NOTICE INVITING TENDER (NIT)

EPC TENDER

(Engineering, Procurement and Construction)

DESIGN, PLANNING, ENGINEERING, PROCUREMENT, CONSTRUCTION, ERECTION & COMMISSIONING OF HAFED FLOUR MILL HAVING MILLING CAPACITY OF 100 MT/Per day IN HAFED COMPLEX AT JATUSANA (REWARI)

NIT No.: Adt. No……/ ….. /HAFED/ 2021-22

Date: …./…/2022

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Detailed Notice Inviting Tender

1. BACKGROUND:

The Haryana State Cooperative Supply and Marketing Federation Limited (hereinafter referred as 'HAFED') is the Haryana's largest cooperative federation serving farmers and consumers since 1966. Procurement of food grains from farmers at MSP for delivery to the Central Government, Warehousing, arrangement and distribution of Agri-inputs, agro-processing and marketing are its core activities. Over the years HAFED has become one of the leading organizations of the Haryana State being its largest food grain procurement agency and a premier warehousing agency for scientific storage of food grains, having largest chain of Agro-processing units, major supplier of quality, hygienic and safe consumer products, cattle/animal feeds and having a largest supply-chain network upto village level for distribution of agri- inputs like fertilizers, pesticides, seeds, etc.

INSTRUCTIONS TO BIDDER ON ELECTRONIC TENDERING SYSTEM

Registration of bidders on e-Procurement Portal:

All the bidders intending to participate in the tenders 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.

Obtaining a Digital Certificate:

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 by4 an Approved Certifying Authority, by the Controller of Certifying Authorities, Government of India.

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

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.

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 eToken carrying DSCs.

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).

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.

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.

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

Download of Tender Documents:

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

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.

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

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.

PREPARATION & SUBMISSION OF online APPLICATIONS/BIDS:

1. Detailed Tender documents may be downloaded from e-Procurement website https://etenders.hry.nic.in and tender mandatorily be submitted online following the instruction appearing on the screen.
2. Scan copy of Document to be submitted / uploaded for Technical bid under online 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.
3. FINANCIAL or Price Bid PROPOSAL shall be submitted mandatorily online under Commercial Envelope and original not to be submitted manually).

ASSISTANCE TO THE BIDDERS

For queries on Tenders Haryana Portal, Kindly Contact
Note: Bidders are requested to kindly mention the URL of the portal and Tender ID in the subject shield emailing any issue along with the contact detail. For any issue/clarification relating to the Tender (s) published kindly contact the respective tender Inviting Authority. Tel:-0120-4200462, 0120-4001002
Mobile:
Email:-support.etender@nic.in
For any technical related queries please call at 24x7 Help Desk number 0120-4001002, 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 download the file.

(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 transaction number 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.

C. **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.

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

b Upon doing so, the e-Procurement portal will redirect the bidder to a page where itwill generate a Challan.

c 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 the RTGS/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 mention 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 the fund and not credit the Techprocess intermediary Department/PSUs Escrow Security Deposit A/C

D. 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 bank account 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. 49,999/-).
(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 case of 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 eProcurement 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 update 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 eProcurement Portal, when the bidder clicks on the verification option in the portal. 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.

2. **General:**

Hafed invites e-tenders for design, planning, engineering, construction, erection & commissioning of Hafed Flour Mill having milling capacity of 100 MT Per Day production capacity Hafed Flour Mill at Jatusana (Rewari) for the below noted scope of work for Hafed Flour Mill Jatusana (Rewari) :

A) Design, Manufacturing, Supply and Erection of Pre-Engineered Buildings as described later in the document, dismantling of existing statement as per the planning.

B) Design and Construction of Main Civil Works including Electrical, Sanitary, Plumbing and Interior Work to build a complete project of Atta Plant at Jatusana, Haryana.

C) Supply, Erection and Commissioning of Flour Mills at Jatusana, Haryana consisting of:

1. Wheat Pre cleaning capacity 12 – 15 TPH
2. Silo Storage capacity 5,000 MT
3. Wheat Cleaning Section capacity 5 – 6 TPH
4. Milling Section capacity 100 TPD
5. Packing Section

TERMS & CONDITIONS

OFFERS

- The offer should consist of technical details and costs separately.
- Financial costs should separately for civil and equipment as follows:
    - Civil: contain the individual prices of material / construction equipment / erection / electrical / plumbing as per scope of work and specifications of machinery described in Annexure – I.
    - Equipments: contain the individual prices of Machines / equipment / material /erection and commissioning as per scope of work and specifications of machinery described later in the document.
- All offers should be valid for a period of _____ days from the date of issue.
- The period for supply of all machines / equipments / items required for the construction / equipment will be days from the date of issue of order. The erection, commissioning and trial run will be completed within _____ days from the date of issue of order.
- The supplier prior to commencement of the work of construction / supply / erection shall supply all foundation drawings; layout plans, flow charts and manuals for operation and troubleshooting instructions. All drawings and details would be checked and approved by

our consultant Dr.-Ing. N. K. Gupta Technical Consultants (P) Ltd., New Delhi.

- All the electrical items are to be supplied by the party and these should be of international standard. The make of each part should be specified in the offers. Electrical / Plumbing installation work should comply with all currently applicable statutes, regulations and safety codes in the area where the equipment will be installed.

- Safety guards should be provided for covering all rotating parts of the machinery.

- All the hot surfaces (if any) should be insulated by as per standard of insulation norms.

- All the machines should be supplied with first charge of lubricants / grease / chemicals and other consumables, as required.

- All the machines / equipments / items supplied shall be painted.

- Suppliers will also have to give complete details of capacity such as KW, RPM and make of motors required to drive machines along with rates as per requirement and accompanied with manufacturers printed literature.

- Warranty period of each machine must be specified in the offers, which should not be less than one year from the date of commissioning.

- After conducting satisfactory trial run, the supplier will give notice for showing the proper performance of machines in which representative of HAFED and our consultant Dr.-Ing. N. K. Gupta Technical Consultants (P) Ltd., New Delhi will be associated. The performance parameters will be tested as under:

    - Rated output of machines will be checked individual machinery-wise with the capacity offered in the offer under prevailing industrial working conditions. However, proper labour will be provided but interruption of power is on account of tripping etc. cannot be guaranteed.

    - Quality of end-product: - The quality of end-product must be smooth and consistent.

    - It will be the responsibility of the supplier to give rated performance. In case the performance is not as per required specifications then quantum of variation whether minor / major, will be assessed by the committee of HAFED and our consultant Dr.-Ing. N. K. Gupta Technical Consultants (P) Ltd., NewDelhi.

    - The supplier shall have to get the defect removed within a reasonable time. If the supplier fails to do the jobs within the given time schedule, then HAFED can get the job done at the risk and cost of the supplier. If the defect observed in the machine is of permanent nature and require basic change of design

      etc., then HAFED may ask for the replacement of defective machine. If the supplier does not replace the machine within a reasonable time, then the cost of machinery and other expenses incurred would be recovered from thesupplier.

    - Noise level of machines will be checked. There should not be any irregular sound while running the machinery.

    - The heating level of machines particularly motors will also be checked by putting load on the machines after running continuously for 24 hours. Therefore, machinery offered should be suitable for heavy duty running.

- There should not be any sparking in the switchgears while operating the machines. More so running of machines for a fortnight for commercial production should be free from breakdown.

- Suppliers will be required to arrange for training to at least two persons designated by HAFED, within contracted cost about the operations, replacement of spare- parts of supplied machinery. Suppliers are expected to depute at least one engineer for at least _____days after the successful commissioning so that the technical staff is familiar with the working / maintenance of the plants.

PART I: INSTRUCTIONS TO BIDDERS

1. General

TENDER FOR DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, TESTIN COMMISSIONING of DESIGN, PLANNING, ENGINEERING, CONSTRUCTION, ERECTION & COMMISSIONING OF HAFED FLOUR MILL HAVING MILLING CAPACITY OF 100 MT/Per day IN HAFED COMPLEX AT JATUSANA (REWARI)

1.1 List of Requirements

1	**Name of plant**	**DESIGN, PLANNING, ENGINEERING, CONSTRUCTION, ERECTION & COMMISSIONING OF HAFED FLOUR MILL HAVING MILLING CAPACITY OF 100 MT/Per day IN HAFED COMPLEX AT JATUSANA (REWARI)**
2	**Free Comprehensive Warranty / Inbuilt Warranty (Period In Yrs)**	**01 Year from Date of completion of successful demonstration of smooth operation of equipment for seven days continuously from the date of Commissioning.**
3	**O & M Contract (Period In Months)**	**3 Months after Commissioning and successful demonstration of smooth operation of equipment for seven days continuously.**
4	**Bid EMD**	**Rs. 24 Lakh through RTGS/NEFT/ in favour of "The Haryana State Cooperative Supply & Marketing Federation Limited (HAFED).**
5	**Security deposit**	**5% amount of the contract value (including EMD) in shape of DD or Bank guarantee.**

PART II- GENERAL CONDITIONS OF CONTRACT (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, labor (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 (h).

"**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) whose bid to execute the Contract has been accepted by HAFED 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 and approved 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 12 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 installation services as mentioned in the GCC 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.

"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.;

"Operational Acceptance" means the acceptance by the "HAFED" of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor's fulfillment 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 Flour Mill having milling capacity of 100 per day at Jatusana.

"**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, and such 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 work order 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 approval of Haryana State Cooperative Supply and Marketing Federation Limited 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.

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 and the 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.

3.3.1 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.

3.3.2 Singular and Plural

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

3.3.3 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.

3.3.4 Persons

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

3.3.5 Entire Agreement

The Contract constitutes the entire agreement between HAFED and successful bidder 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.

3.3.6 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.

3.3.7 Independent Contractor

a) 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.

b) 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.

3.3.8 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 fulfillment of the provisions of the Contract and shall designate one of such firms to act as a leader as per the Appendix(h). The composition or the constitution of the JV / consortium shall not be altered without the prior written consent of HAFED.

3.3.9 Non-Waiver

a) 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.

b) 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.

3.3.10 Severability

a) 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.

b) 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 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.

3.4.2 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.

3.4.3 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.

3.4.4 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 of India 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

If any dispute, controversy or claim between the Parties arises out of or in connection with this Contract, including breach, termination or its invalidity ("**Dispute**"), the Parties shall use all reasonable endeavors to negotiate with a view to resolving the Dispute amicably. If a Party gives the other Party notice that a Dispute has arisen ("**Dispute Notice**") and the Parties are unable to resolve the Dispute amicably within 30 (thirty) days of service of the Dispute Notice (or such longer period that the Parties may mutually agree), the Dispute shall, unless the Parties otherwise agree in writing, be referred to arbitration in accordance with the terms of this clause. A notice ("**Arbitration Notice**") of intent to refer the Dispute to arbitration may be given by any Party ("**Claimant**") to the other Party ("**Respondent**").

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 **Panchkula, Haryana** 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).

3.8 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 acquire, on behalf of HAFED, in HAFED's 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 setting up of the plant mentioned under the Contract, including, but not limited to, entry permits for all imported HAFED equipment (if any). In this regard, any document required from HAFED shall be intimated at least 10 days prior to submission. 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 also seek for any exemption applicable for the project as per the orders released from GOI/ State Government time to time. In this regard, Contractor shall be responsible to take all necessary certificates as a proof of exemptions on behalf of HAFED. HAFED will only assist though providing letters/project status documents. The demand of such documents shall be made to HAFED in at least ten (10) days in advance.

3.8.6 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.

3.8.7 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.

3.8.8 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 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.

3.9.3 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.

3.9.4 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.

3.9.5 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.

3.9.6 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.

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

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

3.9.9 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): Proforma 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

PAYMENT TERMS AND CONDITIONS: -

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 Banks at the times, and in the amount, manner and form specified below:

3.12.1 Performance Bank Guarantee (PBGs)

a) 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".
b) PBGs shall be submitted in 3 separate Bank Guarantees in the ratio of 20%, 40% and 40% of the total PBG value.
c) PBGs submitted shall have the initial validity up to twelve (12) 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.
d) 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

a) 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 12 months from the date of signing of Contract Agreement.
b) 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.
c) 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 pay all 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 affecting 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. HAFED shall 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:

(i) at the time of disclosure to the receiving Party was publicly available or thereafter becomes publicly available through no fault of the receiving Party;

(ii) 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 hereunder;

(iii) is independently developed by the receiving Party without use of the confidential material; or

(iv) 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:

a) ensuring compliances under the best corporate governance practices adopted by the receiving Party; or mandated by law, as the case may be;
b) for the purpose of procuring insurance or as may be required for internal audit purpose;
c) documented before the committee meeting or before board of directors of the receiving Party;
d) 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, HAFEDs 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 be executed under this Contract, may be taken or executed:

a) on behalf of HAFED by _____ or his/her designated representative;

b) 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 without delay.

