Charged & Trip circuit healthy and phase indicating lamps.			
	1 No.-H.T. Cable joint box suitable for 3C x 240 sq.mm aluminium conductor XLPE cable, 11 KV (E)			
	1-set of IDMTL relay with 3 elements of O/C protection(50%-200%), instantaneous O/C protection (200%-800%) & 1 element of E/F protection (10%-40%).			
	1 no. U/V & O/V relay			
	1 no. Anti Pumping Relay			
	1 no. Trip Circuit supervision relay.			
	1 no. Negative phase sequence protection relay.			
	1 no. Master Trip relay.			
	1 no. 8 window Annunciation system for alarm & Trip status of relays, HT Breakers complete with acknowledgement & Reset Button.			
	Bus Bar : - 1 Set of 630 amps TP air insulated Cu. bus bar & chamber.			
	OUTGOING PANELS:			
	2 Nos. & EACH SHALL COMPRISING OF:			
	1No. -Metal Clad housing with having 630 A Vacumm circuit breaker with Manual & Electric operated mechanism (spring charged motor - 230V AC)			
	1 - Tripping coil & closing Coil 24V DC			
	1 - Set of isolating plug and receptacle			
	1 - Set of Automatic safety shutter			

	1- Set of breaker control switch (TNC)			
	1 -Set of dual core CT's with Ammeter as given below for outgoing feeders respectively:			
	Core I -75 /5-5A class 5P-10 (15VA)			
	Core II - 75/5-5A class I (15VA)			
	1set of 30KV /√3 / 110/√ 3 Volt, 100 VA burden & accuracy class 1, 3 nos. single phase construction, dry type cast resin PT			
	1 - No. Ammeter(0-30A) with selector switch (Built-in)			
	1 - KW, KVA, KWH & KVAH Meter			
	1- Set ON/OFF, Trip & Trip ckt healthy indication lamp			
	1 No.-H.T. Cable joint box suitable for 3C x 185 sq.mm aluminium conductor XLPE cable, 11 KV (E)			
	1-set of IDMTL relay with 3 element of O/C protection(50%-200%), Instantanous Over Current protection(200%-800% and 1 element of E/F protection (10%-40%)			
	Restricted Earth Fault Relay with following rating PS class CT to be mounted on neutral of Transformers.(CT to be provided by HT panel Vendor)			
	For 1200 KVA Trafo.-2000/5A PS class - 2 nos.			
	1 - Aux. relay			
	1 - Trip circuit supervision relay			
	1 - no. Anti Pumping Relay			
	1 - Master Trip relay			
	1 no. 8 window Annunciation system for alarm & Trip status of relays, HT Breakers complete with acknowledgement & Reset Button.			
	Supply Rate for HT Panel as per specification & as described above	Set		1.00
267	HT CABLE			
	Supplaying of XLPE (E) 11 kv HT aluminium conductor armoured cable 1 metre below ground level with sand & bricks with all labour and material including digging and refilling of trench as required			
	240 sqmm 3 core XLPE Cable	metre		25.00
	185 sqmm 3 core XLPE Cable	metre		50.00

268	Laying and erection of XLPE (E)II kv HT aluminium conductor armoured cable 1 metre below ground level with sand & bricks with all labour and material including digging and refilling of trench as required			
	above 120 and up to 300 sqmm 3 core XLPE Cable	metre		125.00
269	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required			
	150 to 185 sqmm	SET		4.00
	240 to 400 sqmm	SET		2.00
270	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required			
	150 to 185 sqmm	SET		2.00
	240 to 400 sqmm	SET		1.00
	Transformer - 1200 KVA 11/0.433kva Out Door Oil Type			
271	Design, Supply & erection of transformer of standard make Required 1200 KVA 11/0.433 KVA rating outdoor type 11 KVA V.C.B, panel, G.O. switch, H. Pole , H.T metering panel, APFC panel, battery charges, 11 KVA substation, entire cable network from G.O. switch to H.T metering equipment and from H.T metering to Transformer. From transformer to main to L.T, panel earthling, safety equipment, fenced enclosure for transformer, and any other contingent thereto complete in all respect as per approved make and directions of Engineer-in-charge as per respective capacity.			
	1200KVA	EACH		2.00
	Sub-Head-I : PCC LT Panel			
272	Design, Fabrication, Supply, Erection,Testing and commisioning of Powder coated PCC Panel fabricated out of 14 guage CRCA sheet steel in cubical, compartmentallised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T -iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels.Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be Galvanized and Zinc passivated)As per Specification.			
	PCC PANEL			
	INCOMER FROM TRANSFORMERS(1 Nos. 1200 KVA			

