REQUEST FOR PROPOSAL

Development, Operation and Maintenance of 6 MTPD Capacity Herbal Extraction Unit in the State of Chhattisgarh

Volume 1: Instructions to Bidder

Managing Director Chhattisgarh Minor Forest Produce (T&D) Cooperative Federation Ltd Van Dhan Bhawan, Sector 24, Nava Raipur, Atal Nagar Chhattisgarh

September 2022

Development, Operation and Maintenance of 6 MTPD capacity Herbal Extraction Unit

Press Note



Chhattisgarh State Minor Forest Produce (T&D) Co-operative Federation Limited

"Van Dhan Bhawan", Sector - 24, Nava Raipur Atal Nagar Tel.: 0771-2513100-110, E-mail: mfpfed.cg@nic.in, Website: www.cgmfpfed.org

Notification No: Herbal Extraction Unit (2022) - I

Dated 10/09/2022

Request for Proposal for Development, Operation and Maintenance of 6 MT capacity Herbal Extraction Unit in the State of Chhattisgarh

Online Submission and Opening of e-Bid: e-Bids can be submitted online on the dates mentioned in table below till 3:00 PM in the e-procurement portal https://cgmfpfedtenders.abcprocure.com only, the tenders will be opened online from 3:10 PM on the mentioned in table below.

Bid Round	Bid downloading Start date	Date of Pre-bid meeting	Online Bid submission Start date	Online Bid submission End date	Date of online opening of Bid	
First	14.09.2022	23.09.2022	30.09.2022	11.10.2022	11.10.2022	
Second	17.10.2022	19.10.2022	21.10.2022	31.10.2022	31.10.2022	

The RFP and Draft O&M Agreement may be downloaded from the website www.cgmfpfed.org and e-Procurement portal https://cgmfpfedtenders.abcprocure.com only. Amendments / Notices will be available on above website and e-Procurement portal.

Managing Director

Important Dates

1.	Pre-Bid Meeting	23-09-2022 at 12:30 PM
2.	Last Date of Submission of Bid (Online and Hard Copy Submission)	11-10-2022 by 3:00 PM
3.	Date of Opening of Technical Bid	11-10-2022 by 3:10 PM

Date Sheet

1.	Name of the project	Development, Operation and Maintenance of 6 MTPD capacity Herbal Extraction Unit
2.	Tender issued by	Chhattisgarh Minor Forest Produce (T&D) Cooperative Federation Ltd
3.	Development, Operation and Maintenance Period	18 Months (Construction & commissioning) 20 Years (Operation & Maintenance)
4.	Cost of Tender Documents	Rs. 5,000.00 (To be paid online through e- Tender Portal)
5.	Bid Security	Rs. 5,00,000.00 in the form of BG /DD
6.	Date of issue tender document	10/09/2022
7.	Date from which Bid Documents can be downloaded	14/09/2022
8.	Pre-bid meeting (Meeting can be attended through virtual / physical mode)	23/09/2022 at 3:00 PM
9.	Date from which online submission will start	30/09/2022
10.	Last date & time for submission of Bid (Bid Due Date – Online Submission and Hard Copy submission)	Up to 3:00 P.M. on or before 11/10/2022
11.	Date and Time of opening Technical Bid.	11/10/2022 at 3:30 P.M.
12.	Opening of Financial Bid	Time & Date will be announced only after evaluation of Technical Bid.
13.	Email for Correspondence	mfpfed.cg@nic.in

Table of Contents

Glossary	y	8
1.1	Background	11
1.2	Brief description of Bidding Process	13
1.3	Schedule of Bidding Process	15
1.4	Pre-Bid Conference	16
A.	GENERAL	16
2.1	Scope of the Bid	16
2.2	Eligibility of Bidders	16
2.3	Pre-Qualification Criteria	18
2.4	General terms of Bidding	23
2.5	Change in composition of the consortium	24
2.6	Change of Ownership	24
2.7	Number of Bids and costs thereof	25
2.8	Site visit and verification of information	25
2.9	Acknowledgement of the Bidders	26
2.10	Verification and disqualification	26
B.	DOCUMENTS	27
2.11	Contents of the RFP	27
2.12	Clarifications	29
2.13	Amendment of Bidding Documents	30
C.	PREPARATION AND SUBMISSION OF BIDS	30
2.14	Language	30
2.15	Preparation of Bid	30
2.16	Online Bid submission	30
2.17	Instructions for submission of Bid	32
2.18	Common instructions	32
2.19	Bid Due Date	33
2.20	Late Bids	33
2.21	Modifications/Substitution/Withdrawal of Bids	33
2.22	Rejection of Bids	33
2.23	Validity of bids	33
2.24	Confidentiality	33
2.25	Correspondence with the Bidder	34
D.	BID SECURITY	34

2.26 Bid Security	34
3. EVALUATION OF BIDS	36
3.1 Opening and Evaluation of Bids	36
3.2 Test of responsiveness	
3.3 Clarifications	37
3.4 Qualification and Bidding	37
4. CRITERIA FOR EVALUATION	38
4.1 Financial Evaluation	38
4.2 Financial information for purposes of evaluation .	38
4.3 Financial Bid	38
4.4 Selection of Bidder	38
4.5 Contacts during Bid Evaluation	39
5. FRAUD AND CORRUPT PRACTICES	40
6. PRE-BID CONFERENCE	42
7. MISCELLANEOUS	43
APPENDICES	45
PART A – FORMATS FOR BID SUBMISSION	47
APPENDIX-A1	48
APPENDIX-A2	52
Appendix-A3	54
APPENDIX-A4	56
APPENDIX-A5	61
Appendix-A6	64
APPENDIX - A7	66
Annexure A8	68
Annexure A9	69
PART B – FORMATS FOR TECHNICAL BID SUBMISS	ION77
APPENDIX B1	78
APPENDIX B2	80
APPENDIX B3	82
APPENDIX B4	84
APPENDIX- B5	85
PART C – FORMAT FOR FINANCIAL BID SUBMISSIC	
APPENDIX- C1	87
PART D – PRELIMINARY PROJECT REPORT	88

Disclaimer

The information contained in this Request for Proposals document (**the "RFP"**) or subsequently provided to Bidder(s), whether verbally or in documentary or any other form by or on behalf of the Authority or any of its employees or advisors, is provided to Bidder(s) on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

This RFP is not an agreement and is neither an offer nor invitation by the Authority to the prospective Bidders or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in the formulation of their proposals pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived at by the Authority in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This RFP may not be appropriate for all persons, and it is not possible for the Authority, its employees or advisors to consider the investment objectives, financial situation and particular needs of each party who reads or uses this RFP. The assumptions, assessments, statements and information contained in this RFP may not be complete, accurate, adequate or correct. Each Bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information contained in this RFP and obtain independent advice from appropriate sources.

Information provided in this RFP to the Bidder(s) is on a wide range of matters, some of which may depend upon interpretation of law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The Authority accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.

The Authority, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Bidder under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the RFP and any assessment, assumption, statement or information contained therein or deemed to form part of this RFP or arising in any way for participation in this Bid Stage.

The Authority also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statements contained in this RFP.

The Authority may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this RFP.

The issue of this RFP does not imply that the Authority is bound to select a Bidder or to appoint the Selected Bidder or Licensee, as the case may be, for the Project and the Authority reserves the right to reject all or any of the Bidders or Bids without assigning any reason whatsoever.

The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the Authority or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder and the Authority shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the Bid, regardless of the conduct or outcome of the Bidding Process.

The Authority reserves its right to withdraw from the process at any stage of the process and/or modify the process or any part thereof or to vary any terms at any time or stage without assigning any reasons whatsoever. In such an event, no financial obligation of whatsoever nature shall accrue to the Authority or any of its respective officers, employees, advisors or agents.

Each Bidder's procurement of this RFP constitutes its agreement to, and acceptance of, the terms set forth in this Disclaimer. By acceptance of this RFP, the recipient agrees that this RFP and any information herewith supersedes document(s) or earlier information, if any, in relation to the subject matter hereto.

Glossary

Associate As defined in Clause 2.2.1(iv) As defined in Clause 1.1.1 **Authority Bank Guarantee** As defined in Clause 2.26.1 As defined in Clause 1.2.2 Bids(s) As defined in Clause 1.2.2 **Bidders Bidding Documents** As defined in Clause 1.1.9 As defined in Clause 1.1.9 **Bid Due Date Bidding Process** As defined in Clause 1.2.1 As defined in Clause 1.2.8 **Bid Security Commercial Operation Date** As defined in Clause 2.2.1(iv) Consortium As defined in Clause 2.2.1(i) **Conflict of Interest** As defined in Clause 2.2.1(iii) **Damages** As defined in Clause 2.2.1(iii) As defined in Clause 2.26.2 **Demand Draft** As defined in Clause 1.1.6 **Estimated Project Cost** Government Government of Chhattisgarh As defined in Clause 1.2.10 **Highest Bidder Joint Bidding Agreement** As defined in Clause 2.3.4(h) **LOA** As defined in Clause 4.4.4 **Lead Member** As defined in Clause 2.3.4 (c) As defined in Clause 1.1.4 **License Agreement** Licensee As defined in Clause 1.1.4 Member of a Consortium Member **Project** As defined in Clause 1.1.2 As defined in Clause 1.2.5 **Price Bid Stage Price Bid** As defined in Clause 1.2.5 Re. or Rs. Or INR Indian Rupee **Annual License Fee** As defined in Clause 4.3.1 **RFP** As defined in the Disclaimer

Selected Bidder As defined in Clause 4.3.2

SPV As defined in Clause 2.3.4

Tie Bidders As defined in Clause 4.4.1

The words and expressions beginning with capital letters and defined in this document shall, unless repugnant to the context, have the meaning ascribed thereto hereinabove.

1. Instructions for Online Bid Submission

The bidders are required to submit softcopies of their bids electronically on the Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the Departments' e-procurement portal, prepare their bids in accordance with their requirements and submitting their bids online on the Department's e-procurement portal. More information useful for submitting online bids on the Department's e-procurement Portal may be obtained at: https://cgmfpfedtenders.abcprocure.com and as per details provided in Annexure A8.

PREPARATION OF BIDS

- 1) Bidders should take into account any corrigendum published on the tender document before submitting their bids.
- 2) Please go through the RFP invitation and the RFP document along with Draft Agreement carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents- including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- 3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

SUBMISSION OF BID

- 1) Bidders should register n the state e-procurement portal as per Annexure 8 and login to the website (https://cgmfpfedtenders.abcprocure.com) well in advance for bid submission so that they can upload the bid in time i.e., on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- 3) Bidder should also submit hard copy of proposal on or before the Bid due (Hard Copy submission) date as per clause 1.3.
- 4) In case of any discrepancy in the documents submitted by the bidder, between online and hardcopy submission, documents submitted online shall be considered for the purpose of evaluation.

ASSISTANCE TO BIDDERS

1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the BID Inviting Authority for a tender or the relevant contact person indicated in the tender. Any queries relating to the process of online bid submission or queries relating to Department's e-procurement Portal in general may be directed to Helpdesk whose contact details are mentioned in **Annexure 9.**

INTRODUCTION

1.1 Background

1.1.1 Chhattisgarh State Minor Forest produce (Trading & Development) Cooperative Federation Limited, Raipur ("Authority") has been appointed as an authorized body for collection, purchase and trade of Minor Forest Produce (MFP) in whole of the state as per orders of the Government. Authority promotes sustainable collection and marketing of these forest produce in the interest of MFP gathering Tribal on co-operative pattern. Authority is presently engaged in conservation and distribution of income generated from these activities to gather tribal families through many socio-economic welfare schemes and promotion of primary processing units to carry out primary and secondary processing, thus adding value to realize better market value for MFP. Presently Authority through its existing processing unit/s established across state promotes value addition of these MFP. The processed products are being sold to consumers under the brand name "Chhattisgarh Herbals" through the Sanjeevani outlets across the State.

Further to promote and provide impetus to Minor Forest Produces (which also includes Medicinal Herbs and Aromatic Plants (MAPs)) based industries in the State, Government of Chhattisgarh desires to develop a Central Processing Unit in Durg District of Chhattisgarh. Total land earmarked for the project is approximately 110 acres located in Jamgaon Village, Patan development Block in Durg District, which is located approximately at a distance of 40 Km from State Capital Raipur. Out of 110 acres of available land, area admeasuring approx. 40 Acres will be developed by Chhattisgarh State Industrial Development Corporation (CSIDC) and remaining 70 acres will be developed by the Authority. The Authority endeavors to establish processing units for identified five (5) MFP processing unit(s) as a part of Central Processing Unit (CPU). The Authority will develop common infrastructure facilities such as warehouse (Godown), Cold storage, Testing Laboratory etc. which will be available on pay and use bases for all the unit/s established in the central processing Unit zone. Out of 70 Acre of land, approximately 40 Acres of land is earmarked for developing processing unit/s for 5 MFP (Including Herbal Extraction) based processing units through Private Sector Participation.

Owing to immensely rich bio-cultural diversity in the state of Chhattisgarh and dependence of forest dweller for their health requirements on medicinal plants, the Government has declared Chhattisgarh as an "HERBAL STATE". Medicinal herbs are widely used as diet supplements and treating illness. The finished products can be in form of oil, powder, paste or aqueous solutions from extracted herbs. With the above backdrop Authority has envisioned to establish Herbal Extraction Unit of minimum capacity of 6 MTPD approximately over 6.04 acres land parcel located at Jamgaon (Village), Patan (Development Block) in Durg District. The Authority has decided to undertake the development, operation, and maintenance of Herbal Extraction unit (the "**Project**") on design, build, operate, maintain and transfer basis, and has therefore, decided to carry out the bidding process for selection of entity (**Licensee**) to whom the project may be awarded.

The selected Licensee can also process other Medicinal Herbs and Aromatic Plants (MAPs) utilizing the same machines after obtaining prior approval in writing from the Authority.

Particular	Detail	
Project	Herbal Extraction Unit	
Area	6.04 Acres (Approx.); (Plot 1)	
Location	Jamgaon, Patan, Dist- Durg (CG)	
Project Capacity	6 MTPD	
Raw Material	 a. Dry Amla Seedless b. Dry Ashwagandha Panchang c. Dry Kalmegh Panchang d. Dry Giloy Stem e. Dry Gudmar Panchang 	
Finished Products	 a. Amla Extract 40 Tannin b. Ashwagandha Extract 5 % Withanolides c. Kalmegh Extract 5 % Andrographolides d. Giloy Extract 5% Bitter e. Gudmar Extract 25 % Gymnemic Acid 	
Estimated Project Cost INR 23.24 Cr		

- 1.1.2 The Selected Bidder, who is either a company incorporated under the Companies Act, 1956/2013 Partnership Firm, Society, Proprietorship, Trust, LLP shall be required to incorporate a SPV (Special Purpose Vehicle as a Company) as such prior to execution of the agreement (the "License Agreement"). The Licensee shall provide detailed civil infrastructure design and plan based on the specifications provided by the Authority. The Authority shall provide the detailed specifications for requirement of Machinery and the Licensee shall be responsible for designing, constructing, operating, managing and maintaining the Herbal Extraction Unit. The Licensee will design, build, operate, maintain and transfer the Project for a period of 21 years (Twenty One years) including construction period along with one time first right of refusal, subject to satisfactory performance during License period within the provisions of the License Agreement, to be entered into between the Selected Bidder and the Authority in the form provided by the Authority as part of the bidding documents.
- 1.1.3 The scope of work of Licensee in respect of the Project will broadly include design & development, construction, engineering, procurement, commissioning, operation, and maintenance of the of Herbal Extraction Unit through the Selected Bidder, subject to and in accordance with applicable regulatory/statutory approvals, license/clearances/consents/permits/norms/rules/schemes of competent Government authorities and Good Industry Practices. The Selected Bidder shall prepare detailed civil infrastructure design and plan based of the specification provided by the Authority as per the PPR (Preliminary Project Report) enclosed as (Appendix D) and shall carry out construction of civil infrastructure and electrical

fittings after obtaining prior approval in writing from the Authority. However, any extra cost over and above the project cost mentioned in the PPR i.e., INR 23.24 Cr, shall be borne by the Operator. The selected bidder shall procure the machinery as per the PPR (Preliminary Project Report) and shall be responsible for the installation & commissioning of Plant and Machinery at the Herbal Extraction Unit subject to conforming to the applicable laws and regulations/ norms/standards for respective project components. The Selected Bidder shall obtain all the requisite licenses/ approvals required for commencement of construction and commercial operation of the plant, completion of construction of civil infrastructure and procurement and commissioning of Machinery.

- 1.1.4 The Preliminary Project Report (PPR)of the project is enclosed which includes the Project cost, list of machinery which would be installed at the site. The cost mentioned in the attached PPR (Preliminary Project Report) would be used for calculation of performance securities which are required to be submitted by the Licensee. The Performance Bank Guarantee for the mentioned amount needs to be submitted before the execution of the License Agreement and shall remain active till the completion of Development, Operation and Maintenance Period.
- **1.1.5** The License Agreement sets forth the detailed terms and conditions for grant of rights to the Licensee, including the scope of the Licensee's services and obligations.
- 1.1.6 The statements and explanations contained in this RFP are intended to provide a better understanding to the Bidders about the subject matter of this RFP and should not be construed or interpreted as limiting in any way or manner the scope of services and obligations of the Licensee set forth in the Agreement or the Authority's rights to amend, alter, change, supplement or clarify the scope of work, the Project to be awarded pursuant to this RFP or the terms thereof or herein contained. Consequently, any omissions, conflicts or contradictions in the Bidding Documents including this RFP are to be noted, interpreted, and applied appropriately to give effect to this intent, and no claims on that account shall be entertained by the Authority.
- 1.1.7 The Authority shall receive Bids pursuant to this RFP in accordance with the terms set forth in this RFP and other documents to be provided by the Authority pursuant to this RFP, as modified, altered, amended, and clarified from time to time by the Authority (collectively the "Bidding Documents"), and all Bids shall be prepared and submitted in accordance with such terms on or before the date specified in Clause 1.3 for submission of Bids (the "Bid Due Date").

1.2 Brief description of Bidding Process

1.2.1 The Authority has adopted a single-stage bidding process (the "**Bidding Process**") for selection of the Bidder for award of the Project (collectively referred to as the "**Bidding Process**").

The tendering process is online at e-portal https://cgmfpfedtenders.abcprocure.com. Aspiring bidders may go through the details given in "Instructions for Online Bid Submission" of the RFP document.