3.17.3 If the Contractor wants 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 4.2 of 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:

a) Percentage completion achieved compared with the planned percentage completion for each activity; and
b) Where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.
c) Any other format as required by HAFED.
d) 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 representative and one copy of the signed records shall be handed over to HAFED.

3.19 Subcontracting

3.19.1 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.

3.19.2 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 relieve the Contractor from any liability or obligation under the Contract.

3.19.3 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

3.20.1 <u>Specification and Drawings</u>

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.

3.20.2 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.

3.20.3 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
b) 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 therefore 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.
c) 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.
d) 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.
e) 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.
f) 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.

g) 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.

h) 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.

3.1. 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.

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

3.3. 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 system compatible 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

a) 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.
b) 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

a) 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.
b) 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.

c) 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.

d) 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.

e) 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.

f) 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

a) 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.

b) 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

a) 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.
b) 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.
c) 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.
d) 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

a) 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.

b) 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.

c) 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.

d) 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.

e) 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.

f) 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.

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

h) 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.

i) 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 Installation / 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 3.25.1 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 and upon 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 Guarantee parameters, as demonstrated even during repeat of the Guarantee Test(s), are outside the acceptable shortfall limit, HAFED shall at its option, either

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

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

c) Terminate the Contract and recover the payments already made, or

d) 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 a 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:

(a) 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 3.34 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;

b) 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 in this 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 decisions of the Project Manager in this regard shall be final.

3.32.3 The Defect Liability Period shall be Twelve (12) 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 3.35 of the GCC.

3.33 Termination

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

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

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

c) 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:

a) 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

b) 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

c) 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 the PBGs provided by the Contractor.

3.15.6 Upon termination of this Contract, the Contractor shall take all necessary steps to stop all the activities 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 recognized 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 or interpretation of the term 'Force Majeure':

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

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

b) 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.

c) 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 by the 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 a continuous 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 the Completion 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 in constitute 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 twelve (12) 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
	Acceptance of LOI	Start Date (D)
	Submission of detail program of execution of contract in form of PERT chart	D+7 days
	Submission of all applicable statutory approvals, insurance, etc. as required for commencement of work at site	D+30 days
	Submission of detailed BoQs for the contract	
	Submission of design, drawing (including layout, general arrangement, structure, P&ID's)	
	Finalization of approved PEB vendors and approval from applicable statutory bodies, placement of work orders for supply equipment and material, submission of all sample as applicable in BoQsetc.	D+60 days
	Site development work (grading/ levelling, internal road pattern, drainage, compound wall, pathway etc)	D+90 days
	Delivery of foundation bolts / plates at site	
	Material delivery	D+180 days
	Completion of civil work	D+ 270 days
	Completion of road work, drainage, & other miscellaneous site development work including high side works.	D+330 days
	Completion of all works as per the Contract Agreement	D+365 days

4.3 Mode of Execution:

The entire work shall be executed on turnkey basis. Such works, not listed in the Scope of Work but 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

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

b) Until the Agreement Date, the LOI in conjunction with the NIT and Bidding Documentsshall constituted 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 against Bank Guarantee of equivalent amount	20% against material inspection	30% after receipt of material/ machinery at site	10% on erection and installation	20% on Commissioning of the Plant	10% on successful completion of work against submission of Performance 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 10 % 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 Work and take the necessary approval from HAFEDbefore initiating any work. Such work can be initiated 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 HAFEDwithin 14 days against the receipt of Contractor's invoices and verification of bills by HAFED.
- Performance Bank Guarantee shall be released by HAFEDonly after the completion of the Defect Liability 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 rules and 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 consortium partner 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 HAFEDsamples 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. HAFEDshall 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 at site. 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, HAFEDhas 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

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

b. 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
SCOPE 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.

5.1 Summary

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

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

5.2 Package – 1Civil Works Specifications

Summary

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

5.2.1 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.

5.2.2 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.

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

5.2.4 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.

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

5.3 Civil Specification

5.3.1 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, 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 floor finishing 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 Hazard system 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 as the 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.

5.3.2 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.

5.3.3 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

5.3.4 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.

5.3.5 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 any trace 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 reference IS 2074/IS 15489 shall be followed.

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.

5.4 Technical Specification

5.4.1 Structural Steel Sections & 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 structural steel bars, plates, shapes etc.
- ASTM A53/A53M – 12, standard specifications for pipe, steel, Black and hot dipped, zinc coated, 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 seamless carbon steel structural tubing.
- ASTM A501/A501M – 14, standard specifications for hot formed welded and seamless carbon 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 2062 or 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 & side sheet 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. For reference 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 as directed by Owner.

c. 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 PEB steelwork.
- 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 and handling.
  - Cutting, chipping, filling, grinding etc. if required or preparation and finishing of site connections.
  - 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 found necessary.
  - Carry out tests in accordance with the related Specification which will be inspected by Owner.
  - 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 ensure the strength requirements of joints.

d. 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.

e. 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 carried out. 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 is not 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.

5.4.2 **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 shall be 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 accordance with IS: 6925 and the total chloride ion in all admixtures used in concrete mix shall not exceed 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.
  - Petrographic 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 per specification, slump tests, optional tests etc.

5.4.3 Steel Reinforcement

Providing, fabricating, delivering and placing of steel reinforcement Fe 550D 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 deformed bars 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 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.

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 testing of 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.

5.4.4 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 which will 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.

5.4.5 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 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 not be used except where necessary to complete the bond. Closers in such cases shall be cut 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 concrete as specified, in their correct positions as the work proceeds. Nothing extra shall be paid for 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 of seven 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.

5.4.6 **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.

5.4.7 **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 of adding 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 fine river 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 place of 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 arises 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 of smoothness 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 in summary form to the Owner.

5.4.8 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.

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.

5.5 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 specification and 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.

i. 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.

ii. 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 floor and 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 diaCP(Chrome plated) brass heavy type with solid rubber plug and bail chain.

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.

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.

iii. 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.

5.6 Soil, Waste, Rainwater, Vent and Anti-Siphonage Pipes & Fittings: Laying And Jointing PVC. Pipes (Internal Work)

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 seal set 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).

5.7 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

- 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.
- Earthing shall be in confirming with IS 3043 and Lightning protection shall be with IS 2309.
- 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 shall be identified with number and using painted board.
- 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.
- 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.
- 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.
- Bentonite or earth powder slurry shall be put along with pipe in the bore.

c. M.V panels & Distribution Board.

- 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.

- Easily openable door locks with common key shall be provided for all doors including alleys.
- 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. Straight through 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 will be 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 sides 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 capacity 20/30AMP 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.

5.8 FIELD INSPECTIONS

5.8.1 STRUCTURAL 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 conform in 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.
- Contractorhas 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.

5.9 Requirement of Environment, Health & safety (EHS) management system to be complied by the Contractors.

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

5.9.2 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.

5.9.3 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.

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

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

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

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

5.9.8 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.

5.9.9 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.

5.9.10 Otherwise penalties shall be incorporated due to non-conformance.

5.9.11 Contractor shall ensure well equipped with trained caretaker and material for complementary nutrition, cleaning, personal hygiene, sleeping and medical aid.

5.9.12 All worker employed shall be screened and contagious disease free and shall have appropriate Personal Protective Equipment (PPE).

5.9.13 **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

5.10 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

5.11 List of approved vendors

a. Plumbing and Water Supply

Particulars	Name of Vendors	Address & Contact Details
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, Zenith: Fittings - HB : Valves – Zoloto, Sant valves/ JSW/ Oswal
	PVC pipes & fittings	Sintex for PVC tanks,Pipes and Fittings – Prince/ Finolex / Sudhakar/Kisan/Supreme 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

Particulars	Name of Vendors	Address & Contact Details
	Miscellaneous	Special Taps and CP Fittings - Jaquar / Jupiter Aqua Lines-JAL/ CERA/ SFMC PPR & PVC Pipes, Harshavardahan international / supreme, ASTRAL UPVC & CPVC pipes/Ashirvad, Prince, Kisan.

d. Electrical Supply

Particulars	Equipment's	Approved Makes
Utilities	Package type substation including VCBs, Transformer, LT Panel, APFCR	ABB/ Schneider/ Siemens
	Ammeter/ Voltmeter/ Other metering device	Conzerv / Siemens/ L&T/ AE
	Rotary Selector switch, Push buttons	GE/ L&T/AE/BCH/Legrand
	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 / Gloster / 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

Particulars	Equipment's	Approved Makes
	Indicating lamps holders filament lamps with resistors	Siemens / L & T/ Schneider/ ABB
	Indicating Instruments	L&T/ Enercon/AE
	Capacitor' banks	Schneider/ L&T/GE
	Power Factor Correction Relay	Schneider/ L&T/GE
	Control Switches, Protective relays	L&T / Siemens /GEC/Alstom
	Load Manager	Conzerv/ Siemens/ L&T
	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	SUDHAKAR / AVON NOVA PLAST/ FINOLEX/ VIP

Particulars	Equipment's	Approved Makes
	Hot Dipped Galvanized Octagonal Street Light Poles	Bajaj / Transrail/ Surya/ Schreder
	Electronic Ballast	Wipro / Bajaj / Havells

silo

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 flour Mill having crushing capacity of 150 MTPD expandable to 300 MTPD at Rampura, Rewari("**Project**").

B. Thereafter, upon evaluation of such bids received, HAFEDhad 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 HAFEDpursuant to _____ of _____ Bank amounting Rs.

_____; towards performance guarantee for the due execution of this Contract Agreement.

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. HAFED has 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

1.1 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.

1.2 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 this Contract Agreement.

1.3 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 construction or 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 Project at 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 -1

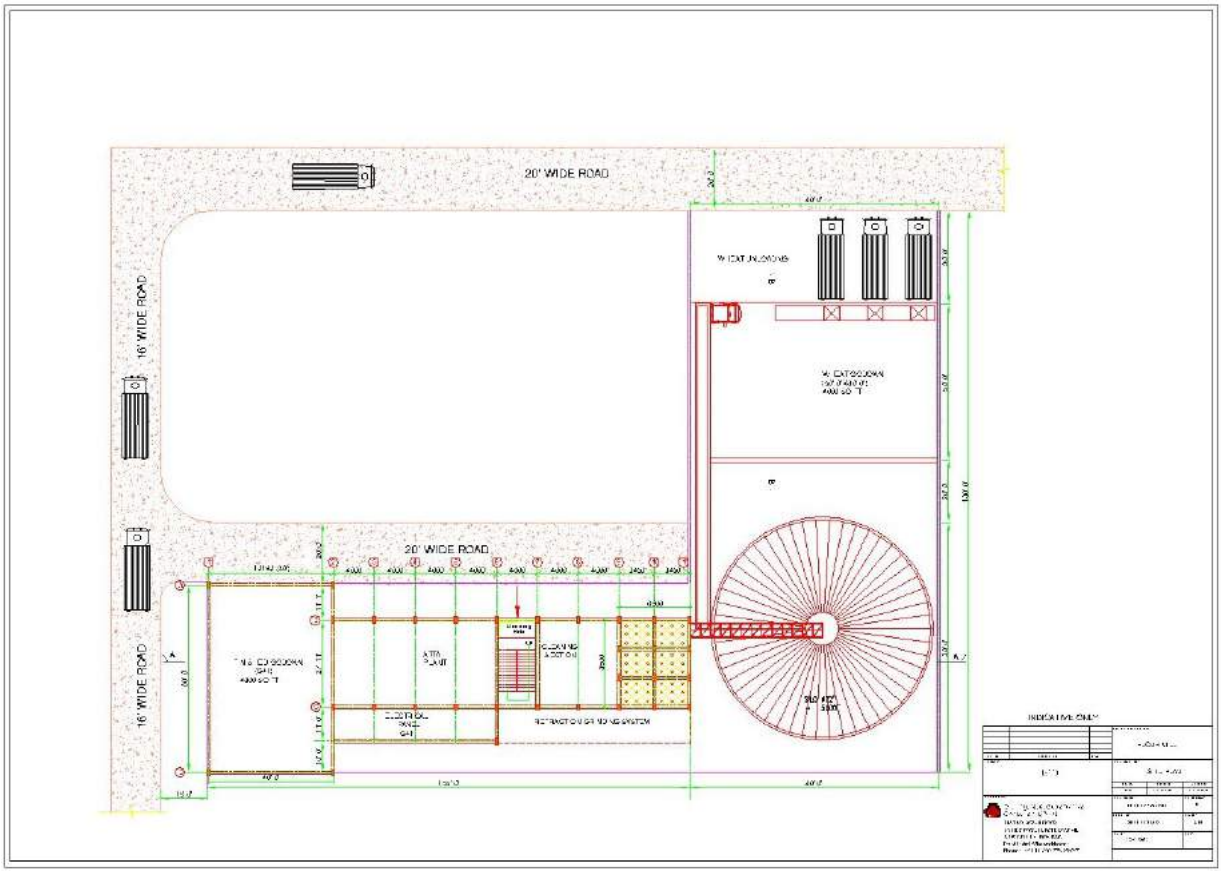
1. Site Plan - FM/H7/03/CAD/6103 dated 09-12-2020 (Sheet 1 of 2)