	Each)			
	Incomer from each transformer shall be provided with the following:			
	1 nos. 2000 A FP EDO ACB having microprocessor based programmable & variable trip setting for releases with integral protection for the following:			
	IDMTL Protection for S/C, O/C & E/f releases.			
	U/V & O/V protection			
	Anti Pumping device			
	Trip circuit supervision relay			
	Master trip relay			
	The ACB shall be complete with 3nos. 2000A/5A, 15VA, 5P10 CTs for protection .			
	METERING & INDICATION			
	1 set of phase indicating lamps			
	1 set of Voltmeter (0-500V) with VSS with 3 nos. 6A SP MCBs each			
	1 Nos. Load Analyser cum digital Multifunction Meter with 3 nos. 2000/5A, CL-1 CTs, as required.			
	1 Set of Breaker ON-OFF-TRIP, Spring charged indication Lamps			
	1 no. of 2000/5A, 15 VA, class-1 CTs for APFC relay			
	1 No. 400V AC/12V DC, 100VA SMPS (Rectifiers) with TP MCB of suitable rating & 2nos 6way terminal strip .			
	INCOMER FROM 500KVA DG Set (2 nos.)			
	Each Incomer from Synchronising panel shall be provided with the following:			
	1 nos. 800 A FP EDO ACB having microprocessor based programmable & variable trip setting for releases with integral protection for the following:			
	IDMTL Protection for S/C, O/C & E/f releases.			
	U/V & O/V protection			
	Trip circuit supervision relay			
	Master trip relay			
	Reverse power Protection.			

	The ACB shall be complete with 3nos. 800A/5A, 15VA, 5P10 CTs for protection.			
	METERING & INDICATION			
	1 sets of phase indicating lamps			
	1 sets of Voltmeter (0-500V) with VSS each with 3 nos. 6A SP MCBs each			
	1 Nos. digital Multifunction Meter with 3 nos. 1000/5A, CL-1 CTs, as required			
	1 Sets of Breaker ON-OFF-TRIP, Spring charged indication Lamps			
	BUS COUPLER:-			
	1 nos. 1600A TPN MDO ACB having microprocessor based programmable & variable trip setting for releases with integral protection for the following:			
	1 Set of Breaker ON-OFF-TRIP indication Lamps with each Bus Coupler			
	INTERLOCKING.			
	Incomers from Transformer, Incomers from D.Gs. & Bus couplers shall be electrically & mechanically interlocked.			
	PLC Panel:			
	Design, manufacturing, testing at works, supply, receiving, storing, inspection, handling, assembling, installing in correct aligned position, effecting proper connections, testing and commissioning of **PLC Based Auto Start, Auto Changeover, Auto Load Balance.**			
	DG AMF panel for 2 Nos. incomer from 2 Nos. 500 KVA D. G. Sets as per technical specifications.			
	AMF panel for 2 Nos. DG Set incomer & 2 Nos. Transformer incomer as per technical specifications.			
	BUS BAR:-			
	1 Sets of 2500A, TPN Aluminum bus bars with colour coded sleeves.			
	OUTGOINGS			
	2 nos. 1600A TPN MDO ACB having microprocessor based programmable & variable trip setting for releases with integral protection.			
	2 nos. 1250 A TPN MDO ACB having microprocessor based programmable & variable trip setting for releases with integral protection.			