- **1.2.2** The Bidders (the "**Bidders**"), which expression shall, unless repugnant to the context, include the Member of the Consortium, are required to submit their bids (the "**Bids**") in two envelops (i) Technical Bid and (ii) Financial Bid and other supporting documents through the e-portal (https://cgmfpfedtenders.abcprocure.com).
- **1.2.3** At the time of submission of the Bid, the Bidder shall pay to the Authority a sum of Rs 5,000 (Five Thousand only) as the cost of the RFP. The cost of RFP is to be paid online on the etendering portal (https://cgmfpfedtenders.abcprocure.com).
- 1.2.4 The pre-qualification stage (the "PQ Stage") of the Bidding Process involves pre-qualification (the "PQ") of prospective bidder(s) in accordance with the provisions of this RFP which expression shall, unless repugnant to the context, include the members of the Bidder bidding as joint venture of entities. At the end of this stage, the Authority shall shortlist pre-qualified Bidders fulfilling the qualification criteria.
- 1.2.5 The Bidders shortlisted as above after the pre-qualification stage shall be eligible for opening and evaluation of their Price Bids at Price Bid stage of the Bidding Process (the "Price Bid Stage") comprising the opening and evaluation of price Bid (the "Price Bid")
- **1.2.6** Government of India has issued guidelines (**see Appendix-A6**) for qualification of bidders seeking to acquire stakes in any public sector enterprise through the process of disinvestment. These guidelines shall apply mutatis mutandis to this Bidding Process. The Authority shall be entitled to disqualify a Bidder in accordance with the aforesaid guidelines at any stage of the Bidding Process. Bidders must satisfy themselves that they are qualified to bid and should give an undertaking to this effect in the form at Appendix-A1.
- **1.2.7** The Bidding Documents include the Draft License Agreement for the Project. Subject to the provisions of Clause 2.6.1, the aforesaid documents and any addenda issued subsequent to this RFP Document, will be deemed to form part of the Bidding Documents.
- 1.2.8 In terms of the RFP, Bid security in the form of Demand Draft in favor of Managing Director, Chhattisgarh State Minor Forest Produce Federation Ltd., on any scheduled bank payable at Raipur or in format BG as per Appendix A5.Bidder will be required to deposit, along with its Bid, a bid security (the "Bid Security") for INR 5 (Five) Lakhs, refundable no later than 60 (sixty) days from the Bid Due Date, except in the case of the selected Bidder whose Bid Security shall be retained till it has provided a Performance Security in terms of the RFP. The Bidders will be required to provide Bid Security in the form of a bank guarantee payable at Raipur or Demand Draft issued by a Scheduled Commercial Bank in India acceptable to the Authority and BG being valid for a period of not be less than 180 (one hundred and eighty) days from the Bid Due Date and Demand Draft being valid for a period of not less than 90 (ninety) days, inclusive of a claim period of 60 (sixty) days and may be extended as may be

- mutually agreed between the Authority and the Bidder from time to time. The Bid shall be summarily rejected if it is not accompanied by the Bid Security.
- **1.2.9** During the Bid Stage, Bidders are invited to examine the Project in greater detail, and to carry out, at their cost, such studies as may be required for submitting their respective Bids for award of the License for implementing the Project.
- **1.2.10** Generally, the Highest Bidder (the "**Highest Bidder**") shall be the Selected Bidder. The remaining Bidders shall be kept in reserve and may, in accordance with the process specified in Clause 4 of this RFP, be invited to match the Bid submitted by the Highest Bidder in case such Highest Bidder withdraws or is not selected for any reason. In the event that none of the other Bidders match the Bid of the Highest Bidder, the Authority may, in its discretion, either invite fresh Bids from the remaining Bidders or annul the Bidding Process.
- **1.2.11** The Licensee shall, in consideration of its services, be entitled to collect revenues as per the provisions of License Agreement.
- **1.2.12** Details of the process to be followed at the Bid Stage and the terms thereof are spelt out in this RFP.
- **1.2.13** The bidder may upload their queries, if any, on e-tendering portal https://cgmfpfedtenders.abcprocure.com before the last date of receiving queries as specified in the RFP. No other mode of raising queries shall be accepted. The Authority shall endeavor to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive bidding process, however, no queries received after prescribed date shall be entertained.
- **1.2.14** The Authority reserves the right not to proceed with the Bidding Process at any time without notice or liability and to reject any or all Bid(s) without assigning any reasons

1.3 Schedule of Bidding Process

S. No.	Event Description	Date
1	Availability of Bid Documents at website	14-09-2022
3 Pre-Bid Conference		23-09-2022 at 3:00 Pm
4	Authority response to queries latest by	27-09-2022
6	Bid Due Date (Online Submission and Hard copy submission)	11-10-2022 by 03:00 Hours
7	Opening date and time of Technical Bid	11-10-2022 at 03:30 Hours onwards
8	Announcement of short-listed bidders for Price Bid Stage	To be intimated

9	Opening date and time of Financial Bid	To be intimated.
10	Issue of Letter of Award	Within 30 days of Bid Due Date
11	Validity of Bids	120 days of Bid Due Date
12	Signing of License Agreement	Within 60 days of LOA

The authority shall endeavor to adhere to the following schedule:

1.4 Pre-Bid Conference

A Pre-Bid Conference shall be held to clarify the issues and to answer questions on any matter, that may be raised at this stage. The date, time and venue of the Pre-Bid Conference shall be:

Details of Pre-Bid Conference		
Date	23-09-2022	
Time	3:00 PM	
Venue	Vandhan Bhawan, Sector 24, Nava Raipur, Atal Nagar	
Pre-Bid Meeting can be attended through virtual / physical mode. The link to attend the pre-		
bid meeting on virtual platform will be notified a day prior to the scheduled pre bid meeting		
date, on the official website of the Authority (www.cgmfpfed.org)		

2. INSTRUCTIONS TO BIDDERS

A. GENERAL

2.1 Scope of the Bid

2.1.1 The Authority wishes to receive Bids in order to select experienced and capable Bidder for the Project. The price bids of the Bidders fulfilling the pre-qualification criteria shall be subsequently evaluated.

2.2 Eligibility of Bidders

- 2.2.1 For determining the eligibility of bidders for their Pre-Qualification hereunder, the following shall apply:
 - i. The Bidder for pre-qualification may be a single entity or a group of entities (the "Consortium"), coming together to implement the Project. However, no Bidder applying individually or as a member of a Consortium, as the case may be, can be member of another Bidder or apply individually, as the case may be. The term Bidder used herein would apply to both a single entity and a Consortium.
 - ii. For the purposes of this RFP, the Bidder may be a company incorporated under Indian Companies Law [as amended, consolidated, re-enacted, and modified from time to time], Partnership Firm, Society, Proprietorship, Trust, LLP or any combination of such entities with a formal intent to enter into an agreement or under an existing agreement to form a

Consortium. A Consortium shall be eligible for consideration subject to the conditions set out in Clause 2.3.4 below.

- iii. The Bidder shall not have a conflict of interest (the "Conflict of Interest") that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified. In the event of disqualification, the Authority shall be entitled to forfeit and appropriate the Bid Security or Performance Security, as the case may be, as mutually agreed genuine preestimated loss and damage likely to be suffered and incurred by the Authority and not by way of penalty for, *inter alia*, the time, cost and effort of the Authority, including consideration of such Bidder's proposal (the "Damages"), without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and/ or the License Agreement or otherwise. Without limiting the generality of the above, a Bidder shall be deemed to have a Conflict of Interest affecting the Bidding Process, if
 - a. The Bidder, its Member or Associate (or any constituent thereof) and any other Bidder, its Member or any Associate thereof (or any constituent thereof) have common controlling shareholders or other ownership interest; provided that this disqualification shall not apply in cases where the direct or indirect shareholding of a Bidder, its Member or an Associate thereof (or any shareholder thereof having a shareholding of more than 5 per cent of the paid up and subscribed share capital of such Bidder, Member or Associate, as the case may be) in the other Bidder, its Member or Associate is less than 5 per cent of the subscribed and paid up equity share capital thereof; provided further that this disqualification shall not apply to any ownership by a bank, insurance company, pension fund or a public financial institution referred to in sub-section (72) of section 2 of the Companies Act, 2013. For the purposes of this Clause 2.2.1(iii), indirect shareholding held through one or more intermediate persons shall be computed as follows:
 - where any intermediary is controlled by a person through management control or otherwise, the entire shareholding held by such controlled intermediary in any other person (the "Subject Person") shall be taken into account for computing the shareholding of such controlling person in the Subject Person; and
 - subject always to sub-clause (i) above, where a person does not exercise control over an intermediary, which has shareholding in the Subject Person, the computation of indirect shareholding of such person in the Subject Person shall be undertaken on a proportionate basis; provided, however, that no such shareholding shall be reckoned under this sub-clause (ii) if the shareholding of such person in the intermediary is less than 26% of the subscribed and paid up equity shareholding of such intermediary; or
 - b. a constituent of such Bidder is also a constituent of another Bidder; or
 - c. such Bidder or any Associate thereof receives or has received any direct or indirect subsidy, grant, concessional loan or subordinated debt from any other Bidder, or any Associate, or has provided any such subsidy, grant, concession/ loan or subordinated debt to any other Bidder, its Member or any Associate thereof; or
 - d. such Bidder has the same legal representative for purposes of this Bid as any other Bidder; or
 - e. such Bidder, or any Associate thereof, has a relationship with another Bidder, or any Associate thereof, directly or through common third party/ parties, that puts either or both

of them in a position to have access to each other's information about, or to influence the Bid of either or each other; or

- f. such Bidder or any Associate thereof has participated as a consultant to the Authority in the preparation of any documents, design or technical specifications of the Project.
- iv. A Bidder shall be liable for disqualification if any legal, financial or technical adviser of the Authority in relation to the Project is engaged by the Bidder, its Member or any Associate thereof, as the case may be, in any manner for matters related to or incidental to the Project. For the avoidance of doubt, this disqualification shall not apply where such adviser was engaged by the Bidder, its Member or Associate in the past but its assignment expired or was terminated prior to the Bid Due Date. Nor will this disqualification apply where such adviser is engaged after a period of 3 (three) years from COD (the "Commercial Operation Date") of the Project.

Explanation:

In case a Bidder is a Consortium, then the term Bidder as used in this Clause 2.2.1, shall include each Member of such Consortium.

For purposes of this RFP, Associate means, in relation to the Bidder/ Consortium Member, a person who controls, is controlled by, or is under the common control with such Bidder/ Consortium Member (the "Associate"). As used in this definition, the expression "control" means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person by operation of law or by contract or otherwise.

v. Damages on Conflict of Interest

Any Bidder found to have a Conflict of Interest shall be disqualified. In the event of disqualification, the Authority shall be entitled to forfeit and appropriate 5% of the value of the Bid Security or equivalent amount from the Performance Security, as the case may be, as mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Authority and not by way of penalty for, inter alia, the time, cost and effort of the Authority, including consideration of such Bidder's proposal (the "Damages"), without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and/or the License Agreement or otherwise.

- 2.2.2 Deleted
- 2.2.3 Deleted

2.3 Pre-Qualification Criteria

2.3.1 To be eligible for short-listing i.e., opening and evaluation of the Financial Bid, the Bidder shall fulfil the following condition:

A. Technical Capacity:

I. The bidder should have experience of running and operating Herbal Extraction unit (raw material as Herbs) with the annual average capacity of 500 tonnes (Not less than total of 1500 Tonnes over the last three years) over the last three years from one unit or multiple units in India (Category 1):

0r

II. The bidder should have experience of running and operating any Minor Forest Produce (MFP¹)/ Agriculture /Food processing unit (raw material combination allowed within MFP list /raw material utilized in the unit is farm/ forest/ land grown) with average annual capacity of 750 Metric Tonnes (Not less than total of 2250 tonnes over last three years) over the last three years from one unit or multiple units in India (Category 2);

Or

III. Start-up recognized by Department for Promotion of Industries and Internal Trade (DPIIT), Government of India, or recognized by any State Government or UT Government in India related to Herbal/ Food Processing/ Agriculture sector (Category 3);

B. Financial Capacity: The Bidder shall have

I. Average Annual Turnover of minimum 5 crores over the last three years for Herbal extraction unit or multiple units in India (if Technical Capacity is being submitted for Category 1)

Or

II. Average Annual Turnover of minimum 10 crores over the last three years for any Minor Forest Produce/Agriculture/Food processing Unit or multiple units in India (if Technical Capacity is being submitted for Category 2);

Or

- III. For startups minimum Net worth of the directors/ promoters of the bidder above INR 10 Crore as on 31 March 2021 (if Technical Capacity is being submitted for Category 3)
- IV. Positive Net Worth as of 31st March 2021.
 In case of a Consortium, the Net worth of each consortium member should be positive.

¹ Minor Forest Produce shall include Tamarind, saal seed, Harra and other MFPs (total 31) listed on the following official website: https://www.cgmfpfed.org/new/msp_scheme.php

C. High Net worth Criteria (High Net worth Route)

The prospective bidder having a Net-worth of Rs 20 Crores (Rupees Ten Crores) & above, as on 31st March 2021 will be exempted from the above stated "Eligibility Criteria" in "para 2.3.1 (A) and para 2.3.1 (B)".

However, such bidder shall have to demonstrate this Net-worth independently, without forming a Consortium/ Joint Venture

In case of bidder getting selected through High Network Criteria above, the bidder shall have to appoint Operation and Maintenance partner and enter into an agreement as per clause 4.1.3 (d) of the License agreement having similar experience of operating and managing Food /Agriculture Processing Industry/Minor Forest produce based industry etc. for Operating and Managing the Herbal Extraction Unit.

It is to confirm that the Bidder/ Lead Member and each of the other members together with their Associates whose Technical and/or Financial experience has been evaluated for the purposes of the RFP, has to subscribe at least 26% (twenty six percent) or more of the paid up and subscribed Equity of the Licensee and further commits that each such member shall, for a period of 5 (Five) years in line with the duration of project as per License Agreement, hold Equity share capital not less than:

- (i) 26% (twenty six percent) of the subscribed and paid up equity share capital of the SPV for Lead member;
- (ii) 26% (twenty six percent) of the subscribed and paid up equity share capital of the SPV for each of the other members and,
- (iii) 5% (five per cent) of the Total Project Cost specified in the License Agreement;
- 2.3.2 The Bidders shall enclose with its Bid, to be submitted as per the format at APPENDIX B3, Complete with the Annexes, the following:
 - i. certificate(s) from statutory auditors of the Bidder or its Associates specifying the Annual Turnover of the Bidder, as at the close of the preceding financial year, and also specifying that the methodology adopted for calculating such Turnover conforms to the provisions of this RFP (For Category 1 and Category 2)
 - ii. certificate(s) from statutory auditors of the Bidder or its Associates specifying the Net Worth of the Bidder, as at the close of the preceding financial year, and also specifying that the methodology adopted for calculating such Net Worth conforms to the provisions of this Clause 2.3.2 (ii). For the purposes of this RFP, net worth (the "Net Worth") shall mean the sum of subscribed and paid up equity and reserves from which shall be deducted the sum of revaluation reserves, miscellaneous expenditure not written off and reserves not available for distribution to equity shareholders
- 2.3.3 The Bidder should submit a Power of Attorney as per the format at Appendix-A2, authorizing the signatory of the Bidder to commit the Bidder. In the case of a Consortium, the Members

should submit a Power of Attorney in favour of the Lead Member as per format at Appendix-A3.

- 2.3.4 The Bidder shall be required to form an appropriate special purpose vehicle, by way of a new company incorporated under the Indian Companies Act, 2013 [and the rules notified thereunder] (the "SPV"), to execute the License Agreement and implement the Project. In case the Bidder is a Consortium, it shall, in addition to fulfilling the aforesaid requirements, comply with the following additional requirements:
 - a. Number of members in a consortium shall not exceed 3 (three);
 - b. subject to the provisions of sub-clause (a) above, the Bid should contain the information required for each member of the Consortium;
 - c. members of the Consortium shall nominate one member as the lead member (the "Lead Member"), who shall have an equity share holding of at least 26% (twenty six per cent) of the paid up and subscribed equity of the SPV. The nomination(s) shall be supported by a Power of Attorney, as per the format at Appendix-A3, signed by all the other members of the Consortium;
 - d. The other members of the Consortium shall have an equity shareholding of at least 26% (twenty-six per cent) of the paid up and subscribed equity of the SPV;
 - e. The Bid should include a brief description of the roles and responsibilities of individual members, particularly with reference to financial, technical know-how and License obligations;
 - f. An individual Bidder cannot at the same time be member of a Consortium submitting a bid. Further, a member of a particular Bidder Consortium cannot be member of any other Bidder Consortium submitting a bid;
 - g. Members of the Consortium shall enter into a binding Joint Bidding Agreement, substantially in the form specified at Appendix-A4 (the "Joint Bidding Agreement"), for the purpose of making the Bid. The Joint Bidding Agreement, to be submitted along with the Bid, shall, inter alia:
 - i. Convey the intent to form an SPV with shareholding/ownership equity commitment(s) in accordance with this RFP, which would enter into the License Agreement and subsequently perform all the obligations of the Licensee in terms of the License Agreement, in case the License to undertake the Project is awarded to the Consortium;
 - ii. clearly outline the proposed roles and responsibilities, if any, of each member;
 - iii. commit that the Lead Member and each of the other members whose experience will be evaluated for the purposes of this RFP, shall subscribe at least 26% (twenty six percent) or more and 26% (twenty six percent) or more respectively of the paid up and subscribed equity of the SPV and shall further commit that each such member shall, for a period of 5 (Five) years in line with the duration of contract as per License Agreement, hold equity share capital not less than: (i) 26% (twenty six percent) of the subscribed and paid up equity share capital of the SPV for Lead member; (ii) 26% (twenty six percent) of the subscribed and paid up equity share capital of the SPV for each of the other members and, (ii) 5% (five percent) of the Total Project Cost specified in the License Agreement;
 - iv. include a statement to the effect that all members of the Consortium shall be liable jointly and severally for all obligations of the Licensee in relation to the Project in accordance with the License Agreement; and
 - v. Except as provided under this RFP and the Bidding Documents, there shall not be any amendment to the Joint Bidding Agreement without the prior written consent of the Authority.

- 2.3.5 Any entity which has been barred by the Central/ State Government, or any entity controlled by it, from participating in any project (BOT or otherwise), and the bar subsists as on the date of Bid, would not be eligible to submit a Bid, either individually or as member of a Consortium.
- A Bidder including any Consortium Member or Associate should, in the last 3 (three) years, have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder, Consortium Member or Associate, as the case may be, nor has been expelled from any project or contract by any public entity nor have had any contract terminated by any public entity for breach by such Bidder, Consortium Member or Associate. Provided, however, that where a Bidder claims that its disqualification arising on account of any cause or event specified in this Clause 2.3.6 is such that it does not reflect (a) any malfeasance on its part in relation to such cause or event; (b) any willful default or patent breach of the material terms of the relevant contract; (c) any fraud, deceit or misrepresentation in relation to such contract; or (d) any rescinding or abandoning of such contract, it may make a representation to this effect to the Authority for seeking a waiver from the disqualification hereunder and the Authority may, in its sole discretion and for reasons to be recorded in writing, grant such waiver if it is satisfied with the grounds of such representation and is further satisfied that such waiver is not in any manner likely to cause a material adverse impact on the Bidding Process or on the implementation of the Project.
- 2.3.7 In computing the Turnover of the Bidder/Consortium Members under Clause 2.3.1, the Turnover of their respective Associates would also be eligible here under.
- 2.3.8 The following conditions shall be adhered to while submitting a Bid:
 - a. Bidder should attach clearly marked and referenced continuation sheets in the event that the space provided in the prescribed forms in the Appendices is insufficient. Alternatively, Bidders may format the prescribed forms making due provision for incorporation of the requested information;
 - b. Information supplied by a Bidder (or other constituent Member if the Bidder is a Consortium) must apply to the Bidder, Member or Associate named in the Bid and not, unless specifically requested, to other associated companies or firms.
 - c. In responding to the Bid submissions, Bidders should demonstrate their capabilities in accordance with Section 2 (Instructions to Bidders), Section 3 (Evaluation of Bids) and Section 4 (Criteria For Evaluation).
 - d. In case the Bidder is a Consortium, each Member should substantially satisfy the qualification requirements to the extent specified herein.
- 2.3.9 While Qualification is open to persons from any country, the following provisions shall apply:
 - a. Where, on the date of the Bid, 25% (twenty five per cent) or more of the aggregate issued, subscribed and paid up equity share capital in a Bidder or its Member is held by persons resident outside India or where a Bidder or its Member is controlled by persons resident outside India; or

- b. if at any subsequent stage after the date of the Bid, there is an acquisition of 25% (twenty five per cent) or more of the aggregate issued, subscribed and paid up equity share capital or control, by persons resident outside India, in or of the Bidder or its Member;
- c. [then the Qualification of such Bidder or in the event described in sub clause (b) above, the continued Qualification of the Bidder shall be subject to approval of the Authority from national security and public interest perspective. The decision of the Authority in this behalf shall be final and conclusive and binding on the Bidder]
- d. [The holding or acquisition of equity or control, as above, shall include direct or indirect holding/ acquisition, including by transfer, of the direct or indirect legal or beneficial ownership or control, by persons acting for themselves or in concert and in determining such holding o]r acquisition, the Authority shall be guided by the principles, precedents and definitions contained in the Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeovers) Regulations, 2011, or any substitute thereof, as in force on the date of such acquisition]

The Bidder shall promptly inform the Authority of any change in the shareholding, as above, and failure to do so shall render the Bidder liable for disqualification from the Qualification/Bidding Process.

2.3.10 Notwithstanding anything to the contrary contained herein, in the event that the Bid Due Date falls within 3 (three) months of the closing of the latest financial year of a Bidder, it shall ignore such financial year for the purposes of its Bid and furnish all its information and certification with reference to the 3 (three) years or 1 (one) year, as the case may be, preceding its latest financial year. For the avoidance of doubt, financial year shall, for the purposes of a Bid hereunder, mean the accounting year followed by the Bidder in the course of its normal business.