2. Building Plan and Section - FM/H7/03/CAD/6103 dated 09-12-2020 (Sheet 2 of 2)

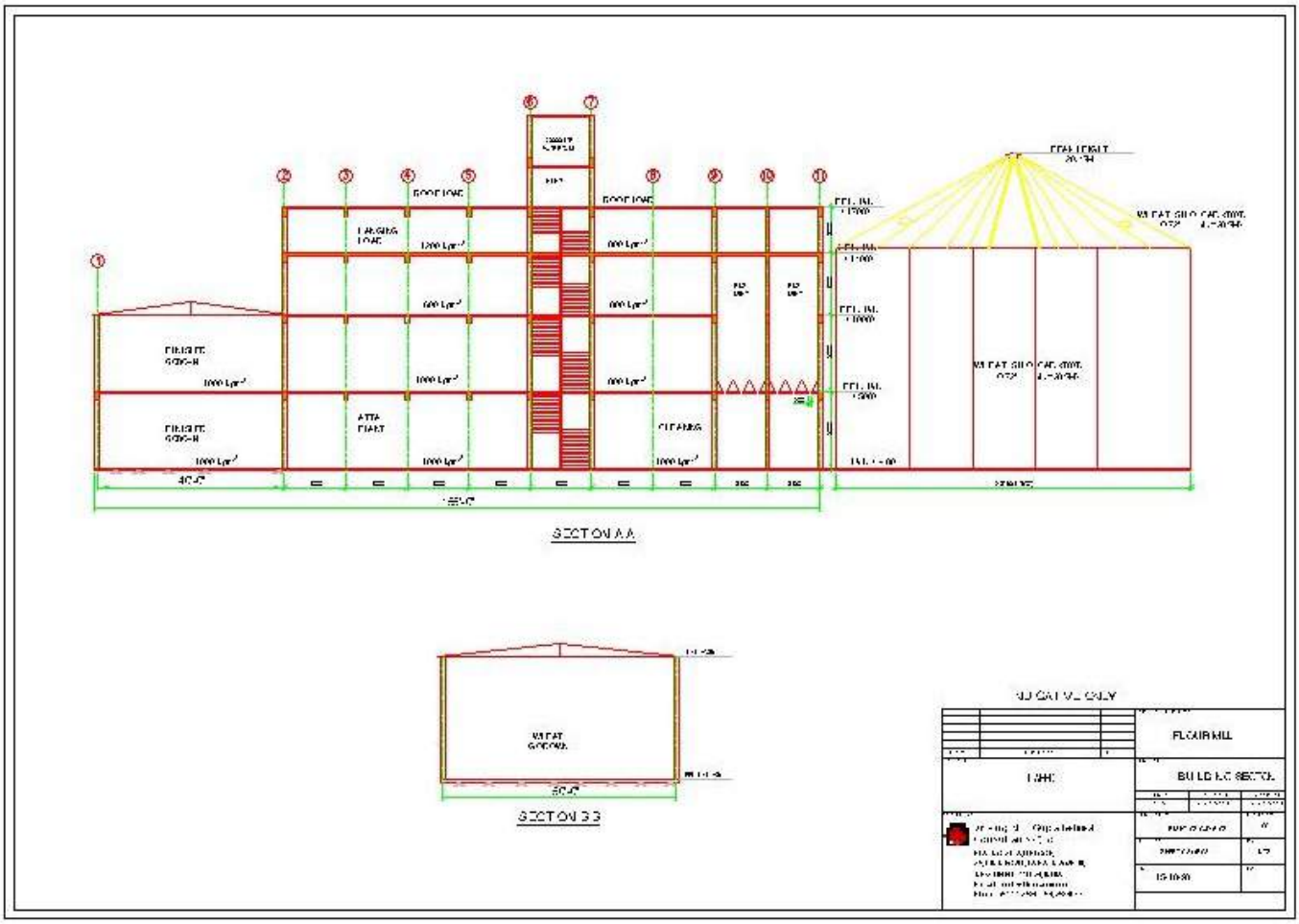
Annexure 1 (a) – Master Layout Plan.

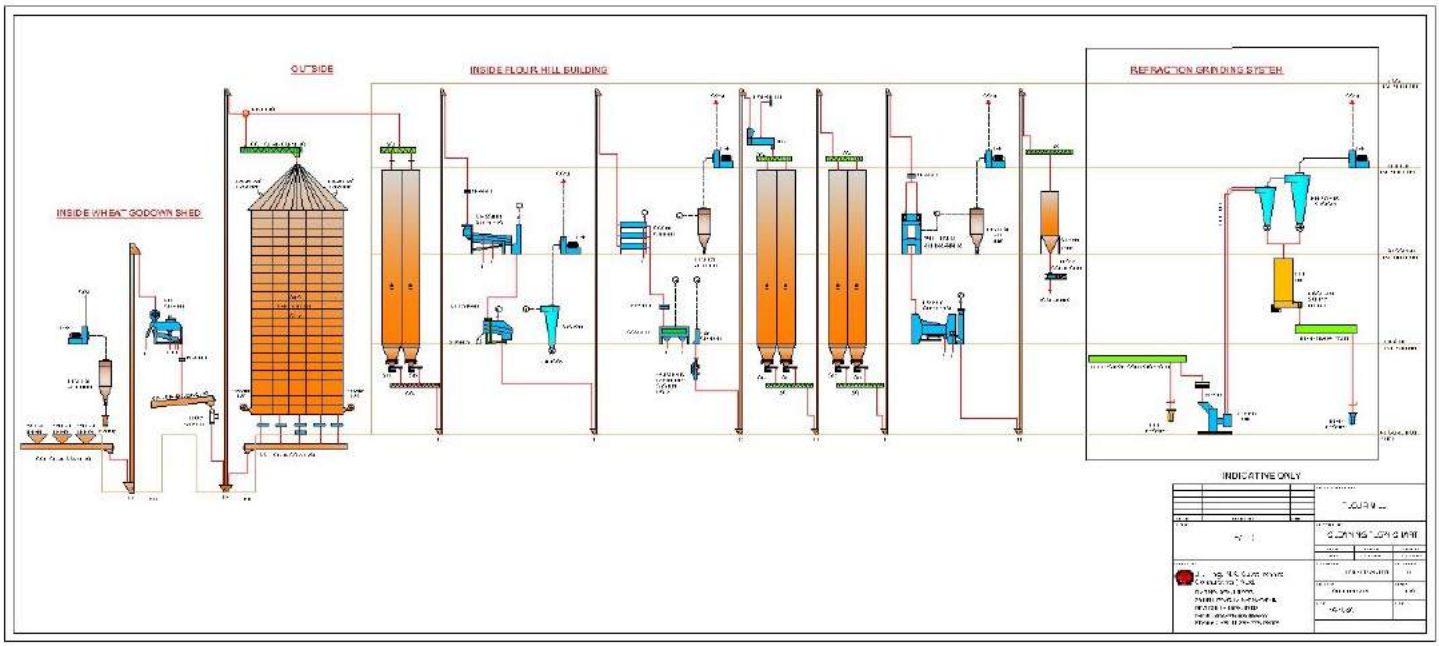
Drawings

Site Plan



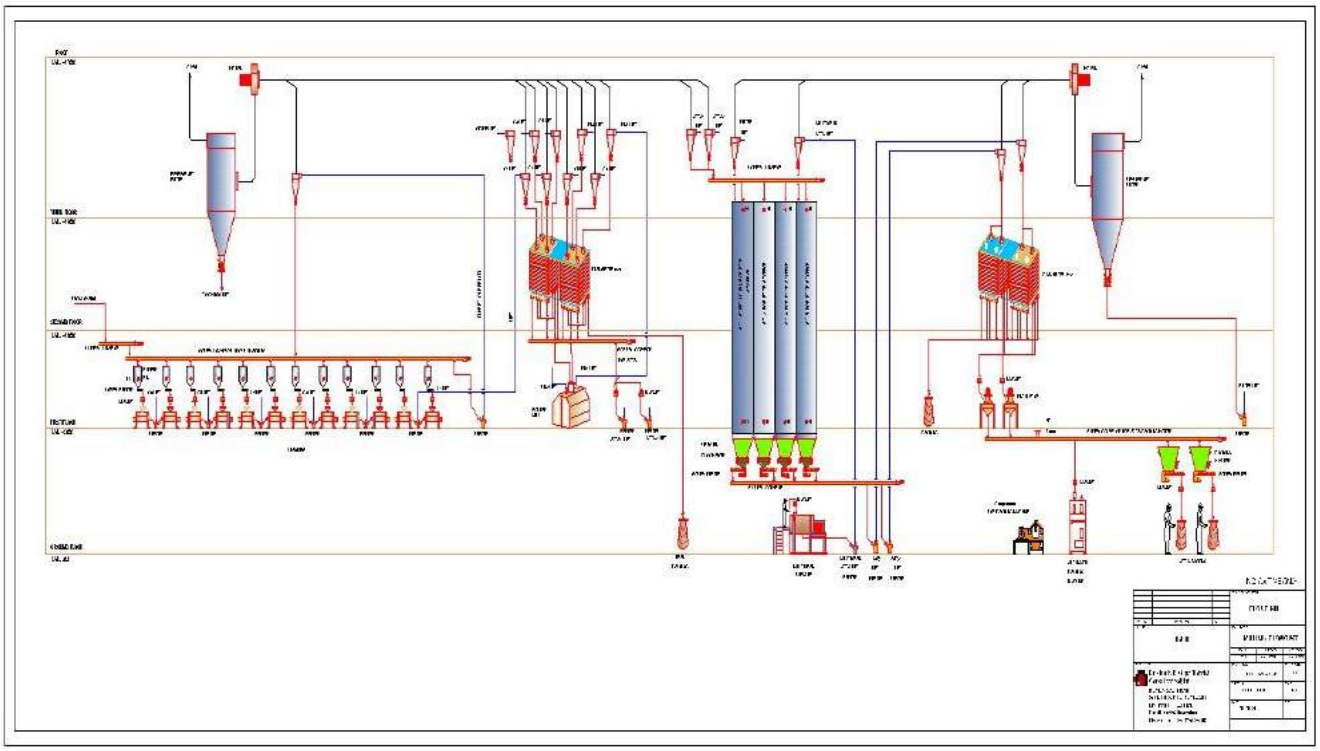
Sections



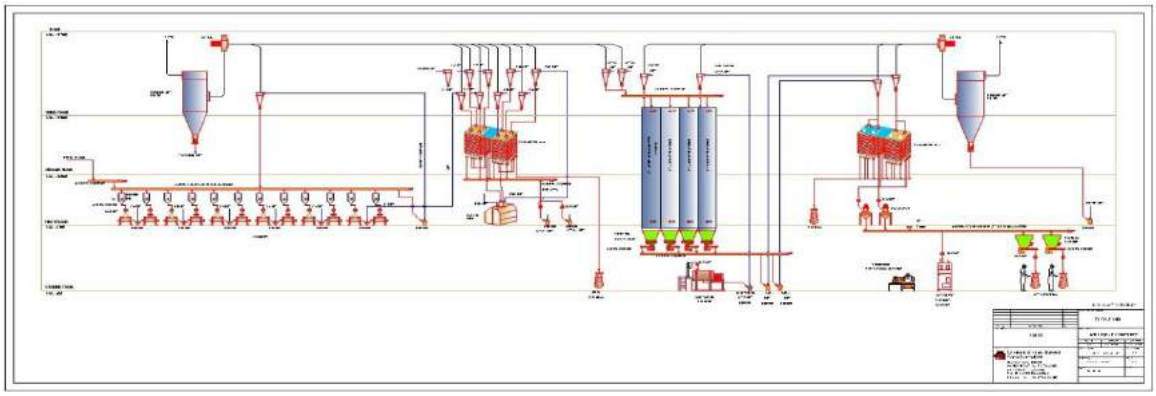


Cleaning Flow Chart

Milling Flow Chart



Milling Section



SPECIFICATIONS – CIVIL WORK

SCOPE AND DELIVERABLES

Scope of Work

- Demolition, Excavation, backfilling, concrete works, painting, including all plumbing, electrical related works as per design and drawings.
- Provide office space of approx. 300 sq. ft for site works personnel appointed by company with necessary furniture. (Contractor to absorb the cost of fabrication & office space)
- Access restricted barricade with mandatory safety signage hoardings to the siteduring the construction and comply with safety regulations.
- Insurance Cover to be arranged for workers at site (such as workmen's compensation, third party liability etc.
- Coordination with the respective agencies and stake holders, etc. involved in Project.
- To ensure the works during the monsoon and rains are protected always and any damage caused due the same are to be borne by the Contractor.
- Facilitate inspection, testing and commissioning by the Contractor.
- Perform specific Quality Control and Quality Assurance tests of the works by involving external laboratories approved as per the IS procedures and furnish the test reports and records time to time.
- Reinstatement of the works after the completion of construction.
- Prepare & submit As-built drawings, guarantee/warranty certificates, DPR, checklist, inventory list and other necessary documents.
- Termite treatment to be done