	7 Nos. 630 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	5 Nos. 400 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	3 Nos. 250 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	3 Nos. 160 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	4 Nos. 100 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Twenty Four (24) Nos. Three Phase Digital Energy Meter with necessary CTs. As Per SLD.			
	Supply of LT Panel as Described above	Set		1.00
273	**CAPACITOR PANEL 365 kvar**			
	INCOMER			
	1 Nos. 630 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Metering & Indication			
	1 set of phase indicating lamps			
	1 No. (0-500V) Digital Voltmeter with Built-in VSS with 3 nos. 6A SP MCB			
	1No. (0-600A) Digital Ammeter with ASS and 3 nos. 600/5A, CL 0.5,10VA CTs'			
	1 No. 14 step APFCR relay			
	1 No. Selector switch for auto-off-manual.			
	BUS-BAR			
	1 Set of 800A TP Aluminium Bus Bar with colour coded PVC Sleeves (Heat Shrinkable sleeve)			
	OUTGOINGS			
	2 Sets of 200A TP+N MCCB 50kA With Thermal Magnetic Based Release (O/C,S/C) Protection with 225A TP Power contactor (AC-3 duty)			
	2 Sets of 100A TP+N MCCB 50kA With Thermal Magnetic Based Release (O/C,S/C) Protection with 110A TP Power contactor (AC-3 duty)			
	3 Sets of 63 A TP+N MCCB 50kA With Thermal Magnetic Based Release (O/C,S/C) Protection with 50 A TP Power			

	contactor (AC-3 duty)			
	7 Sets of 40 A TP+N MCCB 50kA With Thermal Magnetic Based Release (O/C,S/C) Protection with 32 A TP Power contactor (AC-3 duty)			
	1 Nos. 100 KVAR capacitors MPP TYPE NORMAL DUTY			
	2 Nos. 50 KVAR capacitors MPP TYPE NORMAL DUTY			
	3 Nos. 25 KVAR capacitors MPP TYPE NORMAL DUTY			
	4 Nos. 15 KVAR capacitors MPP TYPE NORMAL DUTY			
	3 Nos. 10 KVAR capacitors MPP TYPE NORMAL DUTY			
	14 Sets self Illuminated Red-Green (ON-OFF) and push buttons.			
	Supply of Capacitor panel as described above	Sets		2.00
274	**MCC PANEL-01 (SILO)**			
	Design, Fabrication, Supply, Erection,Testing and commisioning of Powder coated Main Distribution Panel fabricated out of 14 guage CRCA sheet steel in cubical, compartmentallised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T -iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels.Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be Galvanized and Zinc passivated)As per Specification.			
	1 Nos. 250. Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	METERING & INDICATION			
	1 Set of (0-250Amps) CT operated of Multi Functional three phase Digital Meter (LCD) display Type in Size(96 x 96) sq mm. : Display diffirence parameter , at a time i.e. Voltage , Current , frequency , P/F , power , Energy , Accuracy class 1.0 *			
	BUS BAR:-			
	1 Sets of 300A, TPN Aluminum bus bars with colour coded sleeves.			
	OUTGOINGS			
	6 Nos. 63 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Supply of MCC PANEL-01 (SILO) as Described above	Set		1.00

275	**MCC PANEL-03 (MAIN PLANT)**			
	Design, Fabrication, Supply, Erection,Testing and commisioning of Powder coated Main Distribution Panel fabricated out of 14 guage CRCA sheet steel in cubical, compartmentallised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T -iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels.Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be Galvanized and Zinc passivated)As per Specification.			
	1 nos. 1250 A FP EDO ACB having microprocessor based programmable & variable trip setting for releases with integral protection for the following:			
	METERING & INDICATION			
	1 Set of (0-1250Amps) CT operated of Multi Functional three phase Digital Meter (LCD) display Type in Size(96 x 96) sq mm. : Display diffirence parameter , at a time i.e. Voltage , Current , frequency , P/F , power , Energy , Accuracy class 1.0 *			
	BUS BAR:-			
	1 Sets of 1600A, TPN Aluminum bus bars with colour coded sleeves.			
	OUTGOINGS			
	2 nos. 1000 A FP EDO ACB having microprocessor based programmable & variable trip setting for releases with integral protection for the following:			
	2 Nos. 160 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	1 Nos. 100 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Supply of MCC PANEL-03 (MAIN PLANT) as Described above	Set		1.00
276	**MCC PANEL-04 (MAIN PLANT)**			
	Design, Fabrication, Supply, Erection,Testing and commisioning of Powder coated Main Distribution Panel fabricated out of 14 guage CRCA sheet steel in cubical, compartmentallised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T -iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels.Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be			