2.4 General terms of Bidding

2.4.1 Deleted

- 2.4.2 Notwithstanding anything to the contrary contained in this RFP, the detailed terms specified in the Draft License Agreement shall have overriding effect; provided, however, that any conditions or obligations imposed on the Bidder hereunder shall continue to have effect in addition to its obligations under the License Agreement.
- 2.4.3 Any condition or qualification or any other essential stipulation contained in the Bid shall render the Bid liable to rejection as a non-responsive Bid.
- 2.4.4 The documents including this RFP and all attached documents, provided by the Authority are and shall remain or become the properties of the Authority and are transmitted to the Bidders solely for the purpose of preparation and the submission of a Bid in accordance herewith. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The provisions of this Clause 2.4.4 shall also apply mutatis mutandis to Bids and all other documents submitted by the Bidders, and the Authority will not return to the Bidders any Bid, document or any information provided along therewith.

- 2.4.5 A Bidder shall be liable for disqualification and forfeiture of Bid Security if any legal, financial or technical adviser of the Authority in relation to the Project is engaged by the Bidder, its Members or any Associate thereof, as the case may be, in any manner for matters related to or incidental to such Project during the Bidding Process or subsequent to the (i) issue of the LOA or (ii) execution of the License Agreement. In the event any such adviser is engaged by the Selected Bidder or License Licensee, as the case may be, after issue of the LOA or execution of the License Agreement for matters related or incidental to the Project, then notwithstanding anything to the contrary contained herein or in the LOA or the License Agreement and without prejudice to any other right or remedy of the Authority, including the forfeiture and appropriation of the Bid Security or Performance Security, as the case may be, which the Authority may have thereunder or otherwise, the LOA or the License Agreement, as the case may be, shall be liable to be terminated without the Authority being liable in any manner whatsoever to the Selected Bidder or Licensee for the same. For the avoidance of doubt, this disqualification shall not apply where such adviser was engaged by the Bidder, its Member or Associate in the past but its assignment expired or was terminated prior to the Bid Due Date. Nor will this disqualification apply where such adviser is engaged after a period of 3 (three) years from Handover Date of the Project.
- 2.4.6 This RFP is not transferable.
- 2.4.7 Any award of License pursuant to this RFP shall be subject to the terms of Bidding Documents.
- 2.4.8 All documents and other information supplied by the Authority or submitted by a Bidder to the Authority shall remain or become the property of the Authority. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The Authority will not return any Bid or any information provided along therewith.
- 2.4.9 The Bidders shall be responsible for all of the costs associated with the preparation of their Bids and their participation in the Bidding Process. The Authority will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

2.5 Change in composition of the consortium

2.5.1 No change in the Consortium members is allowed once the Bids have been Submitted

2.6 Change of Ownership

2.6.1 By submitting the Bid, the Bidder acknowledges that the Lead Member and each of the other members together with their Associates whose technical experience has been evaluated for the purposes of the RFP, has to subscribe at least 26% (twenty six per cent) or more of the paid up and subscribed Equity of the Licensee and further commits that each such member shall, for a period of 05 (Five) years from the Commercial Operation Date, hold Equity share capital not less than:

- (i) 26% (twenty six percent) of the subscribed and paid up equity share capital of the SPV for Lead member;
- (ii) 26% (twenty six percent) of the subscribed and paid up equity share capital of the SPV for the technical member; and
- (iii) 5% (five per cent) of the Total Project Cost specified in the License Agreement;

The Bidder further acknowledges and agrees that the aforesaid obligation shall be the minimum and shall be in addition to such other obligations as may be contained in the License Agreement, and a breach hereof shall, notwithstanding anything to the contrary contained in the License Agreement, be deemed to be a breach of the License Agreement and dealt with as such thereunder. For the avoidance of doubt, the provisions of this Clause 2.6.1 shall apply only when the Bidder is a Consortium.

2.6.2 By submitting the Bid, the Bidder shall also be deemed to have acknowledged and agreed that in the event of a change in control of a Consortium Member or an Associate whose Financial Capacity was taken into consideration for the purposes of short-listing and pre-qualification under and in accordance with the RFP, the Bidder shall be deemed to have knowledge of the same and shall be required to inform the Authority forthwith along with all relevant particulars about the same and the Authority may, in its sole discretion, disqualify the Bidder or withdraw the LOA from the Selected Bidder, as the case may be. In the event such change in control occurs after signing of the License Agreement but prior to Financial Close of the Project, it would, notwithstanding anything to the contrary contained in the License Agreement, be deemed to be a breach of the License Agreement, and the same shall be liable to be terminated without the Authority being liable in any manner whatsoever to the Licensee. In such an event, notwithstanding anything to the contrary contained in the License Agreement, the Authority shall be entitled to forfeit and appropriate the Bid Security or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and/ or the License Agreement or otherwise

2.7 Number of Bids and costs thereof

- 2.7.1 No Bidder shall submit more than one Bid for the Project. A Bidder applying individually or as a member of a Consortium shall not be entitled to submit another Bid either individually or as a member of any Consortium, as the case may be.
- 2.7.2 The Bidders shall be responsible for all of the costs associated with the preparation of their Bids and their participation in the Bidding Process. The Authority will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

2.8 Site visit and verification of information

2.8.1 Bidders are encouraged to submit their respective Bids after visiting the Project site and ascertaining for themselves the site conditions, location, surroundings, climate, availability of power, water and other utilities for construction and commissioning, access to site, handling

and storage of materials, weather data, applicable laws and regulations, and any other matter considered relevant by them.

2.9 Acknowledgement of the Bidders

- 2.9.1 It shall be deemed that by submitting a Bid, the Bidder has:
 - a) made a complete and careful examination of the Bidding Documents;
 - b) received all relevant information requested from the Authority;
 - c) accepted the risk of inadequacy, error or mistake in the information provided in the Bidding Documents or furnished by or on behalf of the Authority relating to any of the matters referred to in Clause 2.9.1 above;
 - d) satisfied itself about all matters, things and information including matters referred to in Clause 2.9.1 herein above necessary and required for submitting an informed Bid, execution of the Project in accordance with the Bidding Documents and performance of all of its obligations thereunder:
 - e) acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in the Bidding Documents or ignorance of any of the matters referred to in Clause 2.9.1 hereinabove shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc. from the Authority, or a ground for termination of the License Agreement by the Licensee;
 - f) acknowledged that it does not have a Conflict of Interest; and
 - g) agreed to be bound by the undertakings provided by it under and in terms hereof.
- 2.9.2 The Authority shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to RFP, the Bidding Documents or the Bidding Process, including any error or mistake therein or in any information or data given by the Authority.

2.10 Verification and disqualification

2.10.1 Notwithstanding anything contained in this RFP, the Authority reserves the right to accept or reject any Bid and to annul or modify the Bidding Process and reject all Bids, at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons therefor. In the event that the Authority rejects or annuls all the Bids, it may, in its discretion, invite all eligible Bidders to submit fresh Bids hereunder.

2.10.2 Right to accept or reject any or all Bids

Notwithstanding anything contained in this RFP, The Authority reserves the right to verify all statements, information and documents submitted by the Bidder in response to the RFP or the Bidding Documents and the Bidder shall, when so required by the Authority, make available all such information, evidence and documents as may be necessary for such verification. Any

such verification or lack of such verification, by the Authority shall not relieve the Bidder of its obligations or liabilities hereunder nor will it affect any rights of the Authority thereunder.

- 2.10.3 The Authority reserves the right to reject any Bid and appropriate the Bid Security if:
 - a) at any time, a material misrepresentation is made or uncovered, or
 - b) at any time, a material misrepresentation is made or uncovered, or
 - c) the Bidder does not provide, within the time specified by the Authority, the supplemental information sought by the Authority for evaluation of the Bid.
 - Such misrepresentation/ improper response shall lead to the disqualification of the Bidder. If the Bidder is a Consortium, then the entire Consortium and each Member may be disqualified / rejected. If such disqualification / rejection occurs after the Bids have been opened and the Highest Bidder gets disqualified / rejected, then the Authority reserves the right to:
 - a) invite the remaining Bidders to submit their Bids in accordance with Clauses 4.4.2 and 4.4.3; or
 - b) take any such measure as may be deemed fit in the sole discretion of the Authority, including annulment of the Bidding Process.
- 2.10.4 In case it is found during the evaluation or at any time before signing of the License Agreement or after its execution and during the period of subsistence thereof, including the Project thereby granted by the Authority, that one or more of the qualification conditions have not been met by the Bidder, or the Bidder has made material misrepresentation or has given any materially incorrect or false information, the Bidder shall be disqualified forthwith if not yet appointed as the Licensee either by issue of the LOA or entering into of the License Agreement, and if the Selected Bidder has already been issued the LOA or has entered into the License Agreement, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this RFP, be liable to be terminated, by a communication in writing by the Authority to the Selected Bidder or the Licensee, as the case may be, without the Authority being liable in any manner whatsoever to the Selected Bidder or the Licensee. In such an event, the Authority shall be entitled to forfeit and appropriate the Bid Security or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and/ or the License Agreement, or otherwise.

B. DOCUMENTS

2.11 Contents of the RFP

2.11.1 This RFP comprises the Disclaimer set forth herein above, the contents as listed below, and will additionally include any Addenda issued in accordance with Clause 2.13.

GLOSSARY

Section 1 INTRODUCTION

Section 2 INSTRUCTIONS TO BIDDERS

Section 3 EVALUATION OF BIDS

Section 4 CRITERIA FOR EVALUATION

Section 5 FRAUD AND CORRUPT PRACTICES

Section 6 PRE-BID CONFERENCE

Section 7 MISCELLANEOUS

APPENDICES:

PART A - FORMATS FOR BID SUBMISSION

Appendix A1-Letter comprising the Bid for Pre-qualification and Financial Evaluation

Appendix A2-Power of Attorney for Signing of Bid

Appendix A3-Power of Attorney for Lead Member of Consortium

Appendix A4-Joint Bidding Agreement

Appendix A5-Bank Guarantee / Demand Draft for Bid Security

Appendix A6-Guidelines of the Department of Disinvestment

Appendix A7-Statement of Legal Capacity

Appendix A8- Undertaking to Prepare and Submit Project Completion Schedule before signing of Agreement

PART B – FORMATS FOR TECHNICAL BID SUBMISSION

Appendix B1-Particulars of the Bidder

Appendix B2 – Technical Capacity of the Bidder

Appendix B3 - Financial Capacity of the Bidder

Appendix B4- Format for Cost of RFP document

Appendix B5- Checklist of document to be uploaded online on e-Tender Portal

PART C – FORMAT FOR FINANCIAL BID SUBMISSION

Appendix C1-Financial Bid Form

2.11.2 The Draft License Agreement along with indicative details "Preliminary Project Report (PPR)" provided by the Authority as part of the Bidding Documents shall be deemed to be part of this RFP.

2.12 Clarifications

2.12.1 Bidders requiring any clarification on the RFP Document may send their queries by email to mfpfed.cg@nic.in and cgmfpfed.vandhan@gmail.com with subject title "Development, Operation and Maintenance of 6 MTPD Herbal Extraction Unit". Pre-bid queries should be sent in the format mentioned below. A Pre-Bid Conference can be held to clarify the issues and to answer questions on any matter, if any, that may be raised at this stage. The responses will be uploaded on e-tender portal and the website https://cgmfpfed.org. The Authority will forward its responses, at its sole discretion, to all the Bidders and would include a description of the enquiry and the response of the Authority without identifying the source of the enquiry.

Format for sending pre-bid queries:

Ref: RFP Notification no <xxx> dated <dd by="" mm=""></dd></xxx>
Name of The Bidder<<>>
Contact Number and Address of The Bidder - <<>>

S.No	Section Number	Page Number	RFP clause	Query	Remark

- 2.12.2 The Authority shall endeavour to respond to the questions raised or clarifications sought by the Bidders. However, the Authority reserves the right not to respond to any question or provide any clarification, in its sole discretion, and nothing in this Clause shall be taken or read as compelling or requiring the Authority to respond to any question or to provide any clarification.
- 2.12.3 The Authority may also on its own motion, if deemed necessary, issue interpretations and clarifications to all Bidders. All clarifications and interpretations issued by the Authority shall be deemed to be part of the Bidding Documents. Verbal clarifications and information given by Authority or its employees or representatives shall not in any way or manner be binding on the Authority.

- 2.12.4 To facilitate evaluation of Bidders, the Authority may, at its sole discretion, seek clarifications from any Bidder regarding its Bid. Such clarification(s) shall be provided within the time specified by the Authority for this purpose. Any request for clarification(s) and all clarification(s) in response thereto shall be in writing.
- 2.12.5 If a Bidder does not provide clarifications sought under Clause 2.12.4 above within the prescribed time, its Bid shall be liable to be rejected. In case the Bid is not rejected, the Authority may proceed to evaluate the Bid by construing the particulars requiring clarification to the best of its understanding, and the Bidder shall be barred from subsequently questioning such interpretation of the Authority.

2.13 Amendment of Bidding Documents

- 2.13.1 At any time prior to the Bid Due Date, the Authority may, for any reason, whether at its own initiative or in response to clarifications requested by a Bidder, modify the bidding documents by issuance of addenda.
- 2.13.2 Any Addendum issued shall be part of the Bidding Document and shall be available on the website or sent to the bidders.
- 2.13.3 In order to afford the Bidders a reasonable time for taking an Addendum into account for preparing their bids, or for any other reason, the Authority may, in its sole discretion, extend the Bid Due Date.

C. PREPARATION AND SUBMISSION OF BIDS

2.14 Language

2.14.1 The Bid and all related correspondence and documents in relation to the Bidding Process shall be in English language. Supporting documents and printed literature furnished by the Bidders with the Bid may be in any other language provided that they are accompanied by translations of all the pertinent passages in the English language, duly authenticated and certified by the Bidder. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Bid, the English language translation shall prevail.

2.15 **Preparation of Bid**

2.15.1 The Bidder shall provide all the information sought under this RFP. The Authority will evaluate only those Bids that are received in the required formats and complete in all respects. Incomplete and /or conditional Bids shall be liable to rejection.

2.16 Online Bid submission

2.16.1 Please refer "Instructions to Bidders for Online Bid submission" given at the start of this RFP Document. The bidders are required to submit their bids electronically on the Department's

e-procurement Portal, using valid Digital Signature Certificates. The said instructions are meant to assist the bidders in registering on the Department's e procurement Portal, prepare their bids in accordance with the requirements and submitting their bids online on the Department's e procurement Portal. More information useful for submitting online bids on the Department's Portal may be obtained at: https://cgmfpfedtenders.abcprocure.com.

- 2.16.2 Technical Bid along with all the supporting documents shall be submitted through e-Tender portal by the bidder and the hard copy of the Technical Bid shall be submitted to the Authority along with the above 2.16.1 Online Bid submission of the Bid. Financial Bid shall me submitted online only.
- 2.16.3 1) Technical Bid shall be submitted (**Online as well as in Hardcopy Submission**) and shall contain duly filled Bid in the prescribed format along with the appendices and documents specified in 2.17.1.
 - 2) Financial Bid shall be submitted (**Only Online**) in the prescribed format containing the details specified in 2.17.2
- 2.16.4 Notwithstanding the provisions of Online bid submission as per 2.16, the hard copy (in Original) of the following documents must be submitted in an envelope at the address given in 2.16.5 on or before the opening date and time of Technical Bid:
 - (1) Letter comprising the Bid
 - (2) Power of Attorney for signing the Bid (Hard copy in original) supported by Board Resolution for commitment to invest in project, if selected as successful bidder, and to undertake the development, Development, Operation and Maintenance of the project as per the provisions of Draft License Agreement;
 - (3) Power of Attorney for Lead Member of Consortium (Hard copy in original) supported by Board Resolution for commitment to invest in project, if selected as successful bidder, and to undertake the development, Development, Operation and Maintenance of the project as per the provisions of Draft Licensee Agreement;
 - (4) Signed and stamped copy of Draft License Agreement along with any corrigendum or addendum issued thereafter:
 - (5) Bank Guarantee/ Demand Draft for Bid Security (Hard copy in original); and

The envelope shall be sealed, marked with Bidder's name and labelled as "**Development**, **Operation and Maintenance of 6 MTPD Herbal Extraction Unit**"

The Bid shall be summarily rejected if the Hard copy of all or any of the documents mentioned herein is not received by Authority on or before opening of Technical Bid.

2.16.5 The envelope containing hard copies shall be addressed to:

Managing Director

Chhattisgarh Minor Forest Produce (T&D) Cooperative Federation Ltd.

Van Dhan Bhawan, Sector 24, Nava Raipur, Atal Nagar Chhattisgarh

2.17 Instructions for submission of Bid

2.17.1 **Technical Bid:** The scanned copy of following documents shall constitute the Technical Bid:

Appendices:

PART	PART A: FORMAT FOR SUBMISSION OF BID				
1	Appendix- A1	Letter comprising the Bid (scanned copy and hard copy)			
2	Appendix -A2	Power of Attorney for signing the Bid (scanned copy and hard copy)			
3	Appendix-A3	Power of Attorney for Lead member of the Consortium (if applicable)			
3		(scanned copy and hard copy)			
4	Appendix- A4	Joint Bidding Agreement (if applicable) (scanned copy and hard copy)			
5	Appendix – A5	Bank Guarantee or Demand Draft for Bid Security			
6	Appendix- A6	Guidelines of the Department of Disinvestment			
7	Appendix A7	Statement of Legal Capacity			
8	Appendix A8	Undertaking to prepare and submit project completion schedule before			
0		signing of Agreement			
	Appendix A9	Appendix A9 Instructions for the submission of the online Tenders			
	A copy of the Draft License Agreement along with indicative details "Preliminary Project				
10	Report (PPR)" with each page initialed/ stamped by the person signing the Bid in pursuance of				
	the Power of Attorney (Only hard copy submission required)				

2.17.2 Financial Bid:

Financial Bid duly filled and digitally signed prescribed format available on the e-Tender Portal. The Financial Bid Format is as per Appendix-C1.

Utmost care should be taken to upload the Financial Bid. Any change in the format of Financial Bid file shall render it unfit for bidding. Following Steps may be followed in submission of Financial Bid:

- i. Financial Bid format available on the e-Tender Portal shall be filled by the bidder online.
- ii. Fill 'Bidder's Name' & 'financial quote' in the in the prescribed format of Financial Bid available online
- iii. Financial bid to be submitted online

The unconditional financial bid in respect of the Project proposed to be developed by Authority and operated and managed by the Successful Bidder shall be submitted online, in the format attached in Appendix C1, hereof, wherein Annual License Fee, shall be stated. Please note that the format of Financial Bid as provided in APPENDIX C1 is only for the purpose of reference/acclimatization, the bidder needs to submit the financial bid online as per the procedure mentioned above.

2.18 Common instructions

2.18.1 Bids submitted by fax, telex, telegram or e-mail shall not be entertained and shall be rejected.

2.19 Bid Due Date

- 2.19.1 Bids should be submitted online before 15:00 hours IST on the Bid Due Date (Online Submission) and the hard copy of the requisite documents should be submitted before (Hard Copy Submission) as per clause 1.3 at the address provided in Clause 2.16.5 in the manner and form as detailed in this RFP. A receipt thereof should be obtained from the person specified at Clause 2.16.5.
- 2.19.2 The Authority may, in its sole discretion, extend the Bid Due Date by issuing an Addendum in accordance with Clause 2.13.3 uniformly for all Bidders.

2.20 Late Bids

2.20.1 Bids received by the Authority after the specified time on the Bid Due Date shall not be eligible for consideration and shall be summarily rejected.

2.21 Modifications/Substitution/Withdrawal of Bids

2.21.1 Once the Bid is submitted on the e-tender portal, it cannot be modified, substituted or withdrawn by the Bidder on or after the Bid Due Date.

2.22 Rejection of Bids

- 2.22.1 Notwithstanding anything contained in this RFP, the Authority reserves the right to reject any Bid and to annul or modify the Bidding Process and reject all Bids at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons therefor. In the event that the Authority rejects or annuls all the Bids, it may, in its discretion, invite all eligible Bidders to submit fresh Bids hereunder.
- 2.22.2 The Authority reserves the right not to proceed with the Bidding Process at any time, without notice or liability, and to reject any Bid without assigning any reasons.

2.23 Validity of bids

2.23.1 The bids shall be valid for a period of not less than 120 (one hundred and twenty) days from the Bid Due Date. The validity of Bids may be extended by mutual consent of the respective Bidders and the Authority.

2.24 Confidentiality

2.24.1 Information relating to the examination, clarification, evaluation and recommendation for the Bidders shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising the Authority in relation to, or matters arising out of, or concerning the Bidding Process. The Authority will treat all information, submitted as part of the Bid, in confidence and will require all those who have access to such material to treat the same in confidence. The Authority may not divulge any such information unless

it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or the Authority or as may be required by law or in connection with any legal process.