Deliverables

- Execute proposed construction including carrying out electrical and plumbing works) at Site
- As-built drawings including the necessary documents.
- Completion Report, inclusive of QA, QC test reports, Raw material Test reports, guarantee, and warranty certificates etc.

b. DESIGN SPECIFICATIONS FOR PEB

i. Buildings shall be in PEB type shed confirming latest respective IS code / NBC (National Building Code) of India requirement for strength and stability.

ii. Shed should have proper drainage system, lighting system and ventilation as designed by consultant.

iii. Foundation, flooring, side wall / cladding shall be as per operationalrequirement

iv. Column and Rafter shall be made by using high tensile plates Fe 350 grade, Purlins shall be Fe 550 grade.

v. All roof sheeting and side cladding shall be of Fe 550 grade

vi. SMP colour coded sheets (colour shade will be given by client) for side & roof

vii. All rolling shutters shall be as per drawing, operated manually / motorized as desired by the consultant. Canopy to be provided at every 20 / 30 meters gap (3m width x Length column to column)

viii. For ventilation ridge vent shall be used as per design of vendor.

ix. 3.0 m height brick wall plastered and painted from inside (Plastic Emulsion) and outside (Weather Effect (Apex) or equivalent.

x. Rolling Shutters (3m x 4m), Windows and Doors as per requirement.

xi. General Lighting and Plumbing Work inside the buildings

xii. Special provision be made for preventing pigeon's entry inside like chain curtains etc.

xiii. Densification over VDF flooring, where there is no epoxy.

xiv. Load of 25 Kg / sqm + live load to be considered for solar provision at PEB roof.

c. BUILDING DESCRIPTION – PEB

Wheat Godown (FF – 01)

Length	80 Feet
Width	50 Feet
Height (CLEAR)	8M CLR (Side Wall)

Flooring	• FFL level will be +1.2m from Internal Road Level. • 150mm thick RCC Floor and VDF • Load 2000 Kg/sqm (Suitable to take load of Wheat on basis 1 MT per 6 Sq. Ft). Material will be stored in bags in stacks.
Requirement	One RCC trench of width 1.5m wide x 2.2m deep at location as shown in drawing, with steel cover on top and lighting arrangement to be provided.
Intake Hopper	Steel Platform to take load of wheat bags and suitable taper of hopper for wheat flow.

Finished Godown (FF – 04)

Length	80 Feet
Width	40 Feet
Height (CLEAR)	10M CLR (Side Wall)
Flooring	• FFL level will be +1.2m from Internal Road Level. • 150mm thick RCC Floor and VDF • Load 2000 Kg/sqm (Suitable to take load of Atta on basis 1 MT per 6 Sq. Ft). Material will be stored in bags in stacks.
Requirement	• One RCC floor to be constructed at height of 5m from FFL with load provision of 1000 Kg/sqm • Kota Stone Flooring at Ground and First Floor Level • Building is attached to Main Process Building FF – 03

d. BUILDING DESCRIPTION – OTHERS

Main Process Building (FF – 03)

Length	100 Feet
Width	28 Feet
Height (CLEAR)	17M
Flooring	• FFL level will be +1.2m from Internal Road Level. • 150mm thick RCC Floor and VDF • Load 1000 Kg/sqm on ground floor
	• Granite Flooring at all flour levels
Requirement	• RCC Building with RCC floors at different levels with smooth surface finish • Foundations as required • Brick wall plastered and painted from inside and outside • RCC slabs at different levels designed to take loading as mentioned in the drawing and cut outs at desired locations as per machinery requirement. • Stairs as per drawing • Rolling shutters, Doors and Windows as per requirement • General Lighting and Plumbing Work inside the buildings

Silo Area (FF – 02)

Flooring	• Foundations to be constructed for the Silos as per design given by the silo supplier. • Flooring / Pavements to be constructed at area under and adjoining the Silos and as specified above. • Few additional foundations to be done for towers for elevator etc. as per design given the respective equipment suppliers • Trenching to be done as for conveyors with a depth of 2m to 2.5m

CONSTRUCTION AREA CALCULATIONS

Block	Section	Size (ft x ft)	Foot Printft^2
FF – 01	Wheat Godown	50 x 80	4000
FF – 02	Silos	80 x 80	6400
FF – 03	Process Building	100 x 39	3900
FF – 04	Finished Godown	60 x 40	4800
FF – 05	Roads		~ 12000
FF – 06	Pavement		~2500

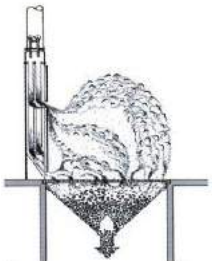
Roads

Requirement	• Level + 0.6m from NH road level • Total Approximate Area – 38,000 SQM • Roads with road marks • Providing and filling approved quality earth either available inside the premises or brought form outside for road work in layers of 30cm thick as per camber & gradient etc. • Providing & Laying compacted 200mm thick (in 2 layer) water bound macadam with specified stone aggregate stone screening and blinding material including screening, sorting spreading to template with proper slope and camber and consolidation with power road roller of 8 to 10 MT capacity etc. complete.
	□ 80mm thick Interlocking Tiles M40 grade with 150 / 300 kerb stone M20. Zebra crossing tile colour at crossings. □ 75mm thick PCC (1:4:8) □ Providing drains alongside roads. Approximate Length of Drains = 2200 mt. (for taking storm / rainwater to exit point.

Pavement and Tiles

Requirement	□ Paved tiles with light poles and drainage as required □ Developing Green Area with grass and flowers

LIST OF MACHINES

Process	Description	Main Equipments Used	
Intake	The raw wheat is unloaded into receiving hopper for feeding into the precleaning section of the mill. Intake is installed at Wheat Godown for easy unloading of wheat and blending may also be done at intake point.	• **Receiving Hopper**: Equipped with Aspiration System for dust free environment. • **Spot Filter:** For controlling dust cloud at intake point • **Elevator:** For vertical lifting of wheat	 Intake and spot filter

Precleaning and Silo Storage	In the first step the wheat is cleaned to remove coarse impurities and the lighter grain. Precleaned wheat is stored in silos / dry bins.	• **Precleaner:** Highest cleaning efficiency for coarse, fine and light impurities
		• **Aspiration System**: Used for aspirating impurities and exhausting the machinery. Aspiration system consists:
		  ◦ **Reverse Bag Filter, Airlock**
		  ◦ **Centrifugal Fan**
		• **Flow Weigher**: For weighing of wheat before storing into silos / bins.
		• **Flat Bottom Silo:** For storing pre-cleaned wheat for longer duration
		• **Dry Bins:** Used for storing pre-cleaned wheat for further process. Bins are equipped with multiple outlets
		• **Elevators and Conveyors**: For Wheat Conveying
			
			Precleaner
			 
			Silo

Cleaning Section	In the first step the wheat is cleaned to remove coarse impurities and the lighter grain. The main cleaning steps involve equipment that	• **Classifier Separator**: Vibrating screens remove bits of wood and straw and almost anything too big and too small to be wheat. Air currents act as a kind of vacuum to remove dust and lighter impurities	

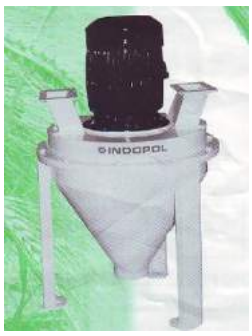
Process	Description	Main Equipments Used	
	separates wheat from seeds and other grains, eliminates foreign materials such as metal, sticks, stones and straw; and scours each kernel of wheat.		Classifier Separator
		• **Dry Stoner**: Using gravity, the machine separates the heavy material from the light to remove stones that may be the same size as wheat kernels	 Dry Stoner
		• **Cockle Cylinder:** The wheat passes through a separator that identifies the size of the kernels even more closely. It rejects anything longer, shorter, round, more angular or in any way a different shape	 Cockle Cylinder
		• **Scourer with Aspiration Channel:** The scourer removes outer husks, crease dirt and any smaller impurities with an intense scouring action. Currents of air pull all the loosened material away	 Scourer with Aspiration Channel
		• **Automatic Dampening System:** Used for calculation and release of water required to meet a specific target moisture level of wheat	 Automatic Dampening System
		• **Intensive Dampener:** Mixing water with wheat for tempering	 Intensive Dampener

Process	Description	Main Equipments Used	
		• **Magnets:** To remove iron particles from wheat • **Elevators and Conveyors**:	 Magnet
Tempering / Conditioning	Now the wheat is ready to be conditioned for milling. This is called tempering. Moisture is added in precise amounts to toughen the bran and mellow the inner endosperm. This makes the parts of the kernel separate more easily and cleanly. Tempered wheat is stored in bins from 8 to 16 hours, depending on the type of wheat – soft, medium or hard.	• **Tempering Bins:**For tempering of wheat. Bins are equipped with multiple outlets. • **Elevators and Conveyors**	
Final Cleaning	Wheat after tempering is again cleaned for final stages before milling process.	• **Whitener / Debranner:** For final scouring action of the wheat before grinding. It removes skin bran from wheat surface.	 Debranner
Aspiration System	It is important to have a dust-free plant. This also becomes necessary for hygienic and sanitation, which is pre-requisite for the various certifications viz. HACCP, ISO etc.	• **Reverse Bag Filters / Cyclone**: For separating dust from the dust laden air. • **Airlocks**: Airlocks are installed underneath cyclones. They are designed for discharge of cyclone dust.	

Process	Description	Main Equipments Used	
	Air currents are used not only for aspirating impurities but also for exhausting the machinery.	• **Centrifugal Fans**: Centrifugal fans with radial blades are used for production of air required for aspiration of machines and conveying of dust / bran.	

Process	Description	Main Equipments Used	
Grinding / Milling	This milling process is a grinding of the wheat kernels. The goal is to produce flour with maximum starch damage (for sweetness). The flouris then graded and separated from the bran by sieves in plan sifter. Subsequently coarse granules and bran is further grinded in roller mill for controlling the percentage of required bran.	• **Flow Controller:** For regulating flow of wheat to the milling section • **Bin above Chakki:** Used for buffer stock of wheat to feed Chakki • **Screw Feeder:** For controlling feed rate to each Chakki • **Chakki:** Used for grinding of wheat	 Flow Controller  Bin and Screw Feeder  Chakki

Sifting / Dressing	The broken particles of wheat are introduced into huge, rotating, box-like sifters where they are shaken through a series of bolting cloths or screens to separate the larger from the smaller particles. Inside the sifter, there are as many as 20 frames, each covered with screen, with square openings that get smaller and smaller the farther down they go. Different sizes of particles may come from a single sifter, including Atta with each sifting. Larger particles are shaken off from the top, or "scalped," leaving the finer flour to sift to the bottom. The "scaled" fractions are sent further to roller millfor re-grinding and then after sifted again in Plansifter to extract bran from Atta.	• **Plansifter:** Used for sifting / dressing of stocks coming from Chakki and roller mills • **Roller Mill:** Used in the re- process for the separation and controlling of branpercentage.	 Plansifter  Roller Mill
Pneumatic System	Pneumatic conveying system is used for vertical conveying of different grades & sizes of wheat flour in different stages. The actual movement of air within the pipe line of the pneumatic transport system is provided by a high-pressure fan which conveys and elevates the material in the installations.	• **High Pressure Fan:** • **Reverse Jet Filter:**High pulse reverse bag filter is used for separating bran escaped through polishing cyclones before the air is discharged to the atmosphere through a centrifugal fan. • **Pneumatic Conveying Parts:** - Pneumatic Feeders - Pneumatic Cyclones - Airlocks - Bends, Pipes	 Pneumatic Conveying  Reverse Jet Filter

Re-Bolting and Packing Section	Atta collected in bins is again re-sifted in plan sifter to maintain quality and then fed to entoleter machines before packing. Multigrain Atta is also blended and mixed with wheat Atta before re-bolting.	• **Atta Storage Bins:** Made of steel with inside epoxy paint. Equipped with Vibrodischarger and screw feeder for controlling the flow rate. • **Re-bolt Plansifter:** Forre-dressingof Atta to maintain consistency in quality. • **Entoleter:**used for eliminating all forms of insect infestation • **Blender;** Provision for Multigrain Atta is also made using blender and separate pneumatic system • **Magnets:** Special high-power magnets are employed for removing any ferrous particles at different stages.	 Atta Bins  Vibro Discharger and Screw Feeder  Entoleter
Packing	The Atta will be packed and stored in individual bagsand then it is ready for delivery to customers.	• **Packing Machine**: An automatic weighing and packing machine does the packing of finished product in packs of 1 – 2 Kg. • **Manual Packing**: to be done in 5 and 10 Kg bags	 Packing Machine