	Galvanized and Zinc passivated)As per Specification.			
	1 nos. 1600 A FP EDO ACB having microprocessor based programmable & variable trip setting for releases with integral protection for the following:			
	METERING & INDICATION			
	1 Set of (0-1600Amps) CT operated of Multi Functional three phase Digital Meter (LCD) display Type in Size(96 x 96) sq mm. : Display diffirence parameter , at a time i.e. Voltage , Current , frequency , P/F , power , Energy , Accuracy class 1.0 *			
	BUS BAR:-			
	1 Sets of 2000A, TPN Aluminum bus bars with colour coded sleeves.			
	OUTGOINGS			
	5 Nos. 630 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	2 Nos. 160 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	3 Nos. 100 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	2 Nos. 63Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Supply of MCC PANEL-04 (MAIN PLANT) as Described above	Set		1.00
277	**MCC PANEL-05 (MAIN PLANT)**			
	Design, Fabrication, Supply, Erection,Testing and commisioning of Powder coated Main Distribution Panel fabricated out of 14 guage CRCA sheet steel in cubical, compartmentallised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T -iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels.Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be Galvanized and Zinc passivated)As per Specification.			
	1 Nos. 400. Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	METERING & INDICATION			
	1 Set of (0-400Amps) CT operated of Multi Functional three phase Digital Meter (LCD) display Type in Size(96 x 96) sq mm. : Display diffirence parameter , at a time i.e. Voltage , Current , frequency , P/F , power , Energy , Accuracy class			

	1.0 *			
	BUS BAR:-			
	1 Sets of 500A, TPN Aluminum bus bars with colour coded sleeves.			
	OUTGOINGS			
	3 Nos.200 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	2 Nos.100 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Supply of MCC PANEL-05 (MAIN PLANT) as Described above	Set		1.00
278	**MCC PANEL-06**			
	Design, Fabrication, Supply, Erection,Testing and commisioning of Powder coated Main Distribution Panel fabricated out of 14 guage CRCA sheet steel in cubical, compartmentallised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T -iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels.Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be Galvanized and Zinc passivated)As per Specification.			
	1 Nos. 400. Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	METERING & INDICATION			
	1 Set of (0-400Amps) CT operated of Multi Functional three phase Digital Meter (LCD) display Type in Size(96 x 96) sq mm. : Display diffirence parameter , at a time i.e. Voltage , Current , frequency , P/F , power , Energy , Accuracy class 1.0 *			
	BUS BAR:-			
	1 Sets of 500A, TPN Aluminum bus bars with colour coded sleeves.			
	OUTGOINGS			
	3 Nos.160 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	4 Nos.100 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Supply of MCC PANEL-06 as Described above	Set		1.00

279	**MCC PANEL-07**			
	Design, Fabrication, Supply, Erection,Testing and commisioning of Powder coated Main Distribution Panel fabricated out of 14 guage CRCA sheet steel in cubical, compartmentallised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T -iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels.Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be Galvanized and Zinc passivated)As per Specification.			
	1 Nos. 630. Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	METERING & INDICATION			
	1 Set of (0-600Amps) CT operated of Multi Functional three phase Digital Meter (LCD) display Type in Size(96 x 96) sq mm. : Display diffirence parameter , at a time i.e. Voltage , Current , frequency , P/F , power , Energy , Accuracy class 1.0 *			
	BUS BAR:-			
	1 Sets of 500A, TPN Aluminum bus bars with colour coded sleeves.			
	OUTGOINGS			
	2 Nos. 400 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	2 Nos.160 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	3 Nos.100 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Supply of MCC PANEL-06 as Described above	Set		1.00
280	**MDB-01 UTILITY**			
	Design, Fabrication, Supply, Erection,Testing and commisioning of Powder coated Main Distribution Panel fabricated out of 14 guage CRCA sheet steel in cubical, compartmentallised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T -iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels.Approval shall be taken for each panel before fabrication. (All hardwares like nuts and bolts used shall be			