2.25 Correspondence with the Bidder

- 2.25.1 Save and except as provided in this RFP, the Authority shall not entertain any correspondence with any Bidder in relation to acceptance or rejection of any Bid.
- 2.25.2 Any information contained in the Bid shall not in any way be construed as binding on the Authority, its agents, successors or assigns, but shall be binding against the Bidder if the Project is subsequently awarded to it on the basis of such information

D. BID SECURITY

2.26 Bid Security

- 2.26.1 The Bidder shall furnish as part of its Bid, a Bid Security referred to in Clause 1.2.8 hereinabove in the form of **Demand Draft** in favor of Managing Director, Chhattisgarh State Minor Forest Produce Federation Ltd., **or** in the form of **"Bank Guarantee"** issued by a nationalized bank, or a Scheduled Bank in India for an amount of Rs. 5 Lakhs (Rupees Five Lakhs only) **Payable at Raipur**, in favour of the Authority in the format at Appendix–A5 (the "Bank Guarantee") and having a validity period of not less than 180 (one hundred eighty) days from the Bid Due Date, or Demand Draft being valid for a period of not less than 90 (ninety) days, inclusive of a claim period of 60 (sixty) days, and may be extended as may be mutually agreed between the Authority and the Bidder from time to time. In case the Bank Guarantee is issued by a foreign bank outside India, confirmation of the same by any nationalized bank in India is required. For the avoidance of doubt, Scheduled Bank shall mean a bank as defined under Section 2(e) of the Reserve Bank of India Act, 1934.
- 2.26.2 The Authority shall not be liable to pay any interest on the Bid Security deposit so made and the same shall be interest free.
- 2.26.3 Any Bid not accompanied by the Bid Security shall be summarily rejected by the Authority as non-responsive.
- 2.26.4 The Bid Security of unsuccessful Bidders will be returned by the Authority, without any interest, as promptly as possible on acceptance of the Bid of the Selected Bidder or when the Bidding process is cancelled by the Authority, and in any case within 60 (sixty) days from the Bid Due Date. Where Bid Security has been paid by demand draft, the refund thereof shall be in the form of an account payee demand draft in favour of the unsuccessful Bidder(s). Bidders may by specific instructions in writing to the Authority give the name and address of the person in whose favour the said demand draft shall be drawn by the Authority for refund, failing which it shall be drawn in the name of the Bidder and shall be mailed to the address given on the Bid.

- 2.26.5 The Selected Bidder's Bid Security will be returned, without any interest, upon the Licensee signing the License Agreement and furnishing the Performance Security in accordance with the provisions thereof. The Authority may, at the Selected Bidder's option, adjust the amount of Bid Security in the amount of Performance Security to be provided by him in accordance with the provisions of the License Agreement.
- 2.26.6 The Authority shall be entitled to forfeit and appropriate the Bid Security as Damages inter alia in any of the events specified in Clause 2.26.7 herein below. The Bidder, by submitting its Bid pursuant to this RFP, shall be deemed to have acknowledged and confirmed that the Authority will suffer loss and damage on account of withdrawal of its Bid or for any other default by the Bidder during the period of Bid validity as specified in this RFP. No relaxation of any kind on Bid Security shall be given to any Bidder.
- 2.26.7 The Bid Security shall be forfeited as Damages without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and/ or under the License Agreement, or otherwise, if
 - a) a Bidder engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice as specified in Clause 5 of this RFP;
 - b) a Bidder withdraws its Bid during the period of Bid validity as specified in this RFP and as extended by mutual consent of the respective Bidder(s) and the Authority;
 - c) the Selected Bidder fails within the specified time limit
 - i. to sign and return the duplicate copy of LOA; or
 - ii. to sign the License Agreement; or
 - iii. to furnish the Performance Security within the period prescribed thereof in the License Agreement;
 - d) the Selected Bidder, having signed the License Agreement, commits any breach thereof prior to furnishing the Performance Security.

3. EVALUATION OF BIDS

3.1 Opening and Evaluation of Bids

- 3.1.1 The Authority shall open the Bids at 15:10 hours IST on the Bid Due Date, at the place specified in Clause 2.16.5 and in the presence of the Bidders who choose to attend.
- 3.1.2 Bids for which a notice of withdrawal has been submitted in accordance with Clause 2.21 shall not be opened.
- 3.1.3 The Authority will subsequently examine and evaluate Bids in accordance with the provisions set out in Section 2, 3 and 4.
- 3.1.4 Bidders are advised that qualification of Bids will be entirely at the discretion of the Authority. Bidders will be deemed to have understood and agreed that no explanation or justification on any aspect of the Bidding Process or selection will be given.
- 3.1.5 Any information contained in the Bid shall not in any way be construed as binding on the Authority, its agents, successors or assigns, but shall be binding against the Bidder if the Project is subsequently awarded to it on the basis of such information.
- 3.1.6 The Authority reserves the right not to proceed with the Bidding Process at any time without notice or liability and to reject any or all Bid(s) without assigning any reasons.
- 3.1.7 To facilitate the evaluation of Bids, the Authority may, at its sole discretion, seek clarifications in writing from any Bidder regarding its Bid.

3.2 Test of responsiveness

- 3.2.1 Prior to evaluation of Bids, the Authority shall determine whether each Bid is responsive to the requirements of the RFP. A Bid shall be considered responsive only if:
 - a) it is received as per formats prescribed in Appendices;
 - b) it is received by the Bid Due Date including any extension thereof pursuant to Clause 2.19.2;
 - c) it is signed, sealed, and marked as stipulated in Clauses 2.16 and 2.17;
 - d) it is accompanied by the Power(s) of Attorney as specified in clauses 2.3.2;
 - e) it contains all the information and documents (complete in all respects) as requested in this RFP;
 - f) it contains information in formats same as those specified in this RFP/Bidding documents;
 - g) it contains copy of signed Draft License Agreement;
 - h) it does not contain any condition or qualification; and

- i) it is not non-responsive in violation of terms hereof.
- 3.2.2 The Authority reserves the right to reject any Bid which is non-responsive and no request for alteration, modification, substitution or withdrawal shall be entertained by the Authority in respect of such Bid. Provided, however, that the Authority may, in its discretion, allow the Bidder to rectify any infirmities or omissions if the same do not constitute a material modification of the bid.

3.3 Clarifications

- 3.3.1 To facilitate evaluation of Bids, the Authority may, at its sole discretion, seek clarifications from any Bidder regarding its Bid such clarification(s) shall be provided within the time specified by the Authority for this purpose. Any request for clarification(s) and all clarification(s) in response thereto shall be in writing.
- 3.3.2 If any Bidder does not provide clarifications sought under Clause 3.3.1 above within the prescribed time, its Bid shall be liable to be rejected. In case the Bid is not rejected, the Authority may proceed to evaluate the Bid by construing the particulars requiring clarification to the best of its understanding, and the Bidder shall be barred from subsequently questioning such interpretation of the Authority.

3.4 Qualification and Bidding

3.4.1 The Authority would announce a list of Pre-Qualified bidders after the Pre-Qualification criteria evaluation. Only the Bidders who qualify under the Pre-Qualification Criteria would be eligible for Financial Evaluation (Price Bid Stage). The Authority will not entertain any query or clarification from the Bidder who could not be shortlisted.

3.4.2 Opening of Price Bids

Price bids of only those Bidders, who are short-listed after the Pre-Qualification criteria evaluation shall be opened by the Authority.

3.4.3 Proprietary data

All documents and other information supplied by the Authority or submitted by a Bidder to the Authority shall remain or become the property of the Authority. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The Authority will not return any Bid or any information provided along therewith.

3.4.4 Correspondence with the Bidder

Save and except as provided in this RFP, the Authority shall not entertain any correspondence with any Bidder in relation to the acceptance or rejection of any Bid.

4. CRITERIA FOR EVALUATION

4.1 Financial Evaluation

4.1.1 Only those Bidders who meet the Qualification Criteria specified in Clause 2.3 shall qualify for evaluation under Clause 4.1. Bids of firms/consortia who do not meet this criteria shall be rejected

4.2 Financial information for purposes of evaluation

- 4.2.1 The Bid must be accompanied by the Audited Annual Reports of the Bidder (of each Member in case of a Consortium) for the last 3 (three) financial years, preceding the year in which the Bid is made.
- 4.2.2 In case the annual accounts for the latest financial year are not audited and therefore the Bidder cannot make it available, the Bidder shall give an undertaking to this effect and the statutory auditor shall certify the same. In such a case, the Bidder shall provide the Audited Annual Reports for 3 (three) years preceding the year for which the Audited Annual Report is not being provided.
- 4.2.3 The Bidder must establish the positive Net Worth specified in Clause 2.3.1 (B), and provide details as per format of APPENDIX B3.

4.3 Financial Bid

- 4.3.1 "Bid parameter Annual License Fee for first year of Operation (the "Annual License Fee") as defined in Draft License Agreement.
- 4.3.2 The Bidder who quotes the highest Annual License Fee shall be declared as the selected bidder (the "Selected Bidder").
- 4.3.3 Bidders would be ranked in the descending order of the Annual License Fee furnished by the Bidders.
- 4.3.4 The Financial Bid should be furnished in the format at Appendix–C1, clearly indicating the Annual License Fee in both figures and words, and signed by the Bidder's authorised signatory. In the event of any difference between figures and words, the amount indicated in words shall be taken into account.

4.4 Selection of Bidder

4.4.1 In the event that two or more Bidders quote the same value for Annual License Fee, up to one decimal place (the "**Tie Bidders**"), the Authority shall identify the Selected Bidder based on Net Worth. The Bidder with the highest Net Worth (As on 31st March 2021) shall be the Selected Bidder.

- 4.4.2 In the event that the Highest Bidder withdraws or is not selected for any reason in the first instance (the "first round of bidding"), the Authority may invite all the remaining qualified Bidders to revalidate or extend their respective Bid Security, as necessary, and match the Bid of the aforesaid Highest Bidder (the "second round of bidding"). If in the second round of bidding, only one Bidder matches the Highest Bidder, it shall be the Selected Bidder. If two or more Bidders match the said Highest Bidder in the second round of bidding, then the Bidder whose Bid was higher as compared to other Bidder(s) in the first round of bidding shall be the Selected Bidder. For example, if the third and fifth highest Bidders in the first round of bidding offer to match the said Highest Bidder in the second round of bidding, the said third highest Bidder shall be the Selected Bidder.
- 4.4.3 In the event that no Bidder offers to match the Highest Bidder in the second round of bidding as specified in Clause 4.4.2, the Authority may, in its discretion, invite fresh Bids (the "third round of bidding") from all Bidders except the Highest Bidder of the first round of bidding, or annul the Bidding Process, as the case may be. In case the Bidders are invited in the third round of bidding to revalidate or extend their Bid Security, as necessary, and offer fresh Bids, they shall be eligible for submission of fresh Bids provided, however, that in such third round of bidding, only such Bids shall be eligible for consideration which are higher than the Bid of the second highest Bidder in the first round of bidding.
- 4.4.4 After selection, a Letter of Award (the "LOA") shall be issued, in duplicate, by the Authority to the Selected Bidder and the Selected Bidder shall, within 7 (seven) days of the receipt of the LOA, sign and return the duplicate copy of the LOA in acknowledgement thereof. In the event the duplicate copy of the LOA duly signed by the Selected Bidder is not received by the stipulated date, the Authority may, unless it consents to extension of time for submission thereof, appropriate the Bid Security of such Bidder as Damages on account of failure of the Selected Bidder to acknowledge the LOA, and the next eligible Bidder may be considered.
- 4.4.5 After acknowledgement of the LOA as aforesaid by the Selected Bidder, it shall cause the Licensee to execute the License Agreement within the period prescribed in Clause 1.3. The Selected Bidder shall not be entitled to seek any deviation, modification or amendment in the License Agreement.

4.5 Contacts during Bid Evaluation

4.5.1 Bids shall be deemed to be under consideration immediately after they are opened and until such time the Authority makes official intimation of award/ rejection to the Bidders. While the Bids are under consideration, Bidders and/ or their representatives or other interested parties are advised to refrain, save and except as required under the Bidding Documents, from contacting by any means, the Authority and/ or their employees/ representatives on matters related to the Bids under consideration.

5. FRAUD AND CORRUPT PRACTICES

- 5.1.1 The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process and subsequent to the issue of the LOA and during the subsistence of the License Agreement. Notwithstanding anything to the contrary contained herein, or in the LOA or the License Agreement, the Authority may reject a Bid, withdraw the LOA, or the Authority may terminate the License Agreement, as the case may be, without being liable in any manner whatsoever to the Bidder or Licensee, as the case may be, if it determines that the Bidder or Licensee, as the case may be, has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process. In such an event, the Authority shall be entitled to forfeit and appropriate the Bid Security or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and/ or the License Agreement, or otherwise.
- 5.1.2 Without prejudice to the rights of the Authority under Clause 5.1.1 hereinabove and the rights and remedies which the Authority may have under the LOA or the License Agreement, or otherwise if a Bidder or Licensee, as the case may be, is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, or after the issue of the LOA or the execution of the Agreement, such Bidder or Licensee shall not be eligible to participate in any tender or RFP issued by the Authority during a period of 2 (two) years from the date such Bidder or Licensee, as the case may be, is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.
- 5.1.3 For the purposes of this Clause 5, the following terms shall have the meaning hereinafter respectively assigned to them:
 - a) "corrupt practice" means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Authority who is or has been associated in any manner, directly or indirectly, with the Bidding Process or the LOA or has dealt with matters concerning the License Agreement or arising therefrom, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Authority, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or (ii) save and except as permitted this RFP, engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the License Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the License Agreement, who at any time has been or is a legal, financial or technical adviser of the Authority in relation to any matter concerning the Project;

- b) "fraudulent practice" means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;
- c) "coercive practice" means impairing or harming, or threatening to impair or harm, directly
 or indirectly, any person or property to influence any person's participation or action in the
 Bidding Process;
- d) "unfair practice" means (i) establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
- e) "restrictive practice" means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bidding Process.

6. PRE-BID CONFERENCE

- 6.1.1 Pre-Bid Conference(s) of the Bidders shall be convened at the designated date, time and place. A maximum of three representatives of each Bidder shall be allowed to participate on production of authority letter from the Bidder.
- 6.1.2 During the Pre-Bid Conference(s), the Bidders will be free to seek clarifications and make suggestions for consideration of the Authority. The Authority shall endeavor to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.

7. MISCELLANEOUS

- 7.1.1 The Bidding Process shall be governed by, and construed in accordance with, the laws of India and the Courts in the State in which the Authority has its headquarters shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the Bidding Process.
- 7.1.2 The Authority, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to;
 - a. suspend and/ or cancel the Bidding Process and/ or amend and/ or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto;
 - b. consult with any Bidder in order to receive clarification or further information;
 - c. retain any information and/ or evidence submitted to the Authority by, on behalf of, and/ or in relation to any Bidder; and/ or
 - d. independently verify, disqualify, reject and/ or accept any and all submissions or other information and/ or evidence submitted by or on behalf of any Bidder.
- 7.1.3 It shall be deemed that by submitting the Bid, the Bidder agrees and releases the Authority, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/ or performance of any obligations hereunder, pursuant hereto and/ or in connection with the Bidding Process and waives, to the fullest extent permitted by applicable laws, any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or in future.

SCHEDULE - I (A)

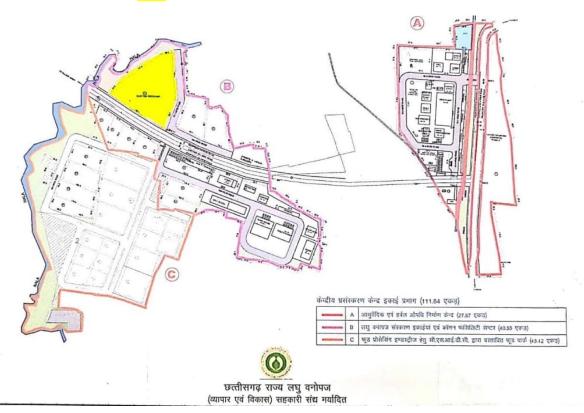
PROJECT DETAILS & SITE MAP

Particular	Detail
Project	Herbal Extraction Unit
Area	6.04 Acres (Approx.); (Plot 1)
Location	Jamgaon, Patan, Dist- Durg (CG)
Project Capacity	6 MTPD
Estimated Project Cost	INR 23.24 Cr

^{*}The land Area (6.04 Acres) is tentative and can be increased or decreased by 10% at the time of handing over of project site

Central Processing Unit Area at Jamgaon (M), Tahsil – Patan, District Durg

Herbal Extraction Plant



APPENDICES

PART A – FORMATS FOR BID SUBMISSION

APPENDIX-A1

Letter comprising the Bid

(Refer Clause 2.17)

To,

Managing Director

Chhattisgarh Minor Forest Produce (T& D) Co-operative Federation Ltd. Vandhan Bhawan, Sector 24, Nava Raipur, Atal Nagar **District- Raipur (C.G.)**

Sub: Development, Operation and Maintenance of 6 MTPD Herbal Extraction Unit

Dear Sir,

- 1. With reference to your RFP document dated, I/we, having examined the Bidding Documents and understood their contents, hereby submit my/our Bid for the aforesaid Project. The Bid is unconditional and unqualified.
- 2. I/ We acknowledge that the Authority will be relying on the information provided in the Bid and the documents accompanying the Bid for selection of the Licensee for the aforesaid Project, and we certify that all information provided therein is true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying the Bid are true copies of their respective originals.
- 3. This statement is made for the express purpose of our selection as Licensee for the Development, Operation and Maintenance of the aforesaid Project.
- 4. I/ We shall make available to the Authority any additional information it may find necessary or require to supplement or authenticate the Bid.
- 5. I/ We acknowledge the right of the Authority 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 certify that in the last three years, we/ any of the Consortium Members[£] or our/ their Associates have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award, nor been expelled from any project or contract by any public authority nor have had any contract terminated by any public authority for breach on our part.
- 7. I/ We declare that:
 - (a) I/ We have examined and have no reservations to the Bidding Documents, including any Addendum issued by the Authority; and

[£] If the Bidder is not a Consortium, the provisions applicable to Consortium may be omitted.

- I/ We do not have any conflict of interest in accordance with Clauses 2.2.1 (iii) and 2.3.5 of the RFP documents; and
- I/ We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in Clause 5.1.3 of the RFP document, in respect of any tender or request for proposals issued by or any agreement entered into with the Authority or any other public sector enterprise or any government, Central or State; and
- I/ We hereby certify that we have taken steps to ensure that in conformity with the provisions of Section 5 of the RFP, no person acting for us or on our behalf has engaged or will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice; and
- 8. I/ We understand that you may cancel the Bidding Process at any time and that you are neither bound to accept any Bid that you may receive nor to invite the Bidders to Bid for the Project, without incurring any liability to the Bidders, in accordance with Clause 2.22 of the RFP document.
- 9. I/ We believe that we/ our Consortium satisfy(s) the Technical & Financial Capacity criteria and meet(s) the requirements as specified in the RFP document I/ We declare that we/ any Member of the Consortium, or our/its Associates are not a Member of a/any other Consortium submitting a Bid for the Project.
- 10. I/ We declare that we/ any Member of the Consortium, or our/ its Associates are not a Member of a/ any other Consortium submitting a Bid for the Project.
- 11. I/ We certify that in regard to matters other than security and integrity of the country, we/ any Member of the Consortium or any of our/ their Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which could cast a doubt on our ability to undertake the Project or which relates to a grave offence that outrages the moral sense of the community.
- 12. I/ We further certify that in regard to matters relating to security and integrity of the country, we/ any Member of the Consortium or any of our/ their Associates have not been chargesheeted by any agency of the Government or convicted by a Court of Law.
- 13. I/ We further certify that no investigation by a regulatory authority is pending either against us or against our Associates or against our CEO or any of our directors/ managers/ employees.
- 14. I/ We further certify that we are not disqualified in terms of the additional criteria specified by the Department of Disinvestment in their OM No. 6/4/2001-DD-II dated July 13, 2001, a copy of which forms part of the RFP at Appendix-A6 thereof.

f In case the Bidder is unable to provide certification regarding any pending investigation as specified in paragraph 13, it may precede the paragraph by the words viz. "Except as specified in Schedule hereto". The exceptions to the certification or any disclosures relating thereto may be clearly stated in a Schedule to be attached to the Bid. The Authority will consider the contents of such Schedule and determine whether or not the exceptions/disclosures are material to the suitability of the Bidder for award hereunder.