			 Manual Packing

a. PLANT AND MACHINERY LIST

S. No.	Name of the Machine	Qty.	Recommended Power Each (KW)
A	**Pre-cleaning and Silo Storage Capacity 12 - 15 TPH**		
1	Wheat Intake Hopper Steel (3 Nos) and Spot Filter (1 No)	1	15.00
2	Chain Conveyor with drive (CC1)	1	1.50
3	Single Bucket Elevator and Drive (E1)	1	1.50
4	Pre cleaner	1	2.20
5	Magnet - Ceramic Deep Reach Magnetic Separator (M1)	1	
6	Chain Conveyor with drive (CC2)	1	1.50
7	Flow Weigher DC3.150	1	
8	Single Bucket Elevator with Drive (E2) & Supports	1	2.20
9	Chain Conveyor with Walkway (CC3 / CC4)	2	1.50
10	Silo Capacity ~5000 MT with accessories like Aeration and Sweep Auger	1	31.65
11	Reverse Bag Filter with Airlock and drive	1	1.10
12	Centrifugal Fan with motor	1	11.00
	Sub Total		70.65

B	**Cleaning Section Capacity 5 - 6 TPH**		
1	Screw Conveyor with Drive (SC1 & SC2)	2	1.10
2	Screw Feeder with VFD below dry bins	2	0.55
3	Single Bucket Elevator (E3)	1	1.50
4	Magnet - Ceramic Deep Reach Magnetic Separator	1	
5	Classifier Separator with drive	1	0.75 x 2
6	Dry stoner with 2 x vibro motors	1	0.75 x 2
7	Cyclone dia 1300 with Airlock and drive	1	0.75
8	Centrifugal Fan with motor for Dry stoner	1	11.00
9	Single Bucket Elevator and Drive (E4)	1	1.50
10	Cockle Cylinder	3	1.50
11	Magnet - Ceramic Deep Reach Magnetic Separator	1	
12	Horizontal Scourer with Aspiration Channel with drive	1	7.5 + 0.37
13	Automatic Dampening System NC8.2 (Euro 15850 x INR 86)	1	
14	Accessories for NC8.2.120 like booster pump, water filter,cable etc.	1	0.75
15	Single Bucket Elevator and Drive (E5)	1	1.50
16	Intensive Dampener (Stainless Steel) with drive	1	7.50
17	Rotameter attachment for water addition	1	
18	Screw Conveyor with drive (SC3 & SC4)	2	1.10
19	Screw Feeder with VFD below wet bins	2	0.75
20	Single Bucket Elevator and Drive (E6)	1	1.50
21	Screw Conveyor with drive (SC5 & SC6)	2	1.10

22	Screw Feeder with VFD below Re bins	2	0.55
23	Single Bucket Elevator and Drive (E7)	1	1.50
24	Magnet - Ceramic Deep Reach Magnetic Separator	1	
25	Whitener / Debranner and drive	1	15.00
26	Rotary Separator	1	1.50
27	Single Bucket Elevator and Drive (E8)	1	1.50
28	Screw Conveyor with drive (SC7)	1	1.10
29	Reverse Bag Filter with Airlock and drive for cleaning	2	1.10
30	Centrifugal Fan with motor	2	11.00
31	Refraction Grinding & Mixing Included (Hammer Mill,Conveying, Feeder, Pneumatic Line + Fan)	1	20.20
	SUB TOTAL		**116.67**
C	**Milling Section Capacity 100 MT / Day**		
1	Flow Controller FC3.150 (Euro 4590 x INR 86)	1	
2	Screw Conveyor Above Chakkies with Overflow Switch anddrive (SC8 & SC9)	2	1.50
3	Screw Feeder with VFD above Chakkies	**12**	0.55
4	Magnets above Chakkies	**12**	
5	Chakkies 30" - Heavy Duty with 25 HP motor and spare stones	**12**	18.50
6	Roller Mill Size 250mm x 1000mm with Rolls and motors	**1**	7.50 x 2
7	Plansifter 8 section / 20 Sieves with cloth	**1**	5.50
8	Screw Conveyor with drive Atta Collection (SC10)	**1**	1.50

9	Magnets before Atta Lifts	**2**	
10	Pneumatic Lifts System	**12**	1.10 x 4
11	Reverse Bag Filter with Airlock and drive	**1**	1.10
12	Fan High Pressure with motor	**1**	37.00
13	Screw Conveyor with drive (SC11)	**1**	1.50
	SUB TOTAL		297.60
D	Rebolting and Packing Section		
1	Bin Discharger (Vibro)	**4**	0.37
2	Screw Feeder with VFD below Tanks (SC12)	**4**	0.55
3	Micro Feeder for fortification additives with VFD drive	**1**	0.55
4	Screw Conveyor with Overflow Switch and drive (SC13)	**1**	1.50
5	Plansifter 4 Sections / 12 Sieves with cloth	**1**	2.20
6	Magnet above Entoleter	**2**	
7	Entoleter with motor	**2**	5.50
8	Screw Conveyor with drive (SC14)	**1**	1.50

9	Packing Hopper with Vibromotor, screw feeder & paddleswitch	2	0.37
10	Magnets before Packing Spouts	3	
11	Automatic Packing (small pack) with blending tank, pickupconveyor, metal detector & check weigher	1	6.00

12	Automatic Packing (Bulk Pack) with blending tank, pickupconveyor, metal detector & check weigher	1	6.00
13	Blender for multigrain Atta	1	15.00
14	Pneumatic Lifts System	5	1.10 x 2
15	Reverse Bag Filter with Airlocks and drive	1	1.10
16	High Pressure Fan with Motor	1	22.00
	SUB TOTAL		73.47
E	**Other Miscellaneous**		
1	Compressor and Air pipeline	1	11.00
	Sub Total - Other Miscellaneous		
	Summary of Power		
A	Pre-cleaning and Silo Storage Capacity 12 - 15 TPH		70.65
B	Cleaning Section Capacity 5 - 6 TPH		116.67
C	Milling Section		297.60
D	Rebolting and Packing Section		73.47
E	Other Miscellaneous		11.00
	Installed Power - In Plants		**569.39**
	Lighting and Workshops		15.00
	Total Installed Power		**584.39**
	Demand Load	**70%**	**409.07**
	Power Factor	95%	
	Demand in KVA		**430.60**

SPECIFICATIONS – EQUIPMENTS

Refer Drawings:

1. Cleaning Flow Chart - FM/H7/01/CAD/6101 dated 09-12-2020 (Sheet 1 of 1)

2. Milling Flow Chart - FM/H7/02/CAD/6102 dated 09-12-2020 (Sheet 1 of 1)

PRECLEANING AND SILO STORAGE

Intake Hopper and Spot Filter

Qty 3 Nos

MS construction hopper, complete with slide and grill on top

Spot Filter for Intake Dust Control with Centrifugal Fan

Qty 1 No

Specifications

- Filter module is a pulse jet bag filter designed to suppress dust emission from intakehopper operating with dusty products
- The filter is designed for mounting on the edge along the hopper – whereby the filterdust can flow back in to the hopper
- The filter is provided with 2 slot intakes; one at low height for heavy dust, and one forlight dust at a certain height above the grate
- The filter module is based on a flexible design and can be installed individually or inseries.

Consisting of:

- Top Section – Including pulse jet cleaning system
- Electric Control – Including adjustable interval function and adjustable pulse function
- Compressed Air Control – Including Manifold tank with nozzle pipes, manometer,moisture removal bottle, pressure relief valve and 25NB pulse air solenoid valve
- Filter Chamber – Including Man door, Teflon treated bags of size 127mm x 2500mmlong and Bag Cages (Collapsible)

The filter operates with compressed air.

Centrifugal Fan complete with motor with accessories like EPDM Flexible connection at inlet / outlet, counter flanges at inlet / outlet, butterfly dampener at inlet, common base frame with antivibration mountings.

Chain Conveyor

Tag **CC1 – CC4**

Qty **4 Nos**

Capacity 15 TPH on Wheat

Length As per layout **With Walkways where necessary** **Specifications:**

- Casing: Bolted construction made of Mild Steel Sheets
- Drive: Individual geared motor
- Sprocket wheel with hardened teeth
- Flexible coupling with protection sheet
- Outlet hopper
- Chain: Single strand plate-link chain with hardened bolts and bushes Partial plasticstrippers (cleaners), replaceable, bolted to the chain
- Troughs: Trough with replaceable plastic lining on full bottom
- Return rollers with ball bearings
- Sight Glass in the Head Section
- Tensioning Plain Return wheel
- Spindle Tensioning Device

Single Bucket Elevator

Tag **E1, E2**

Qty **2 Nos**

Capacity 15 TPH on Wheat

Height As per layout

With Tower where necessary

Specifications:

- Casing: made of Mild Steel Sheets, bolted construction
- Thickness of material – 1.6 / 2 mm for intermediate casing and 3 / 4 mm for top andbottom.
- Bucket made of Mild Steel
- Belt – Food grade with perforations for buckets, Special bucket screws, washers andnuts
- Drive: Individual geared motor
- Inlet Hopper, spindle tensioning device, bust protected bearings, cleaning slides atbottom

Precleaner

Qty **1 No**

Removing foreign matter such as straw, seeds, sand and big stones, lumps etc.

- Modern design, rigid construction
- Highly efficient pre and after suction system is installed for extracting light impuritiesfrom the grain both at machine inlet and outlet.
- Scalping screen separates the coarse impurities. pre-screen separates oversizematerial and next screen separates undersize material.
- Screens are fitted in specially designed wooden ball frames. These screens are kept clean by specially designed rubber balls which bounce in between the screens and ballframes.
- The wooden boxes are specially designed for easy changing of screens.
- All shutters and valves can be adjusted and controlled

Magnet

Qty 1 Nos

- Ceramic Deep Reach Magnetic Separator of size 8” x 12” x 10”
- Two powerful permanent Strontium Ferrite magnets with a special deep reach arealways energized
- Bottom edges act as tapered steps to retain tramp iron
- Easy to clean drawer type design
- Quick access door allows fast cleaning from front side
- 304 SS construction (including flange)

Flow Weigher

Qty 1 Nos

Make Friedrich Electronic, GERMANY

- Weighing unit. Material is slowed down and fed to pipe bend connected with a load cell
- With baffle plate, load cell
- Integrated evaluation electronic
- Power supply + 24 V DC
- With LED Display and keypad
- RS232 / 485 interface.

Flat Bottom Silos

Qty 1 No

- Diameter – 72’ capacity 5,000 MT on Wheat
- Commercial Flat Bottom Bin with stiffeners provided
- Roof Options: 30 degrees – 4 panel roof, standard roof ladder, grain bin vent, heavy

duty non-hinged standard lid

- Side Wall Options: Hex head bolts, ring door, 12” collar & plate standard, 12” rack &pinion standard
- Ladder Options: Outside / inside ladder & cage
- Hopper Aeration: Aeration system (pressure), connection hardware
- Centrifugal Fan: provided
- Temperature Detection: Temperature detection system, lead wire to central readingstation

Reverse Bag Filter

Qty 1 No

High ratio pulse jet type bag filter system suitable for reverse cleaning with off-line operation.

Bag filter shall comprise of bag chamber within the same casing. The bag chamber shall be provided with suitable isolation chamber so that the gas stream to a particular chamber can becut during bag cleaning cycle.

Consisting of: casing of MS construction, 2 hoppers, air manifold nozzle type, non-woven needle felt polyester bags, bag cages, ASCO solenoid valves, electrical sequential controller for bag filter, rotary feeder, isolation dampers at bag filter inlet.

Centrifugal Fan

Qty 1 No

The housing is of sheet steel construction with a circular inlet and rectangular outlet. The impeller is multi-bladed and constructed for smooth vibration free running. Fan impeller directly mountedon shaft of motor or V-belt driven.

With accessories like EPDM flexible connection at inlet / outlet, counter flanges at inlet / outlet, butterfly dampener at inlet, anti-vibration mountings, common base frame, motor etc.

CLEANING SECTION

Screw Conveyor

Tag **SC1 – SC7**

Qty **7 Nos**

Capacity 6 TPH on Wheat

Length As per layout

Specifications:

- Casing: made of Mild Steel Sheets
- ‘U’ type trough 3mm thick with side end flange for bolting top cover of 2mm thickness
- Flange type bearing units provided at tail end and plumber block type at drive end

- Drive: Individual geared motor
- Overflow Sensor Switch at outlet
- Bottom Cleaning Doors for easy cleaning

Single Bucket Elevator

Tag **E3 – E8**

Qty **6 Nos**

Capacity 6 TPH on Wheat

Height As per layout

Specifications:

- Casing: made of Mild Steel Sheets, bolted construction
- Thickness of material – 1.6 / 2 mm for intermediate casing and 3 / 4 mm for top andbottom.
- Bucket made of Mild Steel
- Belt – Food grade with perforations for buckets, Special bucket screws, washers andnuts
- Drive: Individual geared motor
- Inlet Hopper, spindle tensioning device, bust protected bearings, cleaning slides atbottom

Screw Feeder

Tag **SF1 – SF6**

Qty **6 Nos**

Capacity 6 TPH on Wheat

Length As per layout

Specifications:

- Tube conveyor with variable speed AC drive to control the rate of flow.
- Round pipe type conveyor
- Continuous fabricated screw is fitted inside a closed end pipe. This screw is supportedon bearing at both ends and hungers with UHMWPE bearing Motor and gear fitted on outlet side
- Rectangular / Round Inlet / Outlet Hoppers

Classifier Separator

Qty **1 No**

The separator is of steel construction and comprises a free – swinging sieve box enclosing

fourscreening decks. The inlet end of the separator is in the form of a swing – down inlet box, givingaccess to the sieve frames distribution baffles.