	Galvanized and Zinc passivated)As per Specification.			
	1 Nos. 630. Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	METERING & INDICATION			
	1 Set of (0-600Amps) CT operated of Multi Functional three phase Digital Meter (LCD) display Type in Size(96 x 96) sq mm. : Display diffirence parameter , at a time i.e. Voltage , Current , frequency , P/F , power , Energy , Accuracy class 1.0 *			
	BUS BAR:-			
	1 Sets of 500A, TPN Aluminum bus bars with colour coded sleeves.			
	OUTGOINGS			
	3 Nos.250 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	2 Nos.160 Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	1 Nos.63Amps TPN MCCB With thermal magenetic release for O/C,& S/C Protection.			
	Supply of MDB-01 UTILITY as Described above	Set		1.00
	BUS DUCT			
281	Design, manufacture, testing at works, supplying, installing, testing and commissioning of sheet steel enclosed TPN "AL" bus duct **air insulated type** having a gauge 2.0 mm and internal 40 x 5 mm supporting channel suitable for indoor installation including connecting the bus duct with terminal flanges alongwith all accessories as required, complete including expansion joint after every 10 meters copper laminated flexible end connections, phase crossover, bends, adopter box, bus bar supports, insulating materials, all mounting accessories, necessary steel structure support with down rods, dash fastner, 2 Nos. GI 50 x 6mm earth strip shall be bolted on each side, complete as required and as per specifications.			
a	2000 Amps. TPN For Transformer To LT Panel	RM		50.00
b	800 Amps. TPN (For DG LT Panel)	RM		35.00
c	Design, manufacture, testing at works, supplying, installing, testing and commissioning of adopter box for Geerator	Each		2.00
d	Design, manufacture, testing at works, supplying, installing, testing and commissioning of Copper Flexiable for Transformer & Panels.	Each		2.00
	LT CABLE			
282	Supply, following sizes of PVC sheathed PVC/XLPE insulated Aluminium conductor multicore control armoured			

	cable of 1.1 KV grade.			
a	4C- 10 sq mm Aluminium	Metre		15.00
b	4C- 16 sq mm Aluminium	Metre		100.00
c	3.5C- 35 sq mm Aluminium	Metre		200.00
d	3.5C- 150 sq mm Aluminium	Metre		1000.00
e	3.5C- 185 sq mm Aluminium	Metre		500.00
f	3.5C- 240 sq mm Aluminium	Metre		200.00
g	3.5C- 300 sq mm Aluminium	Metre		2250.00
	Laying and fixing of cable on surface/ cable tray etc as required:-			
h	16 Sq mm to 35 sqmm 2 to 4 Core	metre		315.00
i	50 Sq mm to 150 sqmm 2 to 4 Core	metre		1000.00
j	185 sqmm to 240 sqmm 3 to 3½ Core	metre		700.00
k	300 sqmm to 400 sqmm 3 to 3½ Core	metre		2250.00
	Supply and erection of suitable compression type brass cable glands for underground Cable :-			
l	Up to 6 Sq mm cable 2 to 4 Core	SET		1.00
m	1O sqmm to 16s qmm Cable 2 to 4 Core	SET		4.00
n	25 sqmm to 50 sqmm Cable 2 to 4 Core	SET		2.00
o	70 sqmm to 95 sqmm Cable 3 to 3½ Core	SET		1.00
p	120 sqmm to 185 sqmm Cable 3 to 32 Core	SET		12.00
q	240 sqmm to Cable 3 to 32 Core	SET		4.00
r	300 sqmm to 400 sqmm Cable 3 to 3½ Core	SET		46.00
	CABLE TRAY			
283	Supply and erection of MS cable tray , duly pained as required including erection of the same on wall or ceiling with necessary fixture and other material required to complete the job in all respect up to the entire satisfaction of Engineer-in Charge of the work.			
a	MS perforated cable tray painted with powder coating 100 X 50X2mm	metre		50.00
b	MS perforated cable tray painted with powder coating 200 X 50X2mm	metre		25.00