- 15. 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 guidelines referred to above, we shall intimate the Authority of the same immediately.
- 16. I/We further certify that we/any Member of the Consortium or any of our/ their Association are not barred by the Central Government/State Government or any entity controlled by it, from participation in any project (BOT/ DBFOT or otherwise), and no bar subsists as on date of Bid.
- 17. I/ We acknowledge and undertake that if our Consortium gets qualified and short-listed on the basis of Technical and Financial Capacity of its Member who shall, for a period of 21 (Twenty One) years including construction Period from the "Handover Date" as per License agreement, hold equity share capital as per the provisions of this document.
- 18. I/ We acknowledge and agree that in the event of a change in control of an Associate whose Technical or Financial Capacity was taken into consideration for the purposes of short-listing and qualification under and in accordance with the RFP, I/We shall inform the Authority forthwith along with all relevant particulars and the Authority may, in its sole discretion, disqualify us/our Consortium or withdraw the Letter of Award, as the case may be. I/We further acknowledge and agree that in the event such change in control occurs after signing of the License Agreement but prior to Financial Close of the Project, it would, notwithstanding anything to the contrary contained in the Agreement, be deemed a breach thereof, and the License Agreement shall be liable to be terminated without the Authority being liable to us in any manner whatsoever.
- 19. I/ We understand that the Selected Bidder shall either be an existing Company incorporated under the Indian Companies Act, 1956/2013, Partnership Firm, Society, Proprietorship, Trust, LLP as per the provisions of RFP document or shall incorporate a company as SPV, prior to execution of the License Agreement.
- 20. I /We hereby confirm that we shall comply with the Change in Ownership requirements specified in Clause 2.5.
- 21. 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 Authority in connection with the selection of the Bidder, or in connection with the Bidding Process itself, in respect of the above-mentioned Project and the terms and implementation thereof.
- 22. In the event of my/our being declared as the Selected Bidder, I/we agree to enter into a License Agreement in accordance with the draft that has been provided to me/us prior to the Bid Due Date. We agree not to seek any changes in the aforesaid draft and agree to abide by the same.
- 23. I/ We have studied all the Bidding Documents carefully and also surveyed the site. We understand that except to the extent as expressly set forth in the License Agreement, we shall have no claim, right or title arising out of any documents or information provided to us by the Authority or in respect of any matter arising out of or relating to the Bidding Process including the award of Project.
- 24. I/ We offer a Bid Security of Rs. 5 Lakh (In words Rs Five lakhs only) to the Authority in accordance with the RFP Document.

- 25. I/ We agree to make payment of Annual License Fee, as per the provisions of Clause 23.1 of the Draft License Agreement.
- 26. The Bid Security in the form of a Demand Draft/ Bank Guarantee (strike out whichever is not applicable) is attached.
- 27. The documents accompanying the Bid, as specified in Clause 2.16 & 2.17 of the RFP, have been submitted in separate envelopes and marked as "Technical Bid" and "Financial Bid".
- 28. I/ We agree and understand that the Bid is subject to the provisions of the Bidding Documents. In no case, I/we shall have any claim or right of whatsoever nature if the Project is not awarded to me/us or our Bid is not opened or rejected.
- 29. The **Annual License Fee** has been quoted by me/us after taking into consideration all the terms and conditions stated in the RFP, draft License Agreement, our own estimates of costs and revenues and after a careful assessment of the site and all the conditions that may affect the project cost and implementation of the Project.
- 30. I/ We certify that in terms of the RFP, my/our Average Annual Turnover of last three years is Rs.;
- 31. I/ We agree and undertake to abide by all the terms and conditions of the RFP document.
- 32. {We, the Consortium Members agree and undertake to be jointly and severally liable for all the obligations of the Licensee under the License Agreement till occurrence of COD in accordance with the License Agreement.}
- 33. I/ We shall keep this offer valid for 120 (one hundred and twenty) days from the Bid Due Date specified in the RFP.
- 34. In witness thereof, I/we submit this Bid under and in accordance with the terms of the RFP document.

Yours faithfully,

Date:	(Signature,	name and	designation	of the	Authorized	signatory)

Place: Name and seal of Bidder/Lead Member

Date:

APPENDIX-A2

Power of Attorney for signing of $\mathbf{Bid}^{\$}$

(Refer Clause 2.3.3)

Know all men by these presents, We	·
and address of the registered office) do hereby irrevocal Mr./ Ms. (name), son/daughter	
presently residing at, who is present Consortium and holding the position of	ly employed with us/ the Lead Member of our, as our true and lawful attorney name and on our behalf, all such acts, deeds with or incidental to submission of our Bid for
AND we hereby agree to ratify and confirm and do I things done or caused to be done by our said Attorne conferred by this Power of Attorney and that all acts, of exercise of the powers hereby conferred shall and shall	ey pursuant to and in exercise of the powers deeds and things done by our said Attorney in
IN WITNESS WHEREOF WE,	
	For
	(Signature, name, designation and address)
Witnesses:	
1.	
2.	
Accepted	Notarised

52

^{\$} To be submitted in original.

(Signature, name, designation and address of the 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 Bidder 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 Bidder.
- 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 legalised by the Indian Embassy if it carries a conforming Appostille certificate.

Appendix-A3

Power of Attorney for Lead Member of Consortium

Whereas the ***** ("the Authority") has invited Bids from interested parties for the ***** Project

(Refer Clause 2.3.3)

(the "Project").		
Whereas,, a	nd	(collectively the
"Consortium") being Members of the Consortium are	interested in bidding for	or the Project in
accordance with the terms and conditions of the Reques	t for Proposal (RFP) and	d other connected
documents in respect of the Project, and		
Whereas, it is necessary for the Members of the Consort	ium to designate one of	them as the Lead
Member with all necessary power and authority to do for		
deeds and things as may be necessary in connection with t	the Consortium's bid for t	the Project and its
execution.		
NOW, THEREFORE, KNOW ALL MEN BY THESE PR	RESENTS	
We, having our registered		M/s.
referred to as the "Principals") do hereby irrevocably de		•
authorise M/s having its registered	-	
of the Members of the Consortium, as the Lead Mem		_
Consortium (hereinafter referred to as the "Attorney").		•
We hereby irrevocably authorise the Attorney (with power	er to sub-delegate) to con	nduct all business
for and on behalf of the Consortium and any one of us du	uring the bidding process	and, in the event
the Consortium is awarded the Project, during the execut	ion of the Project and in	this regard, to do
on our behalf and on behalf of the Consortium, all or any or	f such acts, deeds or thing	s as are necessary
or required or incidental to the pre-qualification of the Co	onsortium and submission	of its bid for the
Project, including but not limited to signing and submiss	ion of all Bids, bids and	other documents
and writings, participate in bidders and other conferences	s, respond to queries, sul	bmit information/
documents, sign and execute contracts and undertakings of	consequent to acceptance	of the bid of the
Consortium and generally to represent the Consortium in	all its dealings with the	Authority, and/ or
any other Government Agency or any person, in all matters		-
out of the Consortium's bid for the Project and/ or upon a	ward thereof till the Lice	ense Agreement is
entered into with the Authority.		

AND 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 by us/ Consortium.

	VE THE PRINCIPALS ABOV N THIS DA`	E NAMED HAVE EXECUTED THIS Y OF, 20
For(Sig	gnature)(Name & Title)
For (Sig	gnature) (Name & Title)
For(Sig	gnature)(Name & Title)
Witnesses:		
1		
2		
(Executants)		
(To be executed by all the Me	embers of the Consortium)	

Notes:

- i. 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.
- ii. Also, wherever required, the Bidder 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 Bidder.
- iii. 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 legalised by the Indian Embassy if it carries a conforming Appostille certificate.

APPENDIX-A4

Joint Bidding Agreement

(*Refer Clause 2.3.4 (h)*)

(To be executed on Stamp paper of appropriate value)

THIS.	JOINT BIDDING AGREEMENT is entered into on this the day of
AMO	NGST
1.	Limited, a company incorporated under the Companies Act, 1956/2013 [¥] and having its registered office at (hereinafter referred to as the " First Part " which expression shall, unless repugnant to the context include its successors and permitted assigns)
AND	
2.	Limited, a company incorporated under the Companies Act, 1956/2013 and having its registered office at (hereinafter referred to as the "Second Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)
AND	
3.	{ Limited, a company incorporated under the Companies Act, 1956/2013 and having its registered office at (hereinafter referred to as the "Third Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)}
	The above mentioned parties of the FIRST, SECOND, AND THIRD PART are collectively referred to as the " Parties " and each is individually referred to as a " Party "
WHE	REAS,
. ,	
(the Bi	context or meaning thereof, include its administrators, successors and assigns) has invited Bids ids") by its Request for Proposal No
(B)	The Parties are interested in jointly bidding for the Project as members of a Consortium and in accordance with the terms and conditions of the "RFP" document and other bid documents in respect of the Project, and

[¥] A Bidder who is registered abroad may substitute the words, viz "a company registered under the Companies Act, 1956/2013" by the words, viz "a company duly organised and validly existing under the laws of the jurisdiction of its incorporation". A similar modification may be made in Recital 2, as necessary.

(C) It is a necessary condition under the "RFP" document that the members of the Consortium shall enter into a Joint Bidding Agreement and furnish a copy thereof with the Bid.

NOW IT IS HEREBY AGREED as follows:

1. Definitions and Interpretations

In this Agreement, the capitalized terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the "RFP".

2. Consortium

- 2.1 The Parties do hereby irrevocably constitute a consortium (the "Consortium") for the purposes of jointly participating in the Bidding Process for the Project.
- 2.2 The Parties hereby undertake to participate in the Bidding Process only through this Consortium and not individually and/ or through any other consortium constituted for this Project, either directly or indirectly or through any of their Associates.

3. Covenants

The Parties hereby undertake that in the event the Consortium is declared the selected Bidder and awarded the Project, it shall incorporate a special purpose vehicle (the "SPV") under the Indian Companies Act, 2013 for entering into a License Agreement with the Authority and for performing all its obligations as the Licensee in terms of the License Agreement for the Project.

4. Role of the Parties

The Parties hereby undertake to perform the roles and responsibilities as described below:

- a) Party of the First Part shall be the Lead member of the Consortium (Technical Member /Financial Member /Development, Operation and Maintenance Member/ Other Member of the Consortium of the Consortium) and shall have the power of attorney from all Parties for conducting all business for and on behalf of the Consortium during the Bidding Process and until the Appointed Date under the License Agreement when all the obligations of the SPV shall become effective:
- (b)Party of the Second Part shall be (Financial Member/Development, Operation and Maintenance Member/ Other Member of the Consortium);
- (c) Party of the Third Part shall be (Financial Member/Development, Operation and Maintenance Member/ Other Member of the Consortium);

5. Joint and Several Liability

The Parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Project and in accordance with the terms of the "RFP" and the License Agreement, till such time as the Financial Close for the Project is achieved under and in accordance with the License Agreement.

6. Shareholding in the SPV

6.1 The Parties agree that the proportion of shareholding among the Parties in the SPV shall be as follows:

First Party:

Second Party:

Third Party:

- 6.2 The Parties undertake that a minimum of :
 - (i) 26% (twenty six percent) of the subscribed and paid up equity share capital of the SPV for Lead member:
 - (ii)10% (ten percent) of the subscribed and paid up equity share capital of the SPV for each of the other members and,
 - shall, at all times till the 20th anniversary from "Handover Date"
- , be held by the Parties of the First, {Second and Third} Part whose Technical and/or Financial Capacity have been reckoned for the purposes of qualification and short-listing of Bidders for the Project in terms of the "RFP".
- 6.3 The Parties undertake that each of the Parties specified in Clause 6.2 above shall, at all times between Handover Date of the Project and the 20th anniversary of project, hold subscribed and paid up equity share capital of SPV equivalent to at least 5% (five per cent) of the Total Project Cost.
- 6.4 The Parties undertake that they shall comply with all equity lock-in requirements set forth in the License Agreement.

7. Representation of the Parties

Each Party represents to the other Parties as of the date of this Agreement that:

- (a) Such Party is duly organized, validly existing and in good standing under the laws of its incorporation and has all requisite power and authority to enter into this Agreement;
- (b) The execution, delivery and performance by such Party of this Agreement has been authorized by all necessary and appropriate corporate or governmental action and a copy of the extract of the charter documents and board resolution/ power of attorney in favour of the person

executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Consortium Member is annexed to this Agreement, and will not, to the best of its knowledge:

- (i) require any consent or approval not already obtained;
- (ii) violate any Applicable Law presently in effect and having applicability to it;
- (iii) violate the memorandum and articles of association, by-laws or other applicable organizational documents thereof;
- (iv) violate any clearance, permit, concession, grant, license or other governmental authorization, approval, judgment, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or
- (v) create or impose any liens, mortgages, pledges, claims, security interests, charges or encumbrances or obligations to create a lien, charge, pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as to prevent such Party from fulfilling its obligations under this Agreement;
- (c) this Agreement is the legal and binding obligation of such Party, enforceable in accordance with its terms against it; and
- (d) there is no litigation pending or, to the best of such Party's knowledge, threatened to which it or any of its Associates is a party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfilment of its obligations under this Agreement.

8. Termination

This Agreement shall be effective from the date hereof and shall continue in full force and effect until the Financial Close of the Project is achieved under and in accordance with the License Agreement, in case the Project is awarded to the Consortium. However, in case the Consortium does not get selected for award of the Project, the Agreement will stand terminated in case the Bidder is not selected or upon return of the Bid Security by the Authority to the Bidder, as the case may be.

9. Miscellaneous

- 9.1 This Joint Bidding Agreement shall be governed by laws of India.
- 9.2 The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the Authority.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED SIGNED, SEALED AND DELIVERED

For and on behalf of

LEAD MEMBER by: SECOND PART

(Signature)(Signature)(Name)(Name)(Designation)(Designation)(Address)(Address)

SIGNED, SEALED AND DELIVERED

SIGNED, SEALED AND DELIVERED

For and on behalf of THIRD PART

(Signature) (Name)

(Designation) (Address)

In the presence of:

1.

Notes:

- 1. The mode of the execution of the Joint Bidding Agreement 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.
- 2. Each Joint Bidding Agreement should attach a copy of the extract of the charter documents and documents such as resolution / power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Consortium Member.
- 3. For a Joint Bidding Agreement executed and issued overseas, the document shall be legalized by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney has been executed.

APPENDIX-A5

Bank Guarantee for Bid Security

(Refer Clauses 1.2.8 and 2.27.1)

B.G. No. Dated:

1.	In consideration of you,, having its office at
	(hereinafter referred to as the "Authority", which expression shall unless it be repugnant to
	the subject or context thereof include its, successors and assigns) having agreed to receive the
	Bid of (a company registered under the Companies Act, 1956/2013) and
	having its registered office at
	(hereinafter referred to as the "Bidder" which expression shall unless it be repugnant to the
	subject or context thereof include its/their executors, administrators, successors and assigns)
	for the Herbal Extraction Unit (hereinafter referred to as "the
	Project") pursuant to the RFP Document dated issued in respect of the Projec
	and other related documents including without limitation the draft concession agreemen
	(hereinafter collectively referred to as "Bidding Documents"), we (Name of the Bank) having
	our registered office at
	(hereinafter referred to as the "Bank"), at the request of the Bidder, do hereby in terms of
	Clause 1.2.8 of the RFP Document, irrevocably, unconditionally and without reservation
	guarantee the due and faithful fulfilment and compliance of the terms and conditions of the
	Bidding Documents (including the RFP Document) by the said Bidder and unconditionally
	and irrevocably undertake to pay forthwith to the Authority an amount of Rs
	(Rupees only) (hereinafter referred to as the "Guarantee") as our
	primary obligation without any demur, reservation, recourse, contest or protest and without
	reference to the Bidder if the Bidder shall fail to fulfil or comply with all or any of the terms
	and conditions contained in the said Bidding Documents.

- 2. Any such written demand made by the Authority stating that the Bidder is in default of the due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents shall be final, conclusive and binding on the Bank.
- 3. We, the Bank, do hereby unconditionally undertake to pay the amounts due and payable under this Guarantee without any demur, reservation, recourse, contest or protest and without any reference to the Bidder or any other person and irrespective of whether the claim of the Authority is disputed by the Bidder or not, merely on the first demand from the Authority stating that the amount claimed is due to the Authority by reason of failure of the Bidder to fulfil and comply with the terms and conditions contained in the Bidding Documents including failure of the said Bidder to keep its Bid open during the Bid validity period as set forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards amount due and payable by the Bank under this Guarantee.

- 4. This Guarantee shall be irrevocable and remain in full force for a period of 180 (one hundred and eighty) days from the Bid Due Date inclusive of a claim period of 60 (sixty) days or for such extended period as may be mutually agreed between the Authority and the Bidder, and agreed to by the Bank, and shall continue to be enforceable till all amounts under this Guarantee have been paid.
- 5. We, the Bank, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, inter alia, the failure of the Bidder to keep its Bid open during the Bid validity period set forth in the said Bidding Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, Tribunal, Arbitrator or any other authority.
- 6. The Guarantee shall not be affected by any change in the constitution or winding up of the Bidder or the Bank or any absorption, merger or amalgamation of the Bidder or the Bank with any other person.
- 7. In order to give full effect to this Guarantee, the Authority shall be entitled to treat the Bank as the principal debtor. The Authority shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee from time to time to vary any of the terms and conditions contained in the said Bidding Documents or to extend time for submission of the Bids or the Bid validity period or the period for conveying acceptance of Letter of Award by the Bidder or the period for fulfilment and compliance with all or any of the terms and conditions contained in the said Bidding Documents by the said Bidder or to postpone for any time and from time to time any of the powers exercisable by it against the said Bidder and either to enforce or forbear from enforcing any of the terms and conditions contained in the said Bidding Documents or the securities available to the Authority, and the Bank shall not be released from its liability under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the said Bidder or any other forbearance, act or omission on the part of the Authority or any indulgence by the Authority to the said Bidder or by any change in the constitution of the Authority or its absorption, merger or amalgamation with any other person or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of releasing the Bank from its such liability.
- 8. Any notice by way of request, demand or otherwise hereunder shall be sufficiently given or made if addressed to the Bank and sent by courier or by registered mail to the Bank at the address set forth herein.
- 9. We undertake to make the payment on receipt of your notice of claim on us addressed to [name of Bank along with branch address, Raipur] located at Raipur, Chhattisgarh and

delivered at our above branch which shall be deemed to have been duly authorized to receive the said notice of claim.

- 10. It shall not be necessary for the Authority to proceed against the said Bidder before proceeding against the Bank and the guarantee herein contained shall be enforceable against the Bank, notwithstanding any other security which the Authority may have obtained from the said Bidder or any other person and which shall, at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealized.
- 11. We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of the Authority in writing.
- 12. The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorized and has full power to execute this Guarantee for and on behalf of the Bank.
- 13. For the avoidance of doubt, the Bank's liability under this Guarantee shall be restricted to Rs. Lakh (Rupees Lakh only). The Bank shall be liable to pay the said amount or any part thereof only if the Authority serves a written claim on the Bank in accordance with paragraph 9 hereof, on or before [...... (indicate date falling 180 days after the Bid Due Date)].

	Signed and Delivered by	Bank
By the hand of Mr./Ms	, its	and authorised official.

(Signature of the Authorised Signatory)

(Official Seal)

Appendix-A6

Guidelines of the Department of Disinvestment

(Refer Clause 1.2.6)
No. 6/4/2001-DD-II
Government of India
Department of Disinvestment

Block 14, CGO Complex New Delhi. Dated 13th July, 2001.

OFFICE MEMORANDUM

Sub: Guidelines for qualification of Bidders seeking to acquire stakes in Public Sector Enterprises through the process of disinvestment

Government has examined the issue of framing comprehensive and transparent guidelines defining the criteria for bidders interested in PSE-disinvestment so that the parties selected through competitive bidding could inspire public confidence. Earlier, criteria like net worth, experience etc. used to be prescribed. Based on experience and in consultation with concerned departments, Government has decided to prescribe the following additional criteria for the qualification/disqualification of the parties seeking to acquire stakes in public sector enterprises through disinvestment:

- (a) In regard to matters other than the security and integrity of the country, any conviction by a Court of Law or indictment/ adverse order by a regulatory authority that casts a doubt on the ability of the bidder to manage the public sector unit when it is disinvested, or which relates to a grave offence would constitute disqualification. Grave offence is defined to be of such a nature that it outrages the moral sense of the community. The decision in regard to the nature of the offence would be taken on case to case basis after considering the facts of the case and relevant legal principles, by the Government of India.
- (b) In regard to matters relating to the security and integrity of the country, any charge-sheet by an agency of the Government/ conviction by a Court of Law for an offence committed by the bidding party or by any sister concern of the bidding party would result in disqualification. The decision in regard to the relationship between the sister concerns would be taken, based on the relevant facts and after examining whether the two concerns are substantially controlled by the same person/ persons.
- (c) In both (a) and (b), disqualification shall continue for a period that Government deems appropriate.