The sieve box is housed within a floor – standing frame and is supported by means of vibration absorption mounts. The inclination of the sieve box is adjustable and supports two vibratory motors fixed on either side on adjustable base plates. The sieve decks are clothed with perforated metal screens and each deck is arranged for automatic sieve cleaning.

The outlet of the separator discharges into an aspiration box.

Dry Destoner

Qty 1 No

Vacuum type,

Base frame of steel with sieve cleaning adjustment, sieve box of steel, withdraw-able sieves ofwood, covered with steel wire cloth and air distributing plate of aluminum, partially with cube- shaped cleaners

Integrated product distribution device, inspection window of plexiglass device, inspection and cleaning openings provided with rubber cover, adjustable and separation device for the stones, supported on hollow rubber springs, outlets with rubber valves.

Drive by means of 2 x vibrator motors.

Product supply and exhaust connection with incorporated air regulating flap on common platform, vacuum meter, ready wired up to the terminal box, with switch on/off

Cockle Cylinder

Qty 1 No

- M.S. construction with rotary cylindrical shell consisting of segments with sockets ontheir internal surfaces
- Provided with gear box for change in rotation speed

Magnet

Qty 3 Nos

- Ceramic Deep Reach Magnetic Separator of size 8” x 8” x 10”
- Two powerful permanent Strontium Ferrite magnets with a special deep reach arealways energized
- Bottom edges act as tapered steps to retain tramp iron
- Easy to clean drawer type design
- Quick access door allows fast cleaning from front side
- 304 SS construction (including flange)

Horizontal Scourer

Qty 1 No

- Casing on steel supports with inspection doors and collecting hoppers for abrasion fines.
- Tangentially arranged inlet followed by an outlet
- Rotor with rails on which paddles are fitted
- Rotor supported on roller bearings
- Rotor surrounded by a two-part sieve jacket and can be turned to prevent uneven wear.
- Aspiration channel separately fitted at outlet to remove large impurities with the help of air aspiration hopper at top.

Aspiration Channel

Qty 1 No

Connected to Horizontal Scourer outlet

Rigid construction with exact adjustable acrylic wall for reproducible extraction results. Intake aspiration air is distributed to the full depth of the machine with main removal and post extraction section. Adjustable feeder with eccentric drive. Connection prepared for central aspiration system.

Inside illumination. 1 Discharge hopper connected to aspiration channel. Aspiration hood.

Automatic Dampening System

Qty 1 No

Make Friedrich Electronic, GERMANY

The equipment controls the addition of the correct amount of water, thus ensuring constant moisture level in grain and product. The mill will achieve optimal performance by maintaining its grain moisture at a constant level. Consequently, the millers work level is reduced, product with constant moisture is achieved and a better yield is obtained.

The salient features are:

- Display: Illuminated graphic: LCD display size 118mm x 90mm.
- Moisture Measurement range – 8-20%
- Continuous display of following readings on the screen
  - Target moisture %
  - Initial moisture %
  - Hectolitre weight Kg.
  - Grain temperature °C

- Load per hour t/h
- Required water quantity l/hr

- You can see the graph of the following data for the last 12 hours.
  - The development of wheat moisture.
  - Quantity of water dosed.
  - Flow capacity per hour.
- You can also watch the target and actual water digitally and graphically in the evaluation menu, thereby enabling the water dosage to be accurately monitored.
- In addition, the dosed water quantity is recorded and dosed in liter and the moistened grain quantity in Kg. Both the values can be reset to 0.

Intensive Dampener

Qty 1 No

- Rapid revolving rotor with blades resting on bearings
- Stainless steel jacket
- Inlet and outlet tangentially arranged
- Motor resting plate
- Rotameter attachment to give indication of quantity of water flowing through

Whitener / Debranner

Qty 1 No

It uses the vertical abrasive, top to bottom working principle

A feed screw guides wheat after passing the intake hopper to the processing chamber. Processing chamber consists of emery rings that are made of silicon carbide. Screens are made of stainless steel. Adjusting the gap between emery stones and screens (coarse adjustment) or the counterweight of the retaining gate (fine adjustment) adjusts the whitening intensity.

Rotary Separator

Qty 1 No

Rotary movement of sieves ensures efficient separation with corresponding big capacities.

Main body structure is heavy duty welded sheet steel. Sifting body is of sturdy welded sheet steel composed of 2 layers of sieves, suspended and swinging freely on rods. The sieve covers are cleaned by rubber balls that are supported by a metal wire mesh and are easily removable.

V bely drive is given to the flywheel located under the sieve box. The eccentric mass is incorporated in the flywheel to generate circular motion. Aspiration channel is provided on the outlet of the machine.

Reverse Bag Filter

Qty 1 No

Considering the dust concentration and low bulk density of dust, high ratio pulse jet type bag filter system suitable for reverse cleaning with off-line operation, bag filter shall comprise of bag chambers within the same casing separated by a partition. Each chamber shall be provided with

suitable isolation chamber so that the gas stream to a chamber can be cutoff during bag cleaning cycle.

Consisting of casing (partitioned) of MS construction, hopper, air manifold nozzle type, non-woven needle felt polyester bags, bag cages, Solenoid valves, electrical sequential controller for bag filter, rotary feeder, isolation dampers at bag filter inlet.

Centrifugal Fan

Qty 1 No

The housing is of sheet steel construction with a circular inlet and rectangular outlet. The impeller is multi-bladed and constructed for smooth vibration free running. Fan impeller directly mountedon shaft of motor.

Includes: TEFC motor, Flexible connection at inlet and outlet, Counter flanges at inlet and outlet,Damper at inlet, Base Frame, Anti-vibration mountings.

MILLING SECTION
Flow Controller

Qty 1 No

Make – Friedrich Electronic, Germany

- Electrically controlled flat slider with weighing sensor
- Exact regulation of flow capacity in kg/h
- Summation of total amount in kg
- Very low installation height, easy installation directly below the bin
- Control of slider position and position pre-setting

Screw Conveyor

Tag **SC8 – SC11**

Qty **4 Nos**

Capacity 5 TPH on Atta

Length As per layout

Specifications:

- Casing: made of Mild Steel Sheets
- 'U' type trough 3mm thick with side end flange for bolting top cover of 2mm thickness
- Flange type bearing units provided at tail end and plumber block type at drive end
- Drive: Individual geared motor
- Overflow Sensor Switch at outlet
- Bottom Cleaning Doors for easy cleaning

Screw Feeder above Chakkies

Qty 12 Nos

Specifications:

- Tube conveyor with variable speed AC drive to control the rate of flow.
- Round pipe type conveyor
- Continuous fabricated screw is fitted inside a closed end pipe. This screw is supported on bearing at both ends and hungers with UHMWPE bearing Motor and gear fitted on outlet side
- Rectangular / Round Inlet / Outlet Hoppers

Magnet

Qty 14 Nos

- Easy to clean drawer type design
- Quick access door allows fast cleaning from front side
- 304 SS construction (including flange)

Chakki

Qty 12 Nos

Chakki 30" horizontal heavy duty with 4 bearings complete with Choyal brand emery stones, shaft, pulley and feed hopper.

- Choyal make stones
- Stone and shaft are in taper shape so that both get adjusted automatically when the runner stone is placed on the shaft
- Requires little maintenance
- Saves time and gives maximum returns

Roller Mill

Qty 1 No

Size 250mm x 1000 mm

Technologically advanced, sturdy, and consists of two independent milling sections located in a common body. The roller mill is designed for high speed thus achieving higher production.

Each milling section consists of:

- Rigid welded steel construction
- Feed glass hopper,
- Hopper with feed rolls and product flow adjustment system
- Roll engagement and disengagement system with micro adjustment of the nip of rolls.
- Roll cleaning brushes
- Helical gears between rolls for achieving differential speed
- Slide guards, Discharge hoppers
- With pneumatic product extraction system
- Chilled cast iron rolls 250mm diameter x 800mm long complete with shaft cutting as perroller mill design and grooving as per specifications provided by consultant

Plansifter

Qty 1 No

Size 8 Section x 20 Sieves

The plansifter contains 8 sifting sections, each section made of wooden boxes is an independent sieving set consisting of 20 frames, cover and distribution box.

Pneumatic System

Qty 12 Nos Size: As required

The necessary number of conveying lines in its required length, consisting of:

Rotary airlock, cyclone product receivers with air regulating valves, conveying pipes, pneumatic feeders made of welded steel sheet with a regulator air flap, pipe bends to change the direction of the pipes, rubber connection joints for tight connections at straight and curved pipe junctions, tape clamps, U-bolts made of round steel bars of diameter 10 mm, inspection acrylic glass for observing the air mill stock stream, airlocks fitted with glass holding device and glass.

Reverse Bag Filter

Qty 1 No

Considering the dust concentration and low bulk density of dust, high ratio pulse jet type bag filter system suitable for reverse cleaning with off-line operation, bag filter shall comprise of bag chambers within the same casing separated by a partition. Each chamber shall be

provided with suitable isolation chamber so that the gas stream to a chamber can be cutoff during bag cleaning cycle.

Consisting of casing (partitioned) of MS construction, hopper, air manifold nozzle type, non-woven needle felt polyester bags, bag cages, Solenoid valves, electrical sequential controller for bag filter, rotary feeder, isolation dampers at bag filter inlet.

High Prtessure Fan

Qty 1 No

The housing is of sheet steel construction with a circular inlet and rectangular outlet. The impeller is multi-bladed and constructed for smooth vibration free running suitable for V-belt drive.

REBOLTING AND PACKING SECTION

Bin Discharger (Vibro)

Qty 4 Nos

Round shaped steel construction, bottom freely suspended from articulated brackets and oscillated by a vibrator with suitable drive

Screw Feeder above Chakkies

Qty 4 Nos

Specifications:

- Tube conveyor with variable speed AC drive to control the rate of flow.
- Round pipe type conveyor
- Continuous fabricated screw is fitted inside a closed end pipe. This screw is supported on bearing at both ends and hungers with UHMWPE bearing Motor and gear fitted on outlet side
- Rectangular / Round Inlet / Outlet Hoppers

Micro Feeder

Qty 2 No

With AC VFD drive, Vibrator System with geared motor

Plansifter

Qty 1 No

Size 4 Section x 12 Sieves

The plansifter contains 8 sifting sections, each section made of wooden boxes is an independent sieving set consisting of 20 frames, cover and distribution box.

Screw Conveyor

Tag **SC12 – SC14**

Qty **3 Nos**

Capacity 5 TPH on Atta

Length As per layout

Specifications:

- Casing: made of Mild Steel Sheets
- 'U' type trough 3mm thick with side end flange for bolting top cover of 2mm thickness
- Flange type bearing units provided at tail end and plumber block type at drive end
- Drive: Individual geared motor
- Overflow Sensor Switch at outlet
- Bottom Cleaning Doors for easy cleaning

Magnet for Atta

Qty 3 Nos

- Rare Earth Magnet, Tramp Grate-in-housing
- Grate is housed in SS housing
- Magnets are housed in SS 316 tube to protect against abrasion and corrosion. Tubesare spaced at 2" centers and develop peak gauss of 12,500.
- Bank consists of rare Earth Magnets

Blender

Qty 1 No

For mixing and blending of multigrain Atta.

Entoleter

Qty 1 No

- For all form of infestation during the grinding process having feature like:
- Hardened pins positioned around the periphery duly dynamically balanced
- Two inlet spouts (one for air balance)
- Housing for mounting motor
- Discharge Hopper

Automatic Packing Machine (Small Pack)

Qty 1 No

- Vertical Form Fill Seal Machine with Servo Auger Filler for 1 / 2 / 5 and 10 Kg in Laminate Pouches
- All contact parts of stainless steel 304 Grade
- Including: print mark sensor, level sensor, collars for different pack sizes
- With Blender Tank and screw conveyor for blending and feeding Atta to the machine hopper at top
- Pickup Conveyor at outlet of machine
- With Metallic Detector and Check Weigher

Automatic Packing Machine (Bulk Bag)

Qty 1 No

- To fill pre formed Bags

Pneumatic System

Qty 5 Nos

Size: As required

The necessary number of conveying lines in its required length, consisting of:

Rotary airlock, cyclone product receivers with air regulating valves, conveying pipes, pneumatic feeders made of welded steel sheet with a regulator air flap, pipe bends to change the direction of the pipes, rubber connection joints for tight connections at straight and curved pipe junctions, tape clamps, U-bolts made of round steel bars of diameter 10 mm, inspection acrylic glass for observing the air mill stock stream, airlocks fitted with glass holding device and glass.