c	MS perforated cable tray painted with powder coating 375 X 50X2mm	metre		15.00
d	MS perforated cable tray painted with powder coating 600 X 50X2mm	metre		15.00
	EARTHING			
284	Earthing with G.I. earth plate 600 mmx 600 mm x 6 mm thick including accessories and providing masonry enclosures with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required.	each		48.00
285	Earthing with tinned copper earth plate 6D0mmx600mmx3mm thick including accessories and providing masonry enclosures with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) etc. complete as required.	each		48.00
285a	Extra for charcoal or coke and salt for G. I. plate or copper plate earth electrode.	each		96.00
286	Supplying and laying 25mm x 3mm G.I. strip at 0.5 metre below ground as strip earth electrode including soldering etc. as required.	Mtrs.		150.00
287	Supplying and laying 25mm x 3 mm G.I. strip in 40 mm dia,GI pipe as/from earth electrode including soldering etc. as required.	Mtrs.		100.00
288	Providing and fixing 25 mm x 3mm G.I. strip on surface or in recess for connections etc. as required with all labour and material.	Mtrs.		2200.00
289	Providing and fixing 25 mm x5 mm copper strip in 40 mm dia G.I. pipe from earth electrode as required	Mtrs.		150.00
290	Providing and fixing 25 mm x 5mm copper strip on surface or in recess for connections etc. as required with all labour and material.	Mtrs.		100.00
291	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1: 2 (1 cement: 2 fine sand) including testing of joints etc. complete:			
a	150 mm dia. R.C.C. pipe	Mtrs.		250.00
b	300 mm dia. R.C.C. pipe	Mtrs.		400.00
c	450 mm dia. R.C.C. pipe	Mtrs.		50.00
292	**DG SET WORKS**			
	DG SET (SILENT TYPE)			
	Designing, Supply & erection of DG set of capacity given below with noise controlled devices acoustic of suitable rating, testing and commissioning of diesel generating set, radiator cooled, 3 phase, 4 wire, 50 cycles 415 +(-)1% volts AC alternator coupled directly through a set of flexible			

	coupling on a common MS fabricated base frame with diesel engine complete with suitable size incoming cable from generator to change over/AMF panel, making 2nd incoming cable connection from transformer, outgoing cable connection from changeover/ standard panel, making second incoming cable connection from transformer, outgoing cable connection from changeover / STD panel to incomer of motor starter panel, fenced enclosure with platform for DG sets complete as per following detailed scope and specifications and directions of Engineer-in-charge.			
	The rating should be at 1500 RPM.			
	Diesel Engine			
	Alternator			
	Battery 24 v.			
	Base Plate.			
	suitable sq mm suitable core copper cable upto 40 metres.			
	Tools, standard panel			
	Metering set 415 VAC-1 set (Amp. meter, Volt Meter, ASS, VSS, Phase Indicator, control fuse, frequency meter, CT's)			
	Metering set 60/5A/11 OV (Amp. Meter, Volt Meter			
	Overload protection for DC-1 No.			
	Battery Charger 24V DC			
	Copper bus bar of suitable size			
	KWH meter 96 sqmm size			
	Starting fuse button and key switch9on/off)			
	Indicating lamps for low lubricated oil pressure, high coolant temperature, set running, load on, De control and other required accessories complete in all respects to the satisfaction of Engineer-in-charge			
	500kva	EACH		2.00
	(The enclosure should be as per CPCB II norms. The current approval certificate shall be submitted by the firm).The day tank of 990 Liters shall be mounted on a suitable pedestal with weather proof enclosure nearer to the DG set. .			
	NOTE:-			
	The fuel oil pump shall be installed on the Ground Floor complete with foundations and will be common for both the D.G sets.			

	The Fuel transfer pump shall be as per Relevent IS for this type of application.			
	The Foundation shall be in the scope of the Civil Contractor .The DG set is to be installed on the ground floor.Unloading , loading , and installation shall be in the scope of contractor.(Electrical)			
	The DG set should be supplied with cable end box to terminate suitable size of cable / Bus Duct on alternator complete as required.			
	Fuel oil required for testing the DG set as per IS Shall be supplied by the contractor.			
	Sub Total			

Checklist Proforma for Technical Bid

Following documents are to be uploaded in the Bid:

S.No.	Criteria	Documentary Evidence to be attached	Checklist duly filled mentioning Page No.
1	The Bidder should either be a body incorporated in India under the Companies Act,1956/2013 including any amendment thereto or a partnership firm registered in India or a proprietary firm registered in India. The Bidder can bid as consortium or Joint Venture of maximum 3 partners. Hence, the conditions can be met independently by a single Bidder or jointly in consortium with other members.	Incorporation Certificate/ Registered Partnership deed of the firm/ Registration Certificate of proprietor/private limited firm/Registered Joint Venture firm agreement along with • GST, • PAN Card, • ESI and • EPF Certificate	
2	If the Proposal is submitted by a JV, there shall be a Joint Venture Agreement specific for this contract between the constituent firms/ members, indicating clearly, amongst other things, the proposed distribution of responsibilities both financial as well as technical for execution of the work amongst them. A copy of the JV agreement entered by the Joint Venture members shall be submitted along with the bid.		

3	The Bidders or any consortium partners should have experience of planning, design and construction of similar Edible Oil Mill for planning, designing, procurement, construction of Building and Plant Machinery.	Copy of Work Orders, Agreements (if done) and Satisfactory completion certificate	
4	The Bidder or any consortium partners should have completed at least three similar projects of edible Oil Mill in India or abroad. In case, the Bidder is a Consortium or Joint Venture (JV), theircollective / individual experience shouldmeet the required experience.	Copy of Work Orders/ Agreements and Commissioning Certificate	
5	The Bidder shall submit, in support to the above, the list of projects commissioned along with their details.		
6	In case of JV/Consortium, a maximum of three members are allowed to participate in the bid. In case, the Bidder is a JV/Consortium, the members shall authorize one of the JV/Consortium members to act on their behalf as lead member though a written & notarized Power of Attorney signed by each member's authorized representative for exercising all the rights and obligations towards the client under this NIT, including without limitation to the receiving of instructions and payments from the client. Though the lead member shall be responsible for the overall management and delivery of the project, all the members of JV/Consortium shall be jointly and severally responsible for execution of the works in relation to the project	Power of Attorney and, JV agreement clearly specifying the proposed distribution of responsibilities both financial as well as technical for execution of the work	

6	The bidder or all consortium partners should not Blacklisted in the last five years from any state/ Central agency in the country. Selfattested undertaking should be submitted by the Bidder	Self-Certified document duly signed by authorized representative	
7	The Annual average Turnover of the Bidder during the last five FY years., 2018-19,2019-20, 2020-21 and 2021-22 and 2022-23 shall not be less than INR 10 Crore or Equivalent foreign currency. Auditor certificate shall be furnished for the same.In case, the Bidder is a Consortium or Joint Venture (JV), the average annual turnover of all or any members shouldmeet the turnover requirement.	CA Certificate with UDIN for the last five financial years annual turnover i.e., 2018-19,2019-20, 2020-21 and 2021-22 and 2022-23.	
8	The net worth of the Bidder as on date 31st March 2023 shall be positive. In case, the Bidder is a Consortium or Joint Venture (JV), the net worth of each member shall be positive.	CA Certificate with UDIN number - Net Worth indicating positive net worth.	
9	Bank Solvency Certificate	Bank Solvency Certificate	
10	GST No	Copy of GST Certificate	
11	PAN CARD	Copy of PAN Card	
12	EPF Certificate No	Copy of EPF Certificate No	
13	ESI Certificate	Copy of ESI Certificate	
14	Certificate from bidder for accepting all the terms and conditions of the tender document.	Self-Certified document duly signed by authorized representative	
15	EMD and Processing Fee	To be processed by the bidder as mentioned in the document.	
Note: This page number be uploaded in the portal in the bid mention page number of the supporting documents. All the bid uploaded on the portal should be indexed and page numbered.			

Financial/Price Bid

Particulars	Base price (In Rupees)	GST and Other taxes/duties/freight etc (In Rupees)	Total Price (In Rupees)
Design, Planning, Engineering, Procurement, Construction, Erection & Commissioning of Mustard Oil Mill Having Crushing Capacity Of 150 MTPD at Rampura, Rewari (Haryana) On Turnkey Basis			

Note: The bidder shall also submit this bifurcation of rates of all items separately in the sealed envelopbefore opening of Financial Bid.

Thank You