- (d) Any entity, which is disqualified from participating in the disinvestment process, would not be allowed to remain associated with it or get associated merely because it has preferred an appeal against the order based on which it has been disqualified. The mere pendency of appeal will have no effect on the disqualification.
- (e) The disqualification criteria would come into effect immediately and would apply to all bidders for various disinvestment transactions, which have not been completed as yet.
- (f) Before disqualifying a concern, a Show Cause Notice why it should not be disqualified would be issued to it and it would be given an opportunity to explain its position.
- (g) Henceforth, these criteria will be prescribed in the advertisements seeking Expression of Interest (EOI) from the interested parties. The interested parties would be required to provide the information on the above criteria, along with their Expressions of Interest (EOI). The bidders shall be required to provide with their EOI an undertaking to the effect that no investigation by a regulatory authority is pending against them. In case any investigation is pending against the concern or its sister concern or against its CEO or any of its Directors/ Managers/ employees, full details of such investigation including the name of the investigating agency, the charge/ offence for which the investigation has been launched, name and designation of persons against whom the investigation has been launched and other relevant information should be disclosed, to the satisfaction of the Government. For other criteria also, a similar undertaking shall be obtained along with EOI.

sd/
(A.K. Tewari) Under
Secretary to the Government of India

APPENDIX - A7

Statement of Legal Capacity

(To be forwarded on the letterh	nead of the Bia	lder/ Lead Member oj	f Consortium)
Ref. Date:				
To,				
Managing Director				
Chhattisgarh State Minor Forest Produce	(Trading & D	evelopment) Coopera	ative Federati	on Ltd.
Vandhan Bhawan, Sector 24, Nava Raipu	ır, Atal Nagar,	-		
Dist – Raipur, Chhattisgarh	_			
Dear Sir,				
We hereby confirm that we/ our members in the Bid) satisfy the terms a We have agreed that	and conditio (insert member) tive of the condition	ns laid out in er's name) will act as (insert individual's onsortium on its beha	the RFP the Lead Mer name) will alf* and has	document. nber of our act as our been duly
			Yours	s faithfully,
(Si	_	e and designation of t		•
	For	and on behalf of		

^{*} Please strike out whichever is not applicable.

APPENDIX 1A

In the event that credit is being taken for the eligible Technical Capacity experience of an Holding Company/Subsidiary Company, as defined in Clause 2.3.1, the Bidder should also provide the following documents: -

1. A certificate in the format below:

A brief description of the said equity held, directly, is given below: {Describe the share-holding of the Bidder/ Consortium Member and the Holding/Subsidiary Company.}

Name of the audit firm:

Seal of the audit firm: (Signature, name and designation of the authorised signatory).

Date:

Annexure A8

UNDERTAKING TO PREPARE AND SUBMIT PROJECT COMPLITION SCHEDULE BEFORE SIGNING OF AGREEMENT

Undertaking from the Bidder

With reference to the	e RFP, We
(name of the firm and a	ddress of the registered office) hereby undertake that the project completion
schedule (Schedule H	of the License agreement) shall be prepared by us in discussion with the
Authority and shall be s	ubmitted to the Authority before signing of agreement by us for approval, it
we get selected through	this RFP. And the <bidder> shall abide to the Project Completion Schedule</bidder>
	nse Agreement) once approved by the committee appointed by the Authority
with or without any mo	odifications. The approved Completion schedule shall become part of the
agreement.	
	Yours faithfully
Date:	(Signature, name and designation of the Authorized signatory)
2	(2.g.moze, mane and designation of the filtration signatory)
Dlago	Name and seel of Pidder/Leed Member
Place:	Name and seal of Bidder/Lead Member
	Date

Annexure A9

Instructions for the Submission of the Online Tender

Note: The following steps need to be carried out for online submission of the Tender. Detailed instructions for each of the steps are given in the Tenderer's Manual on the Home Page of https://cgmfpfedtenders.abcprocure.com

1. Sequence of steps for online tender submission:

Step 1 – To obtain Digital Signature Certificate (DSC):

The DSC is issued by an approved certifying authority, authorized by the Controller of Certifying Authorities (CCA), Government of India. The individual may obtain information required for issuance of a Class II / Class III DSC from the Controller of Certifying Authorities (www.cca.gov.in). The tenderer will have to obtain DSC from https://ccm.cca.gov.in) or any other CCA approved agency.

DSC is issued upon receipt of mandatory identity proofs and verification letters attested by a Gazetted Officer. Only upon the receipt of the required documents, a DSC can be issued.

Important Note: The offers submitted online should be signed electronically with a DSC to establish the identity of the tenderer. In case, during the process of a particular tender, the user loses his/her DSC (eg. due to virus attack, hardware problem, operating system problem etc.) he may not be able to submit the offer online. Hence the users are advised to back up the certificate and keep the copies at safe places under proper security to be used in case of emergencies.

In case of online tendering, the DSC issued to the authorized user of a firm and used for electronic tendering will be considered equivalent to no-objection certificate / power of attorney to that user. The firm has to authorize a specific individual via an authorization certificate signed by all partners to use the DSC as per Indian *IT Act 2000*. Unless the certificate is revoked, it shall be assumed to represent adequate authority of the user to submit tender on behalf of the firm for the Chhattisgarh State Minor Forest Produce (Trading & Development) Co-op. Federation Limited as per *Information Technology Act 2000*. The DSC of this authorized user will be binding on the firm. It shall be the responsibility of management / partners of the registered firm to inform the Certifying Authority or Sub-Certifying Authority, if the authorized user changes, and apply for a fresh Digital Signature Certificate and issue a fresh 'authorization certificate' for the new user.

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

Step 2 – Online registration of intending bidder:

In order to participate in the bid, the bidder is required to be registered on the e-Procurement portal (https://cgmfpfedtenders.abcprocure.com). Only after online registration of the bidder, the bidder shall be allowed to participate in the bids floated by the C.G.M.F.P. Federation using the e-Procurement System.

The following Registration Fee will be charged by the Service Provider (i.e. e-Procurement Technologies Limited) from the bidder:

Sl. No.	Description	Charges	Service Tax @ 18%	Total Amount
1.	Online Registration (Valid for One Year)	Rs. 500/-	Rs. 90/-	Rs. 590/-

Documents required for Registration with the e-Procurement portal

- (I) In case of Renewal No documents required for renewal of registration on the e-procurement portal.
- (II) In case of New Registration The following documents required along with online registration form:
 - a. Individual or Proprietorship Firm -

Any one ID Proof and One Address Proof (Attested by Banker or Notary or Gazetted Officer as well as Self Attested)

ID Proof	PAN Card	Address Proof	Electricity Bill
	Passport		Passport
	Voter ID		Voter ID
	Driving		Driving License
	License		
	Aadhaar Card		Bank Passbook

b. Partnership Firm -

(i) Any one ID Proof and One Address Proof (Attested by Banker or Notary or Gazetted Officer as well as Self Attested)

ID Proof	PAN Card	Address	Electricity Bill
		Proof	
	Passport		Passport
	Voter ID		Voter ID

Driving License	Driving License
Aadhaar Card	Bank Passbook

- (ii) Partnership Deed details which have to be attested by partners with their company seal.
- c. Pvt. Ltd. Company -
- (i) Any one ID Proof and One Address Proof (Attested by Banker or Notary or Gazetted Officer as well as Self Attested)

ID Proof	PAN Card	Address Proof	Electricity Bill
	Passport	11001	Passport
	Voter ID		Voter ID
	Driving License		Driving License
	Aadhaar Card		Bank Passbook

- (ii) Any one of the Organization proofs issued by Government (Attested by authorized signatory of Organization along with organization seal)
 - Certificate of Incorporation
 - Articles of Incorporation
 - Memorandum of Association
- d. Hindu Undivided Family (H.U.F) –

Any one ID Proof and One Address Proof (Attested by Banker or Notary or Gazetted Officer as well as Self Attested)

ID Proof	PAN Card	Address Proof	Electricity Bill
	Passport		Passport
	Voter ID		Voter ID
	Driving		Driving License
	License		
	Aadhaar Card		Bank Passbook

e. Others -

(i) Any one ID Proof and One Address Proof (Attested by Banker or Notary or Gazetted Officer as well as Self Attested)

ID Proof PAN Card Address Proof Electricity B	ill
---	-----

Passport	Passport
Voter ID	Voter ID
Driving	Driving License
License	
Aadhaar Card	Bank Passbook

(ii) Any other relevant documents

The scanned copies of all required documents as above and payment proof of required fees for New Registration and payment proof of required fees for renewal are required to be submitted by the intending tenderer to e-Procurement Technologies Limited (abcProcure). After verification of the above documents the e-Procurement Technologies Limited (abcProcure) will register the Tenderer and inform by the e-mail accordingly.

After obtaining the Digital Signature Certificate successfully installed on their system, the tenderer have to be online registered through "New Bidder Registration" page of the e-Procurement portal (https://cgmfpfedtenders.abcprocure.com) and mapped their Digital Signature Certificate.

After online registration your registration will be approved by the Service Provider and intimate the same to the tenderer. The tenderer will be inform about the Tenderer's Code, login Id & password. The login Id and password will be required for online tender preparation and the Tenderer's Code will be used for making EMD payment through RTGS / NEFT mode, if opted for.

Step 3 – Online bid preparation

- 1. Technical Bid Envelope (Folder)
 - 1. Details of Bidder Appendix B1
 - 2. Technical Capacity of the Bidder Appendix B2
 - 3. Financial Capacity of the Bidder Appendix B3
 - 4. Cost of RFP- Appendix B4
 - 5. Documents to be uploaded- Appendix B5

2. Financial Bid Envelope (Folder)

1. Financial Bid Form – Appendix C1

Step 4 – Payment of Bid Security

Bid Security of 5 Lakhs has to be paid through Bank Guarantee or Demand Draft. The Applicant has to upload copy of Bank Guarantee / Demand Draft in the online submission and send the hard copy of original Bank Guarantee / Demand Draft in hard copy submission.

Step 5 – Final submission of the bid.

1. Other Information:

2.1 Set-up of Machine:

In order to operate on the e-Procurement System, following minimum operating system and hardware is required.

- Windows XP with service pack 3
- Windows vista / windows 7
- Browser Internet Explorer 7, 8 or 9
- Minimum bandwidth 512 kbps
- Minimum RAM 2 GB

1.2 Procedure of payment of Cost of RFP through RTGS / NEFT mode:

Since RTGS / NEFT payments are settled by RBI in batches, intended **Cost of RFP** amount is required to be paid at least one day in advance of online bid submission by following procedure:

A. Please mention the following details while making the RTGS / NEFT payment from your Bank:

(i) Beneficiary account number – This will be in the following format:

<CGMF+ Tenderer Code>

For example, in case your Bidder Code is ABC66215, the beneficiary account number will be **CGMFABC66215.**

- (ii) Beneficiary bank branch ICICI Bank, CMS, Mumbai
- (iii) Beneficiary IFSC code ICIC0000104
- **B.** After completing the online bid preparation formalities, select RTGS / NEFT payment option at the **Cost of RFP** payment screen. Upon doing so, you shall be able to view the funds already remitted by you through NEFT / RTGS as available balance in beneficiary account. Bidder should note that available balance against their name in ICICI Bank is not **Cost of RFP** amount available with C.G.M.F.P Federation.
- **C.** Please proceed to deposit the **Cost of RFP** from available balance. Upon doing so, the required amount to be paid for the **Cost of RFP**, shall get appropriately deducted from the amount remitted and payment of **Cost of RFP** shall be confirmed & receipt will be generated in real time.
- **D.** In case there is excess remittance i.e., money not transferred for use as **Cost of RFP**, the refund of the same can be claimed by the bidder simultaneously. On submitting refund request, the amount would be transferred in the bank account opted by you by next working day.

E. In case, bidder wants to utilize the excess fund (i.e., the remaining available balance) for participating in next round of bid by Federation under e-Procurement portal, they may do so instead of taking refund.

Please feel free to get in touch with our e-procurement support team / ICICI Bank support team in case any clarification is required.

1.2 Submission of Online Bids:

C.G.M.F.P Federation will not be responsible for any failure on part of the bidder in submission of the Bid and/or the etc. before scheduled time and date, for any reason whatsoever, including, interalia, non-credit of said amounts of **Cost of RFP** and therefore no claims shall be entertained on these grounds.

Under this online payment system for e-Biding, the bids will not be submitted / received by C.G.M.F.P Federation unless the **Cost of RFP** is received / credited before scheduled time and date. Hence, bidder shall remit the said amount well in advance. It is clarified that the Bids will not be considered for opening if **Cost of RFP** is not received/ credited before schedule time and date, for any reason whatsoever.

The bidder is advised to submit his / her bid as well as pay the Cost of RFP amount well before the cut-off time and date to avoid any inconvenience on account of any problem e.g., system slow down or network problem.

2.4 Helpline:

For any assistance regarding Registration on e-Procurement portal, DSC, online tender form submission and other points of e-tendering process, please contact our service provider:-

Important Note for Bidders for New E-Tendering portal

abcProcure (M/s. e-Procurement Technologies Ltd.) is conducting e-Tenders for Chhattisgarh State Minor Forest Produce (Trading & Development) Co-operative Federation Limited (CGMFPFED) for sale of various Minor Forest Produces and for Procurement of various Goods, Services and works. is to herewith inform all bidders who are It to existing registered https://cgmfpfed.abcprocure.com that abcProcure (M/s. e-Procurement Technologies Ltd.) is introducing new e-Tender Portal for foresaid tendering activities for CGMFPFED.

For introducing the new e-Tender portal, Training was scheduled whole month round in Mar. 2022.

It is to inform all the existing bidders that abcProcure (M/s. e-Procurement Technologies Ltd.), has shared with you your Log-IN ID, New Password for new portal (https://cgmfpfedtenders.abcprocure.com) on your registered email ID on 16.03.2022. All existing Bidders registered on https://cgmfpfed.abcprocure.com shall use Log-In and new Password shared

over email on 16.03.2022 to login on new e-Tendering portal i.e., https://cgmfpfedtenders.abcprocure.com.

After logging in on new e-Tendering portal, bidders are mandatorily required to change their password and attach DSC. Once DSC is attached, bidders are required to get it verified from abcProcure (M/s. e-Procurement Technologies Ltd.) by getting in touch with DSC verification Team reachable on +91-9099090830 / +91-6353217080 and **info@AbcProcure.com**.

Further, All the bidders are issued new e-Wallet / Virtual Account for remitting EMD in new e-Tender portal which has been shared on your registered E-Mail ID on 10.03.2022. Bidders are required to use the same e-Wallet / Virtual account for remitting payment by NEFT/RTGS for e-Tender which are floated on new e-Tendering portal i.e., https://cgmfpfedtenders.abcprocure.com. Bidders are strongly requested to not to use their current/ existing e-Wallet / Virtual account for new e-Tender portal. The same is applicable for old e-Tendering portal only and not valid for new e-Tendering portal. Please take strong note of this.

Bidders can download Bidder Manual to get familiar with the new portal from https://cgmfpfedtenders.abcprocure.com/EPROC/ajaxcall/downloadfile/23/577

For New Registration/DSC Support/Profile Approval, Please call or write on:

Cell Number: +91-9099090830 / +91-6353217080

e-mail at: info@AbcProcure.com

Call/write for e-Tender Submission / e-Auction Bid Support:

Phone Numbers: +91-79 6813 6854/50/48/49

Cell Number: +91-9374519729 / 9904406300 / 9510812971

Write by e-mail at: Support@AbcProcure.com

Call/write for e-Payment Related Queries:

Phone Numbers: +91-9374519729 / 9081000427

Write by e-mail at: Payment@eptl.in

Office Hours:

Monday to Friday - 10:00AM to 07:00PM

1st,3rd & 5th Saturday -10:00AM to 06:00PM

2nd & 4th Saturday - Holiday

For any assistance regarding banking transactions, please contact ICICI Bank, Civil Lines, Raipur at the following numbers:

Mr. Shivam Shekhar – 7077102017 Ms. Shubhangi Gupta – 9993822514

MANAGING DIRECTOR

Chhattisgarh State Minor Forest Produce
(Trading & Development) Co-op.

Federation Limited

PART B – FORMAT	S FOR TECHNICA	L BID SUBMISSION

Development, Operation and Maintenance of 6 MTPD Herbal Extraction Unit in Chhattisgarh

APPENDIX B1

Details of Bidder

- 1. (a) Name:
 - (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 responsibilities in this Project:
- 3. Details of individual(s) who will serve as the point of contact/ communication for the Authority:
 - (a) Name:
 - (b) Designation:
 - (c) Company:
 - (d) Address:
 - (e) Telephone Number:
 - (f) E-Mail Address:
 - (g) Fax Number:
- 4. Particulars of the Authorised Signatory of the Bidder:
 - (a) Name:
 - (b) Designation:
 - (c) Address:
 - (d) Phone Number:
 - (e) Fax Number:
- 5. In case of a Consortium:
 - (a) The information above (1-4) should be provided for all the Members of the Consortium.
 - (b) A copy of the Jt. Bidding Agreement, as envisaged in Clause 2.3.4 (h) should be attached to the Bid.
 - (c) Information regarding the role of each Member should be provided as per table below:

Sl.	Name of	Role {Refer	Percentage of equity in the
No.	Member	Clause2.3.4}	Consortium {Refer Clause
			2.3.4}
1.			
2.			
3.			

(d) The following information shall also be provided for each Member of the Consortium:

Name of Bidder/ member of Consortium:

No.	Criteria	Yes	No
1.	Has the Bidder/ constituent of the Consortium been		
	barred by the [Central/State] Government, or any		
	entity controlled by it, from participating in any		
	project (BOT or otherwise)?		
2.	If the answer to 1 is yes, does the bar subsist as on the		
	date of Bid?		
3.	Has the Bidder/ constituent of the Consortium paid		
	liquidated damages of more than 5% (five per cent) of		
	the contract value in a contract due to delay or has		
	been penalised due to any other reason in relation to		
	execution of a contract, in the last three years?		

6. A statement by the Bidder and each of the Members of its Consortium (where applicable) or any of their Associates disclosing material non-performance or contractual non-compliance in past projects, contractual disputes and litigation/ arbitration in the recent past is given below (Attach extra sheets, if necessary):

APPENDIX B2

A. Technical Capacity of the Bidder

(Refer to Clauses 2.3.1(A))

Note: For Category 3 (Startup) as per clause 2.3.1 (A- III), below table is required to be filled as "NA" in all the fields and a self-certified copy of start-up recognition certificate from DPIIT needs to be enclosed.

 Name of Bidder/ Bidder Firm/ Consortium Members 	
2) Technical Capacity (Please mention the Category as per clause 2.3.1 (A)	
Parameters	Particulars of the Project
Title of the Project	
Description of Project	
Name and Address of processing unit	
Annual Average Capacity of processing unit (In Tonnes)	a) 2018-19
Start Date (MM/YYYY)	
Completion Date (MM/YYYY)	
Duration of Operations (In Years)	
Date of Completion/commissioning	
Details of proof submitted	
Whether credit is being taken for the Eligible Experience of member of consortium or single entity (Please Specify)	

Enclosures -

1. To certify the manufacturing unit capacity (as per clause 2.3.1 (A)), the bidders have to submit a certificate from Statutory Auditor indicating the capacity (raw material) of the plant or certificate from Industries Department or commercial production certificate issued by competent authority certifying the capacity (raw material) of the manufacturing Unit

- 2. In case of Development, Operation and Maintenance experience Notarized certificate from the client for successful completion of the project (The certificate from the client should clearly set out the name of the project, activities undertaken under the scope of services, and fees per year / value of services per year. Projects without proof of experience shall not be considered for evaluation.)
- 3. In case the Fee per year / value of services per year from the Project is not set out in the certificate from the Client, the bidders can submit a certificate from Statutory Auditor indicating the same.
- 4. In case of Startup (Category 3) self-certified copy of start up recognition certificate from DPIIT

Yours faithfull	
(Signature of the Authorized signatory)	Date:
(Name and designation of the of the Authorized	
signatory	Place:
Name and seal of Bidder	

APPENDIX B3

Financial Capacity of the Bidder

(Refer to Clauses 2.3.1 (B), 2.3.1 (B) (ii) and 3.2 of the RFP)

(Annual Turnover in the last three years from the processing unit for Category 1 and Category 2 Only and Category 3 Applicants are required to fill below fields as "NA"

Financial Year	Turnover from Processing Unit (INR Crore)			
	Member 1	Member 2	Member 3	Total
2018-19				
2019-20				
2020-21				
Total				
Average Annual Turnover For the past three years				

Enclosures -

- 1. Audited Financial Statement for FY 2018-19, 2019-20 and 2020-21
- 2. Certificate from the Statutory Auditor/Chartered Accountant (Turnover not certified by Statutory Auditor/Chartered Accountant shall not be considered for evaluation)

	Yours faithfully,
Date:	(Signature of the Authorized signatory)
Place:	(Name and designation of the of the Authorized signatory)
	Name and seal of Bidder

CA certificate certifying Annual Turnover and Net worth for Category 1 and Category 2 and

of community of and the work for a subgright and category and category	,
CA certificate certifying Net worth for Category 3 and High Net worth route applicants to	be
enclosed.	