Reverse Bag Filter

Qty 1 No

Considering the dust concentration and low bulk density of dust, high ratio pulse jet type bag filter system suitable for reverse cleaning with off-line operation, bag filter shall comprise of bag chambers within the same casing separated by a partition. Each chamber shall be provided with suitable isolation chamber so that the gas stream to a chamber can be cutoff during bag cleaning cycle.

Consisting of casing (partitioned) of MS construction, hopper, air manifold nozzle type, non-woven needle felt polyester bags, bag cages, Solenoid valves, electrical sequential controller for bag filter, rotary feeder, isolation dampers at bag filter inlet.

High Pressure Fan

Qty 1 No

The housing is of sheet steel construction with a circular inlet and rectangular outlet. The impeller is multi-bladed and constructed for smooth vibration free running suitable for V-belt drive.

ELECRTICAL, CABLES AND PLC

Motor Control Center

Motor Control Center Panel comprising of Non- compartment panels, with top mounted gland plate

The Motor Control Center comprises of the following:

- Main Incomer
- Aluminum Bus Bars.
- Start / Stop Illuminated Push Buttons on the panel
- Multifunctional meter to monitor total load of the plant.
- Ampere meter and CT for S/D motors.
- Control Transformer.
- DOL Feeders (MPCB+ Contactor)
- Star / Delta Feeders (above 5.5 KW MCCB+ Contactor+ Overload relay arrangement)
- VFD of different sizes for Fans

Field Cables

Electrical cables from MCC to field motors as per requirement Cables Trays and accessories for connections.

Automation and PLC

Automation Systems mainly consisting of

- Processor with Power Supply.
- Inputs / outputs modules.
- Color HMI Display Touch Screen.

Pneumatic Slides

- Size 120x120, 150x150 or 200x200 along with square and round pieces
- Electro-pneumatic operation complete with air cylinder, solenoid valve and 2 limit switches for position indication.

Level Sensors

- Capacitance type level indicator

Manual Slides

- Size 120x120, 150x150 or 200x200 along with square and round pieces
- Supplied with chain wheel to adjust the material flow rate

Diverter Valves

- Size 120x120, 150x150 or 200x200 along with square and round pieces
- Electro-pneumatic operation complete with air cylinder, solenoid valve and limit switchfor position indication.

LABORATORY

List of Equipments / Chemical and Glassware Required per specified Tests performed

- **MOISTURE TEST**: This test is done with different methods and is very useful to find out moisturepresent in the raw material & product
  - Air oven method
  - IR method

Raw material moisture directly affects the business commercially and finished product moistureeffects on life of the products. The Atta product moisture level is 9.0% - 10.0%.

- **HECTOLITRE WEIGHT:** The hectolitre weight of Wheat shall be minimum 78 to 80
- **ASH TEST**: Ash test is directly connected to the cleaning section of the plant. If the cleaning sectionis not cleaning the wheat – then sand & stone particles will increase ash % and will also damage theend products quality. The total ash in ATTA products is 0.09 % – 1.2%.
- **ACID IN SOLUBLE ASH**: Acid in soluble ash is necessary to test in products. Acid in soluble ash isonly fibre content in Atta products. If it increases then cleaning of wheat is not well. The maximum level is 0.06% - 0.08%.
- **SEDIMENTATION VALUE**: This test is to find out the quality of products, any directly consumable products is necessary to test minimum food value. In this case the Atta products sedimentation valueneeds minimum 20-22ml and below to this range is not suitable for health.
- **WATER ABSORPTION TEST**: These tests also find out the quality of protein and damage starch inthe Atta products. The good quality of Atta required absorbing more water. That means the damagestarch and quality of protein is good. The WAP min. value is 70% - 80%.
- **COLOR TEST**: This test is to find out appearance of flour and chapatti colour. The good quality of Atta product colour is whitish.
- **CCL 4 TEST**: This test is to find out the sand or stone particle present in flour. The limit of ccl4 testresult is NIL.
- **ALCOHOLIC ACIDITY**: This test is to find out the alcoholic acidity present in Atta products. This depends on quality of wheat which is used for grinding. Maximum limit in Atta products are 0.12%.
- **TEST BEAKING TEST**: The baking test is also a compulsory to check the Atta products. Its help tocheck Atta is stickiness, smell, test, texture, hardness of chapatti and extensibility.
- **GRANULATION TEST**: The test is done with the help of Lab sifter. The lab sifter

has five sieves. Pour the sample and run the lab sifter for five minutes duration with the help of timer.

2. Appendix –2

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

Appendix 2 (a)

Format for Performance Bank Guarantee

PERFORMANCE BANK GUARANTEE

Note: TobestampedinaccordancewithstampActoronstamppaperworthofRs.100/-(Non Judicial).

Date……

BankGuaranteeNo.:-

AmountofGuarantee:

Guarantee Cover from:

xx.xx.2022GuaranteeValidup to:

.....(Extendable

)

In consideration of an agreement dated ..... (here in after called the said agreement) has been executed between The Haryana State Cooperative Supply and Marketing Federation Limited (HAFED)(hereinafter called the HAFED)and ..... (hereinafter called the Contractor)for the work_____on the terms and conditions set out interalia in the said agreement. As mandated by the said Agreement, the Contractor having agreedtoproduceabankguaranteeforthefaithfulperformanceoftheentirecontractincludingwarrantyobligations/liabilitiesunderthesaidagreementforamountingtoRs. ……..(----------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 payThe Haryana State Cooperative Supply and Marketing Federation Limited (HAFED) on demand any and all the amount due and payableby the Contractor against any **loss or damage** caused to or would be caused to orsuffered by the HAFED by reason of **breach of any of the terms and conditions**containedinthesaidagreementbytheContractortotheextentofanamountofRs.…….asaforesaidatanytimeupto (days/month/year)withoutany demur, reservation, contest, recourse or protest and/or without any reference to theContractor.

- 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 withstanding any difference between the HAFED and the Contractor or any dispute pending beforeanycourt,TribunalorArbitratororanyotherauthorityrelatingthereto,ourliabilityunder this present being absolute and unequivocal.

The payment so 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.

Weundertake**nottorevoke**thisguaranteeduringitscurrency**withoutprevious 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 forceable till all the dues of the said Agreement and that it shall continue to beenforceabletillalltheduesofHAFEDunderorbyvirtueofthesaidAgreementhavebeen 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 demand or claim under this guarantee is made on us in writing till the date of itsenforcement,weshallbedischargedformallliabilityunderthisguaranteethereafter.

- We further agree with the HAFED that the HAFED shall have the full estliberty without our consent and without effecting in any manner, obligations here under thisguarantee 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 morofany 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 forbear to enforce 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 tothe matter aforesaid or any of them or by reason of any other acts of omission or commission on part of the HAFED or by any other matter or thing whatsoever which under law would, but for the provision, have the effect of sorelieving 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 notwithstanding any security or other guarantee the HAFED may have in relation to the Contractor's liabilities.
- Thisguaranteewillnotbedischargedduetochangeintheconstitutionofthebankorthe 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 tillthecompletionofwarrantyperiodormaybeextended/renewedtillthecompletion of the contract or for some other period as may be mutually agreed upon by the HAFED and the Contractor.

Appendix 2 (b)

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 saidProject 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 201.

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 executant(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 legalised by the Indian Embassy and notarised 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 (c)

Pro forma for Financial Proposal

To

Subject: “Planning, engineering, procurement, construction, erection, commissioning, trial run of flour Mill having molling capacity of 100 MTPD at Jatusana, District Rewari on EPC Work -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 t Work Contract

S. No	Particulars	Amount in Rs	Amount in Words
1	All Inclusive Price for EPC work Contract		

2	Total		

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 (d)

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: ……/……/2022

Signatures: _____

In the capacity of: -

Duly Authorized to Sign Tenders for and on behalf of (Name & Address)

Appendix 2(e)

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 and responsibility 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 Authorised Signatory of the Bidder:
   a. Name:
   b. Designation:
   c. Address:
   d. Phone Number:
   e. Fax Number:

Appendix 2 (f)

List of Working Professionals

No.	Name of person	Designation	Qualification	Experience

Appendix 2 (g)

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 organization to 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 (h)

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 GovernmentEntities
5. In case of projects Executed for Private Sector, Certificates signed by the Officials representing Senior Management Shall beconsidered
6. Similar project shall be as per the eligibility criteria mentioned in theRFP

Appendix 2 (i)

Format of Bank Guarantee of Mobilization Advance

-

Note: To be stamped in accordance with Stamp Act 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 _____, 2022 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 thereof be deemed to mean and include its successor in business and assigns.

Whereas, _____ having its registered office at _____ Here in after called" contractor" has undertaken 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 interalia 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&AddressoftheBank)havingitsheadofficeat……..
(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 and all the amount notexceedingintotaltheABGamountofRs……atanytimeupto …… (days/month/year)withoutanydemur,reservation,contest,recourseorprotestand/orwithoutanyreference tothe contractor.

- We undertake to pay the said The Haryana State Cooperative Supply and Marketing Federation Limited ("HAFED") anyamount so demanded shall be conclusive and binding, notwithstanding any differencebetweentheHAFEDandtheContractororanydisputependingbeforeanycourt,TribunalorArbitratororanyotherauthorityrelatingthereto,ourliabilityunderthispresentbeingabsoluteandunequivocal.
- The payment so made by us under this bank shall be valid discharge of our liability forpayment there under and the Contractor has no claim against us for making suchpayment.
- Thisguaranteeisnotassignableortransferablewithoutourandapplicant'spriorwrittenconsent.
- Weundertakenottorevokethisguaranteeduringitscurrencywithoutpreviousconsentof the HAFED and further agrees that the Guarantee herein contained shall remain in fullforce and effect during the period. Unless a demand or claim under this guarantee ismade on us in writing till the date of its enforcement, we shall be discharged form allliabilityunderthisguaranteethereafter.Theoriginalofthisguaranteeshallbereturnedto us upon expiry. However, after our payment of the whole of the Guarantee Amountorthe ,whichevercomesfirst,thisguaranteewillbecomenullandvoid,whether returnedto usornot.
- Bank also agrees that the HAFED its option shall be entitled to enforce this Guaranteeagainst the bank as a principal debtor in the first instance without proceeding againstthecontractorandnotwithstandinganysecurityorotherguaranteetheHAFEDmayhaveinrelationtothe Contractor'sliabilities.
- This guarantee will not be discharged due to change in the constitution of the bank orthecontractor.
- We_____lastly undertake not to revoke this guaranty during its currency exceptwiththepreviousconsentof theManagingDirectorof HAFEDinwriting.
- Notwithstanding anything contained herein, this bank guarantee shall be valid till thecompletion of warranty period or may be extended / renewed till the completion of thecontractorforsomeotherperiodasmaybemutuallyagreeduponbytheHAFEDandthecontractor/bidder.
- This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG), 2010revision,ICCPublicationNo.758.

"Notwithstandinganythingcontainedhereinabove"

1. OurLiabilityunderthisGuaranteeisrestricted toRs…./-(Rupees .....).
2. ThisBankGuaranteeshallremainin forceupto.....,2022.
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……, 2022 and unless a demand or claim is made on or before dated XXXXXX, 2022 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“AdvisingBank”.

Dated the…Day……2022 for……

Signatures&SealofGuarantor/Bank

WITNESS

1 ……
(Signaturewithnameinblocklettersand designation)

2……
(Signaturewithnameinblocklettersanddesignation)

Annexure –(h)

PROFORMA OF BANK GUARANTEE FOR RELEASE OF RETENTION MONEY DEDUCTED @5%FROM RUNNING BILL

1) IN LIEU OF RECEIVING PAYMENT AGAINST THE SECURITY DEPOSIT ACCRUED ANNUALLYBY PAYING THE RUNNING BILL AT 95%, i.e. THE RETENTION MONEY DEDUCTED @ 5% FROM RUNNING BILL

To
M/s. Bharat Coking Coal
LimitedKoyla Bhawan, Koyla
Nagar Dhanbad – 826005

Re: Bank guarantee in respect of contract No……..……

Dated…… between ……. (Name of the)

And .....(Name of the contractor)

WHEREAS

…….. (Name and address of the Contractor) (herein after called "the Contractor") has entered into a contract dated…….(herein after called the said contract) with ……. (name of the Company) (hereinafter called "the Company") to execute ……. (name of the contract and brief description of work) on the terms and conditions contained in the said contract.

It has been agreed that the Contractor shall furnish a Bank Guarantee from a Schedule bank for a sum of Rs… as security for release of equivalent amount of Retention Money as per terms
and conditions of the said contract.

We…… (name of the Bank) having its branch/Office at…….. have, at the request of the Contractor, agreed to furnish this bank Guarantee by way of Retention Money
NOW, THEREFORE, we the.....Bank (herein after called The Bank) hereby, unconditionally and
irrevocably, guarantees and affirms as follows:

The Bank do hereby irrevocably guarantees and unconditionally agree with the Company thatif the contractor shall in any way fail to observe or perform the terms and conditions of the said contract or shall commit any breach of its obligation thereunder, the Bank shall on its mere first written demand, and without any objection, demur and without any reference to the contractor, pay to the company the said sum of …… or such portion as shall then remain due with interest without requiring the Company to have recourse to any legal remedy that may be available to it to compel theBank to pay the sum, or failing on the company to compel such payment by the contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the Companyand as regards the amount payable by the Bank under this guarantee. The Bank shall not be entitledto withhold payment on the ground that the Contractor has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending betweenthe Company and the Contractor regarding the claim.

The Bank further agree that the Guarantee shall come into force from the date hereof and shall remain in force and effect till the period that will be taken for the performance of the said Contractwhich is likely to be …… day of but if the period of Contract is extended either pursuant to
the provisions in the said Contract or by mutual agreement between the contractor and the company,the Bank shall renew the period of the Bank Guarantee failing which it shall pay to the

company the said sum of Rs…….. or such lesser amount of the said sum of Rs… as may be due to the
company and as the company may demand.

This Guarantee shall remain in force until the dues of the company in respect of the said sum of Rs… and interest are fully satisfied and the Company certifies that the Contract has been fully
carried out by the Contractor and he has discharged the guarantee.

The Bank further agrees with the company that the company shall have the fullest liberty without consent of the Bank and without affecting in any way the obligations hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of the said contract from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the contractor and to forebear to enforce any of the terms & conditions relating to the said Contract and the Bank shall not be relieved from its liability by reason of such failure or extension being granted to the Contractor or to any forbearance, act or omissions on the part of the company or any indulgence by the Company to the Contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect or relieving or discharging the Guarantor.

The Bank further agrees that in case this Guarantee is required for a longer period and it is notextended by the Bank beyond the period specified above the Bank shall pay to the company the saidsum of Rs…….. or such lesser sum as may then be deemed to the Company and as the Company may require.

Notwithstanding anything contained herein the liability of the Bank under this Guarantee is restricted to Rs…….. The Guarantee shall remain in force till the day ……*…….. of ……* and
unless the Guarantee is renewed or claim is preferred against the Bank on or before the said date allrights of the Company under this Guarantee shall cease and the Bank shall be relieved and dischargedfrom all liabilities hereunder except as provided in the preceding Clause.

* The date of guarantee shall cover a period of minimum one year or 270 days beyond the date of completion whichever is more.

Any notice by way of request, demand or otherwise hereunder maybe sent by post/e-mail/Fax addressed to the bank branch/operative branch, which shall be deemed to be a sufficient demand notice. Bank shall effect payment thereof forthwith.

This Guarantee will not be discharged due to the change in the constitution of the Bank or theContractor.

The Bank has under it is constitution power to give this guarantee and Shri..... who has signed it on behalf of the Bank has authority to do so.

Signed and sealed this……..day

of……..at……

SIGNED, SEALED AND DELIVERED
For and on behalf of the Bank by:

(Signature)
(Name)
(Designation)
(Code number)
(address)

2) "The Bank Guarantee as referred above shall be payable at Kolkata Branch/DhanbadBranch at.....(pl. specify name of Branch with address)"

NOTE:- The department shall ensure extension of guarantee period in case of extension of time.

3) Annexure - J PROFORMA OF JOINT VENTURE /CONSORTIUM AGREEMENT

(On Non-Judicial Stamp paper of appropriate value as per provision of the Stamp Act applicable inthe concerned state)

This Joint Venture /Consortium agreement is made on this ……..day of……..

AMONGST/BETWEEN

M/s……, having its registered Office at ……...

Represented by Shri…….(Name and Designation) of M/s……...Who has power of Attorney to enter into Joint Venture /Consortium with and

Sign all documents/agreements on behalf of M/s…… (hereinafter referred to as" ")

AND

M/s……, having its registered Office at ……...

Represented by Shri…….(Name and Designation) of M/s……...who has power of Attorney to enter into Joint Venture /Consortium with and

Sign all documents/agreements on behalf of M/s…… (hereinafter referred to as" ").

The expressions M/s ……..and M/s…….Shall, wherever the context admits, mean and include their respective legal representatives, successors-in-interest and assigns and shall collectively be referred to as "Joint Venture /Consortium/Parties" and individually as "Joint Venture /Consortium Partner/Party".

WHEREAS M/s…….and M/s…agreed to form a Joint Venture /Consortium in order to join

their forces to obtain best results from the combinations of their individual resources of technical andmanagement skill, finance and equipment for the benefit of the project and in order to submit the Bid for the work of ".....……(hereinafter referred to as "Project") under ..... (Name of Company(hereinafter referred to as "the principle Employer").

The Parties hereby enter into this Joint Venture /Consortium Agreement (hereinafter referred to as "Joint Venture /Consortium Agreement") to jointly prepare and submit the Bid for the Project and in the event of securing the Project from the Employer, to execute the Project in accordance with the Contract terms and conditions, to the satisfaction of the Principal Employer.

NOW THEREFORE, the parties, in consideration of the mutual premises contained herein, agree as follows:

1) ***FORMATION AND TERMINATION OF THE JOINT VENTURE /CONSORTIUM***.

The parties under this Agreement have decided to form a Joint Venture /Consortium to submitthe Bid for the above Project and execute the Contract with the Principal Employer for the Project, if qualified and awarded.

a) The name and style of the Joint Venture /Consortium shall be "" (hereinafter called the "Joint Venture /Consortium"
b) The Head Office of the Joint Venture /Consortium shall be located at…… and the site office will be located at the site of the Project. All communication regarding the project will be made to…… Telephone Nos……..
c) None of the parties of the Joint Venture /Consortium shall be allowed to assign, pledge, sell orotherwise dispose all or part of its respective interests in the Joint Venture /Consortium to anyparty including the existing partner of the Joint Venture /Consortium.
d) The term of the Joint Venture/Consortium shall begin as on the date first set forth above and shall terminate on the earliest of the following dates.
    i) The Joint Venture /Consortium fails to obtain qualification from the Employer.
    ii) The Contract for the Project is not awarded to the Joint Venture /Consortium.
    iii) The Employer cancels the Project
    iv) Either Party commits material breach of this Agreement and fails to cure such breach withinthe period designated by the non-defaulting Party
    v) Both parties agree to terminate this Agreement in writing.
    vi) The Project is completed including defects liability period to the satisfaction of the Employer and all the parties complete any and all duties, liabilities and responsibilities under or in connection with the Contract and the Joint Venture /Consortium Agreement.

2) ***LEAD PARTNER***.

M/s… ..... shall be the Lead Partner of the Joint Venture /Consortium and is responsible
for performing a key function in contract management. M/s……. shall be attorney of the Parties duly authorized to incur liabilities and receive instructions for and on behalf of any and all partners in the Joint Venture /Consortium and also all the partners of the Joint Venture /Consortium shall be jointly and severally liable during the bidding process and for the execution of the contractas per contract terms with the employer in accordance with the power of attorney annexed. All Joint Venture /Consortium partners M/s…….. & M/s…….. nominate and authorize Shri……. (name and designation) of M/s…… to sign all letters, correspondence, papers & certificates and to submit the Pre-qualification Application / Biddocuments for and on behalf of the Joint Venture /Consortium.

3) ***REPRESENTATIVE OF THE PARTNERS OF THE JOINT VENTURE /CONSORTIUM***.

Each constituent party of the Joint Venture /Consortium appoints the following personnel as the representative of the relevant party with full power of attorney from the Board of Directors of theconcerned company.

JV / CONSORTIUM Partner	Name	Position in the respective Company
M/s……	…….	…….
M/s……..	……..	……..

4) *PARTICIPATION SHARE & WORK RESPONSIBILITIES*.

The parties agree that their respective participation share (hereinafter called 'ParticipationShare') in the Joint Venture /Consortium shall be as follows:

M/s…….. : .....…….…..% (…per cent)
M/s…….. : .....…….…..% (…per cent) and
M/s…….. : .....…….…..% (…per cent)

The Parties shall share the rights and obligations, risk, cost and expenses, working capitals, profits or losses or others arising out of or in relation to execution of the Project in proportion to their share of participation in the Joint Venture /Consortium except as otherwise agreed.

The parties shall jointly execute the works under the Project as an integrated entity and allocate responsibilities as regards division of work between themselves by organizing the adequate resources for successful completion of the Project. However, all parties shall remain jointly and severally responsible for the satisfactory execution of the Project in accordance with the Contractterms and conditions.

5) *JOINT AND SEVERAL LIABILITIES.*

All partner of Joint Venture /Consortium shall be liable jointly and severally during the Pre- qualification and Bidding process; and in the event the contract is awarded, during the execution of the Contract, in accordance with Contract terms.

6) *WORKING CAPITAL*

Each party shall contribute working capital for equipment, labour and material or any expenses incurred for execution of the Project or any other investment required in connection with the execution of the project proportionate to the participation ratio.

7) *BID SECURITY:*

Bid Security, Performance Security and other securities shall be paid by the Joint Venture/Consortium except as otherwise agreed.

8) *PERSONNEL & EQUIPMENT*

Team of Managers / Engineers of all the partners of the Joint Venture /Consortium will form part of the core management structure and assist in execution of the project. The list of Personnel and equipment proposed to be engaged for the project by each Party will be decided by themanagement committee.

9) NON PERFORMANCE OF RESPONSIBILITY BY ANY PARTY OF JOINTVENTURE /CONSORTIUM.

a) As between themselves, each Party shall be fully responsible for the fulfillment of all obligations arising out of its scope of the work for the Project to be clarified subject to the Agreement between the Parties and shall hold harmless and indemnified against any damage arising from its default or non-fulfillment of such obligations.

b) If any Party fails to perform its obligations described in this Agreement during the execution of the Project and to cure such breach within the period designated by the non-defaulting party, then the other party shall have the right to take up work, the interest and responsibilities of the defaulting party at the cost of the defaulting party.

c) Stepping into the shoes of the existing partner of Joint Venture /Consortium with all the liabilities of the existing partner from the beginning of the contract with the prior approval of company.

d) Notwithstanding demarcation or allotment of work of between/amongst Joint Venture /Consortium partners, Joint Venture /Consortium shall be liable for non-performance of the whole contract irrespective of their demarcation or share of work.

e) In case bid being accepted by Company, the payments under the contract shall only be made to the Joint Venture /Consortium and not to the individual partners.

10) BANK A/C.

Separate Bank A/c. shall be opened in the name of the Joint Venture /Consortium in a scheduled or Nationalized Bank in India as per mutual Agreement and all payments due to the Joint Venture /Consortium shall be received only in that account, which shall be operated jointly by the representative of the Parties hereto. The financial obligations of the Joint Venture /Consortium shall be discharged through the said Joint Venture /Consortium Bank Account only and also all thepayments received or paid by company to the Joint Venture /Consortium shall be through that account alone.

11) LIMIT OF JOINT VENTURE /CONSORTIUM ACTIVITIES.

The Joint Venture /Consortium activities are limited to the bidding and in case of award, to the performance of the Contract for the Project according to the conditions of the Contract with the Employer.

12) TAXES.

Each Party shall be responsible for its own taxes, duties and other levies to be imposed on each party in connection with the Project. The taxes, duties and

other levies imposed on the Joint Venture /Consortium in connection with the Project shall be paid from the account of the Joint Venture /Consortium.

13) ***EXCLUSIVITY***

The Parties hereto agree and undertake that they shall not directly or indirectly either individuallyor with other party or parties take part in the Bid for the said Project. Each Party further guarantee to the other party hereto that this undertaking shall also apply to its subsidiaries and companies under its direct or indirect control.

14) ***MISCELLANEOUS****:*

a. Neither party of the Joint Venture /Consortium shall assign, pledge, sell or otherwise dispose all or part of its respective interests in the Joint Venture /Consortium to a third party without the Agreement of the other parties in writing and also without the permission of the Employer.

b. Subject to the above clause, the terms and conditions of this agreement shall be binding upon the parties, the Directors, Officers, Employees, Successors, Assigns and Representatives.

15) ***APPLICABLE LAW***

This agreement shall be interpreted under laws and regulations of India**.**

IN WITNESS Whereof the Parties hereto have hereunder set their respective hands and seals theday, month, year first above written.

For ……..	For……
..	
Signature_____	Signature _____
(Name & Address)	(Name & Address)
……..	……
……..	
(Official Seal)	(Official Seal)
Place ……..……..	Place
……..	
Date …….	Date
…….	
Witness	Witness
Signature ……..……..	Signature
……	
(Name & Address)	(Name & Address)
……..	
	……
……..	