Name of Firm	/ Member of	Consortium:	•••••

Bidder Name	Net worth		Annual Turnover			
		Year 1	Year 2	Year 3		
Bidder 1						
(Consortium						
member 1)						
Bidder 2						
(Consortium						
member 2)						
Bidder 3						
(Consortium						
member 3)						

Dated this	_ day of	_ 2022
(Name & Signat	ure of Authorised Sig	gnatory)
In the capacity o	f	(position) duly authorized to sign this Bid for and behalf
		(name of sole Bidder / lead member of the consortium) (Address)
Name of Statuto	ry Auditor's firm:	
Seal of the Statu	tory Auditor's firm:	(Signature, name and designation of the Authorised Signatory

Instructions:

- 1. The Bidder/ its Consortium members shall attach copies of Audited Annual Reports for 3 (three) preceding years from the Bid Due Date. The Audited Annual Reports shall:
 - a. be audited by Statutory Auditor;
 - b. be complete, including all notes to the financial statements; and
 - c. correspond to accounting periods already completed and audited (no statements for partial period shall be requested or accepted).

APPENDIX B4

Cost of RFP

1.	Cost of RFP	Rs. 5000

APPENDIX- B5 Checklist of documents to be uploaded online on e-Tender Portal

S. No	Checklist of Documents
1.	Scanned copy of PAN Card (Mandatory)
2.	Scanned copy of Aadhaar Card of Managing Director of the Company and in case of Partnership firm Aadhaar Card of at least two of Partners required, in case of Hindu Undivided Family (HUF) Aadhaar Card of Karta and one adult family member is to be enclosed (Mandatory)
3.	Scanned copy of certificate of Goods and Services Tax Identification Number (GSTIN) (Mandatory)
4.	Scanned copy of Letter comprising the Bid – Appendix A1 (Mandatory)
5.	Scanned copy of Certificate of Company Incorporation and List of Latest Directors of Company (if applicable)
6.	Scanned copy of Power of Attorney – Appendix A2
7.	Scanned copy of Power of Attorney for Lead Member of Consortium – Appendix A3
8.	Scanned copy of Joint Bidding Agreement – Appendix A4
9.	Scanned copy of Bank guarantee for Bid Security/ Demand Draft – Appendix A5
10.	Scanned copy of Statement of Legal Capacity – Appendix A7
11.	Scanned copy of Undertaking to Prepare and Submit Project Completion Schedule before signing of Agreement - Appendix A8 (Mandatory)
12.	Scanned copy of Certificate from Statutory Auditor/ Company Secretary – Appendix 1A
13.	Scanned copy of documents as per enclosures in Technical Capacity of the Bidder – Appendix B2 (Mandatory)
14.	Scanned copy of documents as per enclosures in Financial Capacity of the Bidder – Appendix B3 (Mandatory)
15.	Audited Financial Statement of the tenderer for the year 2018-19 (For Category 1 Applicant)
16.	Audited Financial Statement of the tenderer for the year 2019-20 (For Category 1 Applicant)
17.	Audited Financial Statement of the tenderer for the year 2020-21 (For Category 1 Applicant)
18.	Any other relevant Document

^{*} In case soft copy file size of scanned audited financial statements are more only the summary report of the audit report may be uploaded on the e-tender portal and the summary report along with all the annexures of the audited financial statements have to be submitted in hard copy.

Development, Operation and Maintenance of 6 MTPD Herbal Extraction Unit in Chhattisgarh
PART C – FORMAT FOR FINANCIAL BID SUBMISSION

APPENDIX-C1

Financial Bid Form

(Refer Clauses 2.17.2 and 4.3.4)

Financial Bid is to be submitted ONLINE ONLY, in the prescribed format shared on the e-tendering portal

То		
Managing Director Chhattisgarh Minor Forest Pr Vandhan Bhawan, Sector 24, District- Raipur (C.G.)		-
Sub: Financial Bid - Develop State of Chhattisgarh	ment, Operation a	nd Maintenance of Herbal Extraction Unit in the
Annual License Fee as appli MTPD Herbal Extraction U year of operation.		(INR Lakhs)(Exclusive of Taxes) Amount in figures and words
*GST or any other tax appl License Fee quoted above. I undertake to abide all the pr		orne by the Licensee over and above the Annual License Agreement.
Date: Place:	. •	Yours faithfully, and designation of the Authorised Signatory) me and seal of the Bidder/ Lead Member

PART D – PRELIMINARY PROJECT REPORT



Project Brief of Herbal Extraction UnitBY

Chhattisgarh State Minor Forest Produce (Trade & Development) Cooperative Federation Limited Raipur

S. No.	Particular	Details
1	Project Name	Herbal Extraction Unit
2	Location & GPS Coordinates (how to reach from Raipur, Durg)	Vill Jamgaon M, Tehsil – Patan Dist. – Durg - Raipur to Jamgaon – 25 kms via Amleshwar & Kapsi - Durg to Jamgaon – 33 Kms via Charoda, Sirsakalan, & Bhatgaon
3	Land Area (open area, built-up area)	Plot: 6 Acre Factory Shed: 6000 Sq Meter
4	The capacity of the Unit in terms of Raw Material Consumption (in MTPD)	6 MTPD
5	Raw Material (Quantity in MT per Annum)	 A. Dry Amla Seedless: 360 MT B. Dry Ashwagandha Panchang:360 MT C. Dry Kalmegh Panchang:360 MT D. Giloy Stem Dry: 0.136MT E. Dry Gudmar Panchang:360 MT
6	Number of Working days	300 Days in a Year
7	Total Project Cost	23.24 Cr
8	Indicative Costs (It's a bifurcation into total civil and otal machinery costs)	A. Total Civil Cost: 5.20 Cr B. Total Machinery Cost: 18.04 Cr
9	Projected electricity and water requirement	A. Electricity- 760 HPB. Water – 14 Lakh Liters per Month
10	List of Tentative finished Products	 A. Amla Extract 40 Tannin B. Ashwagandha Extract5% Withanolides C. Kalmegh Extract 5% Andrographolides D. Giloy Extract 5% Bitter. E. Gudmar Extract 25% Gymnemic Acid.
11	Human Resource Requirement	51 Nos.

	INDEX
Chapter 1	Introduction.
Chapter 2	About the Product
Chapter 3	Statutory Requirement
Chapter 4	Supply & Demand Analysis and Market Scenario
Chapter 5	Location and Layout Plan
Chapter 6	Herbal Extraction Process and Technology
Chapter 7	About Final Product
Chapter 8	Process flow chart
	Detail of each step in the process flow from procurement of Raw Material to
	the manufacturing of finished goods along with machine use for each step &
	material balance.
Chapter 9	Quality Parameter of the Product
Chapter 10	Pollution Control and Energy Conservation
Chapter 11	Working Hours, Capacity Utilization& Human Resource
	 Working Hours & Capacity Utilization
	Human Resource
Chapter 12	Plant And Machinery
	 Capacity per machine.
	 Placement of machine in the flow chart along with function.
Chapter 13	Construction and Building Design

Chapter 1: Introduction

Medical herbs and Aromatic plants (MAPs)

- Medicinal herbs have curative powers and are used in making medicines because of their healing properties as a result of containing active ingredients. They are also used as natural flavouring agents, cosmetic ingredients, etc.
- Herbal material such as gums, fixed oils, essential oils, resins extracts, etc. are also extracted from plants and used separately. These materials are processed by various local procedures, such as steaming, roasting, or stir baking with honey/ alcoholic beverages/ other materials.
- There is a renewed interest in MAPs, especially in developing countries, for application in pharmaceutical, nutrition, perfumery and cosmetic fields.
- Medicinal herbs are widely used as dietary supplements and as treating illness like valerian. The finished products can be in form of oil, powder, paste or aqueous solutions from extracted herbs.
- The adoption of medical herbs increasing globally
- In Germany, ~ 700 plant based medicines are available, which prescribed by ~70% of German physicians
- ~2,100 plant species globally have the potential for being used as medical plants and it has been estimated, that in development countries such as the US, plant drugs constitute as much as 25% of the total drugs, while in fast developing countries such as India and China, the contribution is as much as 80%.

Chapter 2: About the Product

Medicinal herbs are widely used as diet supplements and treating illness like valerian. The finished products can be in form of oil, powder, paste or aqueous solutions from extracted herbs.

The manufacturing unit can focus on production, processing, marketing, exports, etc.

Depending upon their properties, MAPs are used in different industrial sector Purpose Type of product Uses Pharmacological activity Pulverised plants Phytotherapy Simple extracts Homeopath Essential oils Aromatherapy Isolated active ingredients.

- 1. Preparation of medicines, Pulverised plants, Models for synthesis, and Molecules for semi synthesis.
- 2. Essential oils, Nutritional complements
- 3. Raw materials for industrial use
- 4. Extracts Foodstuffs
- 5. Isolated products
- **6.** Perfumes Cosmetics
- In view of extremely rich bio-cultural diversity in the state and the dependence of forest dwellers for their health requirements on medicinal plants the Government has declared Chhattisgarh as an "HERBAL STATE".
- Amarkantak village of Chhattisgarh, located near the origin of Narmada River, has a rich biodiversity, with over 1,500 species of medicinal plants. Chhattisgarh is called India's herbal state for this very reason.
- The available produce includes tendu leaves, Kullu, Dhawda, Babul, Khair, Sal seed, Harra, Imli, Mahua, Iac, Kosa, Mahul Leaves, chironjee Baibaring, Vanjeera, Kalmegh, Aonla etc.
- They are mainly found in Abhujmad region, Bailadilla hills, Kanger Reserve and Kurchel valley in Bastar division and in some parts of Surguja division in north ChhaMisgarh.
- The actively traded MAPs from the state are Bhui Aonla (Phyllanthus amarus), Baheda Chhilka (Terminalia belerica), Kalmegh (Andrographis paniculata), Safed Musli (Chlorophytum tuberosum), Aama Haldi (Curcuma amada), Bhelwa Fruit (Semecarpus Anacardium), Van Tulsi (Ocimum gratissimum), Dhawai Phool (Woofordia fruitcosa) and about 100 others.

RANGE OF PRODUCTS FROM MEDICINAL PLANTS



Herbal Extracts available in the market can broadly be classified into following types:

Herbal Tinctures

Tinctures are typically made using an alcohol and water mixture as the solvent. The herb is first soaked in the solvent for a specified amount of time (depending on the herb). This soaking period is usually from several hours to several days in length, and some herbs may be soaked for much longer periods of time. The resultant solution is then pressed out, yielding the Tincture.

Herbal Fluid Extracts

Fluid Extracts are more concentrated than Tinctures. Although they are most oEen made from Hydro-Alcoholic mixtures, other solvents may also be used (Vinegar, Glycerin, Propylene, Glycol, Ale etc.). Commercial Fluid Extracts usually are made by distillation of some of the alcohol, typically by using methods that do not require elevated temperatures such as Vacuum Distillation and Counter-Current Filtration. However, some small manufacturers produce Fluid Extracts in a similar manner to Tinctures via a "Percolation" process.

Herbal Dry/Solid Extract

A Solid Extract is produced by further concentration of the extract by the mechanisms described above (for fluid extracts) as well as by other techniques such as thin layer evaporation. The solvent is completely removed from the solution, leaving a viscous extract (soE solid extract) or a dry solid extract (depending upon the plant, portion of the plant, or solvent used, or if a drying process was used). The dry solid extract, if not already in powdered form, can be ground into coarse granules or a thin powder. A Solid Extract also can be diluted with alcohol and water lo form a Fluid Extract or a Tincture.

Herbal Concentrates

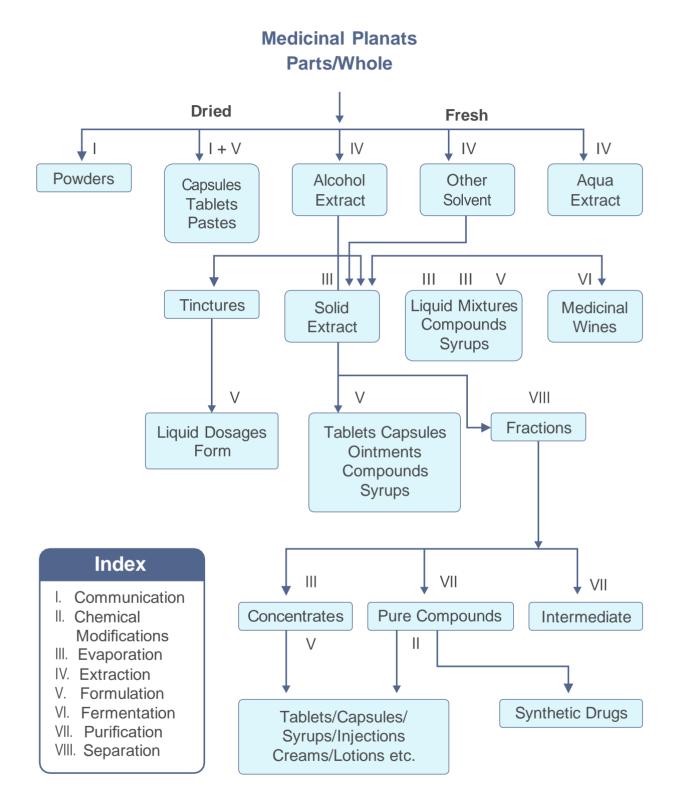
Dry, Fluid and Tincture are the form of Herbal Extracts and these differ from Herbal Concentrates. While Herbal Extracts are standardized to the Key Compound, which has been found to be therapeutically active, the Concentrates are Concentrated Form Of the entire Plant and are usually manufactured in cases where the Key Compound has not been clearly identified. An Herbal material can be concentrated to yield a higher degree of all of the Plant's compounds in a smaller volume (than the plant itself). Therefore, 50 mg. (milligrams) of extract of 50:1 Herbal Concentration would mean equivalent composition and effectiveness of 2500 mg. of Raw Plant Material. However, when the Key Compound(s) of an Herbal Material has been identified then one can both concentrate and standardize the Herbal Material to yield an optimal percentage of that specific compound.

Phyto-Chemicals

The modern system of medicine, however, uses Phyto- Chemicals (the Chemically & Therapeutically Active Ingredient), which is derived from the Crude Drug by specialized method of Extraction, Isolation, Fractionation and Purification. There is a wide range of Phyto-Chemicals including simple to complex Carbohydrates, Colour, Odour, Flavours, Proteins, Acids, Alcohol, Oils, Tannins, Saponins, Glycosides. At one point of time some Phyto-Chemicals were classed as Vitamins, however, now they have won their own spot light in Research and Science. There are thousands of Plant Chemicals and new ones are still being discovered. Alkaloids are the important Phyto-Chemicals, which are generally used by Pharmaceutical Industry and sometimes even referred as Phyto- Pharmaceuticals. These are Nitrogen containing substances, which are typically biMer in taste and in most cases toxic.

Common Medicine made from Alkaloids includes the Opiates such as Morphine and Codeine, Aconite preparations and Ephedrine etc. The production of known pure Phyto-Pharmaceuticals used in modern Medicine requires more processing stages and more sophisticated Machineries.

DOWNSTREAM PROCESSING ACTIVITIES FOR MEDICINAL PLANTS



Chapter 3: Statutory Requirement

The Statutory Registrations and Legal Formalities for the establishment the of Processing Unit for Herbal Extraction and Ayurvedic Medicines Manufacturing are discussed in the ensuing paragraphs. The most common; formalities are as under:

- 1. The Application to the respective Sub Station of CSPDCL (formerly CSEB) for Power Connection.
- 2. The Approval of the Chief Electrical Inspector, Govt. of Chhattisgarh for all the Electrical Installations like Transformer, Switch Yard Equipment's etc. w.r.t. the Safety Features, Locations etc.
- 3. The Approval of the Directorate of Industrial Health & Safety, Govt. of Chhattisgarh.
- 4. The Approval of the Chief Inspector of Boilers, Govt. of Chhattisgarh for installation & Operation of Boiler, Steam & Water Piping.
- 5. Registration for GST and other levied taxes is mandatory etc.
- 6. The Patent and Trademark Registration for Individual Product.
- 7. The Certification/Accreditation of the Processing Unit as an ISO:22000(a derivative of ISO: 9000) Certified entity. This ISO: 22000 integrates the principles of the Hazards Analysis & Critical Control Point (HACCP), as well.
- 8. The application for issue of Entrepreneurs 'Memorandum Number (EMN); Part–I& II to the District Trade & Industry Centre, Raipur [C.G.].
- 9. The Certificate of Land Use as Industrial purpose.
- 10. No Objection Certificate of the Gram Panchayat (the Local Body).
- 11. The Approval of the Competent Authority for the commencement of Construction of Buildings & Civil Works.
- 12. The Clearance from the State Ground Water Board for using Ground Water.
- 13. The Clearance from the Chhattisgarh State Environment Conservation Board for Air Pollution, Water Pollution and Noise Pollution.
- 14. The Approval of the Chief Controller of Explosives from the Petroleum & Safety Organization (PESO) for storage of hazardous chemicals and solvents.
- 15. The Approval from the Tariff Advisory Committee (a Subsidiary of the General Insurance Company) for the Fire Fighting Systems like Hydrant systems, systems and Portable Fire Extinguishers proposed to protect boilers equipment and Buildings.
- 16. The Registrations for Import Export License Code with DGFT for Exporting Finished Goods.
- 17. Another License requirement as applicable by state govt.

Chapter 4: Supply & Demand Analysis and Market Scenario

Supply & Demand Analysis:

- India has 15 agroclimatic zones that comprise ~18,000 types of plants, of which 6,000-7,000 have therapeutic properties. These medicinal plants are used in numerous applications in the Indian society and used to make medicines in traditional medical practices such as Ayurveda, Unani, Siddha, Sowa-Rigpa and homeopathy; also used in plant-based pharmaceutical companies. ~960 types of medicinal plants are traded, of which 178 species have yearly consumption levels of >100 metric tonnes. ~80% medicinal plants are extracted from the wild, while 69% of plants are collected using destructive farming practices.
- There is a huge gap between the supply and demand of medicinal plants to manufacture Ayurvedic medicines in India. According to the 'All India Trade Survey of Prioritised Medicinal Plants, 2019', demand for high-value medicinal plants increased by 50%, while the availability declined by 26%. This led to increased habitat degradation and levels of over-exploitation by pharmaceutical industries. This also resulted in 65 species (i.e., 10% of the total species) falling into the critically endangered, endangered, vulnerable, and nearly threatened categories.
- For ayurvedic medicines, raw materials such as herbs and shrubs can be grown and harvested in a period of one year, while medicinal trees take >10 years to get ready for harvesting. Therefore, it is important to engage in the conservation, cultivation, and research & development of medicinal plants.
- Cultivation of medicinal plants in a commercial mode is one of the most profitable agribusiness for farmers in India. If anyone has suficient land and knowledge of herb marketing, then they can earn a high income with moderate investments. Cultivation of medicinal herbs such as shankhapushpi, atis, kuth, kutki, kapikachhu and karanja are changing the Indian agrarian ayurvedic scenes and providing extraordinary opportunities for farmers to increase their incomes. According to the traditional treatment health centre, there are 25 significant medicinal plants that are always in full demand. These plants include the Indian Barberry, Liquorice, Bael, Isabgol, Atis, Guggal, Kerth, Aonla, Chandan, Senna, Baiberang, Long Pepper, Brahmi, Jatamansi, and Madhunashini, Kalmegh, Satavari, Ashwagandha, Chirata, Katki, Shankhpushpi, Ashoka, Giloe, Kokum and Safed Musli.

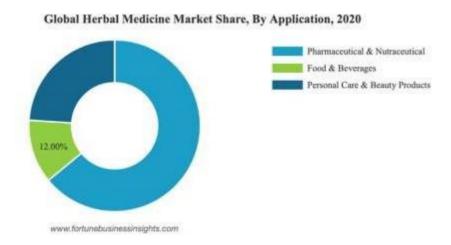
Market Scenario:

- The market for medical plants in India stood at Rs. 4.2 billion (US\$ 56.6 million) in 2019 and is expected to increase at a CAGR 38.5% to Rs. 14 billion (US\$ 188.6 million) by 2026. The total world herbal trade is currently assessed at US\$ 120 billion. India's share in the global export of herbs and herbal products is low due to unsophisticated agricultural and quality control procedures, lack of processing, research & development, standardization in products and regulatory framework in trade of medicinal plants.
- The export of herbs and value-added extracts of medicinal herbs has been gradually increasing over years. In 2017-2018, India exported US\$ 330.18 million worth of herbs at a growth rate of 14.22% over the previous year. Also, exports of value-added extracts of medicinal herbs and herbal products in 2017-2018 stood at US\$ 456.12 million, recording a growth rate of 12.23% over the previous year. The demand for herbal/value-added extracts of medicinal herbs is gradually increasing in foreign countries, especially in European and other developed countries.

Products in demand in domestic & International Markets

Sl.No.	Product	Specification	Analysis Method	Reference	Price(Rs.)
1	Andrographis Paniculata Extract	Andrographolide 5%	By HPLC	US Pharmacopoeia	520
2	Azadirachta Indica Extract	Bitters 5%	By Gravimetry	Indian Pharmacopoeia	620
3	Bacopa Monnieri Extract	Bacosides 20%	By HPLC	US Pharmacopoeia	2150
4	Boswellia Serrata Extract	Boswellic Acid 65%	By Titartion	Indian Pharmacopoeia	1350
5	Cassia Augustifolia Extract	Sennoside 20%	By UV	Indian Pharmacopoeia	1750
6	Cissus Quadrangularis Extract	Ketosterones 20%	By Gravimetry	Indian Pharmacopoela	1500
7	Coleus Forskolli Extract	Forskolin 10%	By HPLC	US Pharmacopoeia	6500
В	Curcuma Longa Extract	Curcumin 95%	By HPLC	US Pharmacopoela	5100
9	Emblica Officianalis Extract	Tannin 40%	By Gravimetry	Indian Pharmacopoeia	550
10	Garcinia Cambogia Extract	Hydrocitric Acid 50%	By HPLC	US Pharmacopoeia	550
11	Glycyrrhiza Glabra Extract	Glycyrrhizic acid 20%	By Gravimetry	Indian Pharmacopoeia	1200
12	Gymnema Sylvestre Extract	Gymnemic Acid 25%	By Gravimetry	Indian Pharmacopoeia	780
13	Mucuna Pruriens Extract	L DOPA 20%	By HPLC	US Pharmacopoeia	1600
14	Tinospora Cordifolia Extract	Bitter 5%	By Gravimetry	Indian Pharmacopoeia	590
15	Withania Somnifera Extract	Withanolide 5%	By Gravimetry	Indian Pharmacopoeia	720
16	Salacia Oblonga Extract	Saponin 20%	BY UV	Indian Pharmacopoeia	1800

Market Survey & Trend/ Growth of Herbal Industry in last 5 Years



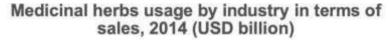
The global herbal medicine market is projected to grow from US billion in 2021 to USD 430.05 billion in 2028 at a CAGR of 11.32% The Global Herbal Medicine Market Share, Trends, Analysis and Forecasts, 2020-2030 provides insights on key developments, business strategies, research & development activities, supply chain analysis, competitive landscape, and market composition analysis.

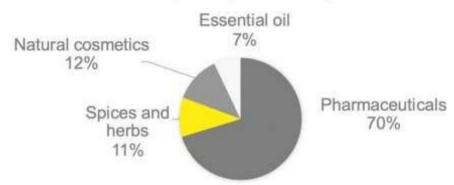


Source: Secondary Research, Expert Interviews, Government Authorities, Related Research Publications, Government Publications, and MarketsandMarkets Analysis

- The global herbal medicine market size was estimated to be US\$ 83 billion in 2019 and is expected to reach US\$ 550 billion by 2030 at a CAGR 18.9% through 2030. An herb is basically a plant or plant part that is used in medicine, because of its scent, flavour, or its therapeutic properties. Herbal medicines are a type of dietary supplement. They make use of plants or plant parts, to treat disease and enhance general health and wellbeing.
- These natural medicines are sold in the form of tablets, capsules, powders, and fresh or dried plants. People use herbal medicines to cure ailments, or as an attempt to maintain or improve their health. Herbal medicines aim to return the body to its state of natural balance so that it can heal itself when ill. Different types of herbs act on different parts of the body.

- The global herbal trade stands at USD120 billion and is expected to reach USD7 trillion by 2050.
- About 80% of the world population is dependent on medicinal plants for health care and 20% of the pharma drugs are of plant origin, either extracted from the plants or synthetic derivatives of these plant species. Despite a steady performance of MAP sector over the years, India's share in the world herbal export is insignificant (1.6%) and 2/3rd of it is in the form of raw herbs.
- Global market for MAPs is largely dominated by China, Japan, France, Germany, Italy, Spain, UK and US.
- Herbal drugs are used in cardio vascular (27%), respiratory (15.3%), digestive (14.4%), hypnotics and sedatives (9.3%), miscellaneous (12%)



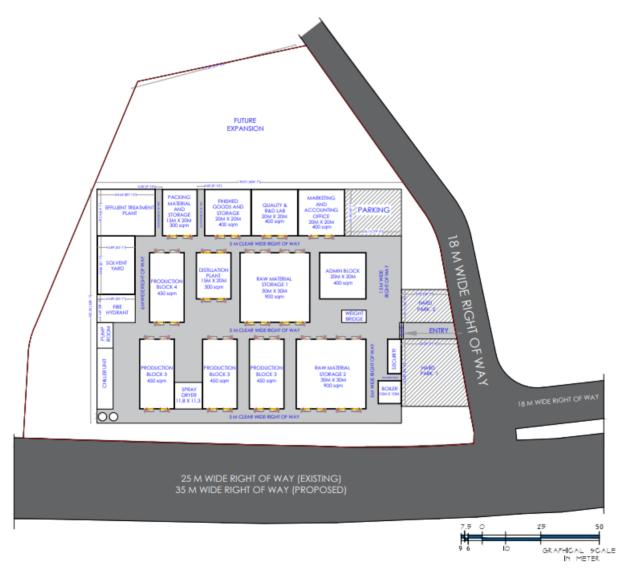


Chapter 5: Location & Layout Plan

The envisaged plant will be set up by Chhattisgarh Government State Minor Forest Produce Cooperative Federation Limited, Chhattisgarh at the site mentioned.

- Site is located at Plot No. 1 under Central Processing Unit & Food Park at Jamgaon-M, Tehsil-Patan, Dist-Durg, Chhattisgarh.
- External Infrastructure such as Boundry Wall, Connecting Roads and Necessary utilities connection etc. will be constructed by CGMFP Federation.

Internal Boundry walls & Processing unit roads shall be constructed by the processing unit party along with other construction



Chapter 6: Herbal Extraction Process and Technology

- Preparation of medicinal plants for experimental purposes is an initial step and key in achieving quality research outcome. It involves extraction and determination of quality and quantity of bioactive constituents before proceeding with the intended biological testing.
- The primary objective of this study was to evaluate various methods used in the
 preparation and screening of medicinal plants in our daily research. Although the
 extracts, bioactive fractions, or compounds obtained from medicinal plants are used for
 different purposes, the techniques involved in producing them are generally the same
 irrespective of the intended biological testing.
- The major stages included in acquiring quality bioactive molecule are the selection of an appropriate solvent, extraction methods, phytochemical screening procedures, fractionation methods, and identification techniques. The niMy-griMy of these methods and the exact road map followed solely depends on the research design.
- Solvents commonly used in extraction of medicinal plants are polar solvent (e.g., water, alcohols), intermediate polar (e.g., acetone, dichloromethane), and nonpolar (e.g., n-hexane, ether, chloroform).
- In general, extraction procedures include maceration, digestion, decoction, infusion, percolation, Soxhlet extraction, superficial extraction, ultrasound-assisted, and microwave-assisted extractions.
- Fractionation and purification of phytochemical substances are achieved through application of various chromatographic techniques such as paper chromatography, thinlayer chromatography, gas chromatography, and high-performance liquid chromatography.
- Finally, compounds obtained are characterized using diverse identification techniques such as mass spectroscopy, infrared spectroscopy, ultraviolet spectroscopy, and nuclear magnetic resonance spectroscopy. Subsequently, different methods described above can be grouped and discussed according to the intended biological testing to guide young researchers and make them more focused.
- Medicinal plants are extracted and processed for direct consumption as herbal or traditional medicine or prepared for experimental purposes.

- The concept of preparation of medicinal plant for experimental purposes involves the proper and timely collection of the plant, authentication by an expert, adequate drying, and grinding.
 - This is followed by extraction, fractionation, and isolation of the bioactive compound where applicable. In addition, it comprises determination of quantity and quality of bioactive compounds.
 - Recently, plant as a source of medicine is gaining international popularity because of its natural origin, availability in local communities, cheaper to purchase, ease of administration, and perhaps less troublesome.
 - Also, herbal medicine may be useful alternative treatment in case of numerous side effects and drug resistance.
 - Extraction of medicinal plants is a process of separating active plant materials or secondary metabolites such as alkaloids, flavonoids, terpenes, saponins, steroids, and glycosides from inert or inactive material using an appropriate solvent and standard extraction procedure. Plant materials with high content of phenolic compounds and flavonoids were found to possess antioxidant properties and hence are used to treat age-related diseases such as Alzheimer's disease, Parkinsonism, anxiety, and depression.
 - Several methods were used in the extraction of medicinal plants such as maceration, infusion, decoction, percolation, digestion and Soxhlet extraction, superficial extraction, ultrasound-assisted, and microwave-assisted extraction.
 - In addition, thin-layer chromatography (TLC), high-performance liquid chromatography (HPLC), paper chromatography (PC), and gas chromatography (GC) were used in the separation and purification of the secondary metabolites.
 - The choice of an appropriate extraction method depends on the nature of the plant material, the solvent used, pH of the solvent, temperature, and solvent to sample ratio. It also depends on the intended use of the final products. This study aimed to assess various solvents of extractions, methods of extraction, fractionation, purification, phytochemical screening, and identification of bioactive compounds in medicinal plants.

Chapter 7: About the Raw Material

List of Herbal Raw Material that can be processed in Herbal Extraction Unit.

Sr. No.	Botanical Name	Common Name	State Availabilty	Quantity Availability	Uses
1	Acacia Catechu	Katha	Madhya Pradesh	Suficiently Available	
2	Allium Sativum	Garlic	ChhaMisgarh	Suficiently Available	
3	Aloe Barbadensis	Aloe Vera	ChhaMisgarh	Suficiently Available	
4	Andrographis Paniculata	Kalmegh	ChhaMisgarh	Suficiently Available	
5	Asparagus Racemous	Shatavar	ChhaMisgarh	Suficiently Available	
6	Asphaltum	Shilajit	Himachal Pradesh	Suficiently Available	
7	Azadirachta Indica	Neem	ChhaMisgarh	Suficiently Available	
8	Bacopa Monnieri	Jalbrahmi	West Bengal	Suficiently Available	
9	Berberis Aristata	Daru Haldi	Rajasthan	Suficiently Available	
10	Boswellia Serrata	Salai Guggul	Madhya Pradesh	Suficiently Available	
11	Camella Sinensis	Tea	Sikkim	Suficiently Available	
12	Cassia Augustifolia	Senna	Rajasthan	Suficiently Available	
13	Chlorophytum Borivillianum	Safed Musli	ChhaMisgarh	Suficiently Available	
14	Cinnamon Cassia	Cinnamon	Sikkim	Suficiently Available	
15	Cissus Quadrangularis	Hadjod	Andhra Pradesh	Suficiently Available	
16	Coffea Robusta	Coffee	Karnataka	Suficiently Available	
17	Coleus Forskolli	Pashanbhed	Tamil Nadu	Suficiently Available	
18	Curcuma Longa	Turmeric	Tamil Nadu	Suficiently Available	
19	Emblica Oficianalis	Amla	ChhaMisgarh	Suficiently Available	
20	Fenugreek	Methi	Madhya Pradesh	Suficiently Available	
21	Garcinia Cambogia	Malabar Imli	Karnataka	Suficiently Available	
22	Glycyrrhiza Glabra	Mulethi	UMarakhand	Suficiently Available	
23	Gymnema Sylvestre	Gudmar	Madhya Pradesh	Suficiently Available	
24	Momordia Charantia	Karela	ChhaMisgarh	Suficiently Available	
25	Moringa Oleifera	Moringa	Tamil Nadu	Suficiently Available	
26	Mucuna Pruriens	Kaunch	ChhaMisgarh	Suficiently Available	
27	Oscimum Sanctum	Tulsi	ChhaMisgarh	Suficiently Available	
28	Piper Longum	Black Pepper	Kerala	Suficiently Available	
29	Pterocarpus Marsupium	Vijaysar	ChhaMisgarh	Suficiently Available	
30	Saraca Asoka	Ashoka Chhal	ChhaMisgarh	Suficiently Available	
31	Terminalia Arjuna	Arjun Chhal	ChhaMisgarh	Suficiently Available	
32	Terminalia Bellerica	Baheda	ChhaMisgarh	Suficiently Available	

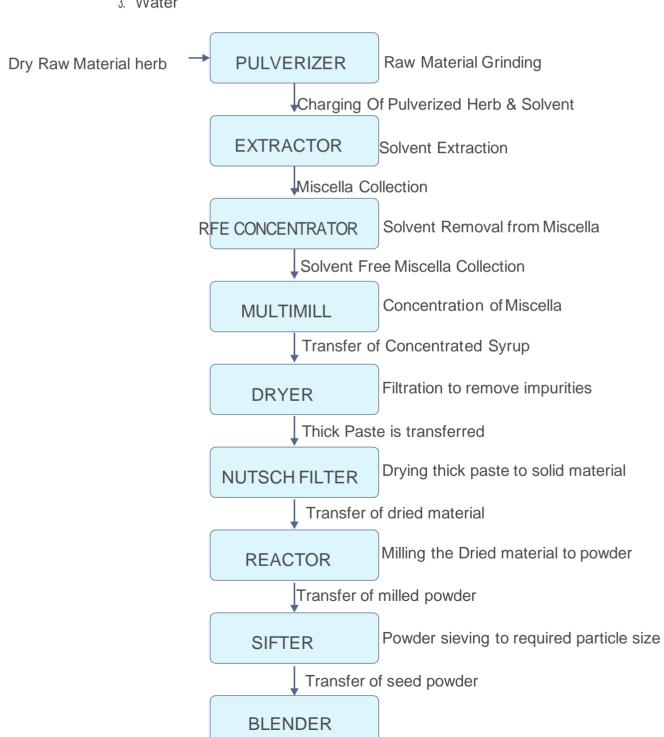
Sr. No.	Botanical Name	Common Name	State Availabilty	Quantity Availability	Uses
33	Terminalia Chebula	Harad	ChhaMisgarh	Suficiently Available	
34	Tinospora Cordifolia	Giloy	ChhaMisgarh	Suficiently Available	
35	Tribulus Terrestris	Gokhru	ChhaMisgarh	Suficiently Available	
36	Withania Somnifera	Ashwagandha	Madhya Pradesh	Suficiently Available	
37	Zingiber Oficinale	Ginger	Maharashtra	Suficiently Available	
38	Carica Papaya	Papaya	ChhaMisgarh	Suficiently Available	
39	Plantago Ishapgula	Isabgol	Rajasthan	Suficiently Available	
40	Boerhavia Diffusa	Punarnava	Madhya Pradesh	Suficiently Available	
41	Rauvolfia Serpentina	Sarpagandha	ChhaMisgarh	Suficiently Available	
42	Salacia Oblonga	Saptrangi	Orissa	Suficiently Available	
43	Acacia Concinna	Shikkkai	Rajasthan	Suficiently Available	
44	Convolvulus Pluricaulis	Shankhpuspi	Gujarat	Suficiently Available	
45	Pueraria Tuberosa	Vidarikand	ChhaMisgarh	Suficiently Available	
46	Adhatoda Vasica	Vasaka	Madhya Pradesh	Suficiently Available	
47	Centella Asiatica	Mudukaparni	West Bengal	Suficiently Available	
48	Vitex Negundo	Nirgundi	ChhaMisgarh	Suficiently Available	
49	Syzygium aromaticum	Clove	Kerala	Suficiently Available	
50	Silybum marianum	Milk Thistle	Gujarat	Suficiently Available	
51	Aegle Marmelos	Bael	ChhaMisgarh	Suficiently Available	
52	Alpinia Galangal	Kulanjan	Maharashtra	Suficiently Available	
53	Crataeva Nurvula	Varuna Chhal	Orissa	Suficiently Available	
54	Eclipta Alba	Bhringraj	UMar Pradesh	Suficiently Available	
55	Euginia Jambolana	Jamun	ChhaMisgarh	Suficiently Available	
56	Picrorrhiza Kurroa	Kutki	UMarakhand	Suficiently Available	
57	Morinda Citrifolia	Noni	Gujarat	Suficiently Available	
58	Nigella Sativa	Kalonji	ChhaMisgarh	Suficiently Available	
59	Passiflora Incarnata	Passion Flower	Tamil Nadu	Suficiently Available	
60	Rubia Cordifolia	Manjishtha	Madhya Pradesh	Suficiently Available	

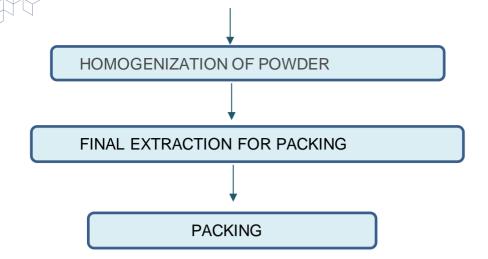
Chapter 8: Process Flow for Herbal Extraction

Raw Material are selected taking the availability from the Chhattisgarh state and neighbouring region. Following are raw material required annually for preparation of Herbal Extract: -

Raw Material used in the process:

- 1. Dry Raw Material
- 2. Methanol
- 3. Water





Chronological Flow of Material from Raw to Finished Product

A. Product: Tinospora Cordifolia Dry Stems(Giloy) Batch Size: 950 Kgs Finished Product: Giloy Extract 5% BiLers

SI.No	Equipment	Input Details	Process Details	Process time	Output Details
Step -1	Pulverizer	1.Gilloy Stem-950 Kgs	Pulverization to smaller size	3 Hours	Pulverized Giloy Stem - 950 Kgs
Step - 2	Extractor	1.Pulverized Giloy -950 Kgs 2. Methanol- 13000 Litre	Active Component Extraction from Herb to Solvent at 65'Celsius	34 Hours	850 Kgs Spent Giloy sent to boiler for burning Miscella Quantity - 13100 Litre
Step - 3	Concentrator	1.Miscella - 13100 Litre	Desolventizer	20 Hours	Methanol Solvent - 12000 Litres Concentrated Miscella - 1100 Litre.
Step - 4	Reactor	1. Miscella - 1100 Litre 2. Water - 100 Litre	Removing the solvent completely from miscella.	7 Hours	Methanol Solvent - 1000 Litres Concentrated Syrup - 150 Kgs Water - 50 Litres
5tep - 5	Nutsch Filter	1. Conc Syrup - 150 Kgs	Removing Impurities	3 Hours	1. Final Paste - 145 Kgs
Step - 6	Dryer	Final Paste - 145 Kgs Yellow Dextrin - 100 Kgs	Drying the paste to chips to bring the moisture content below 5%.	12 Hours	1. Dried Material - 200 Kgs
Step - 7	Multimill	1.200 Kgs Dried Material	Milling of chips and rock like material to fine powder.	2 Hours	1. Fine Powder - 200 Kgs
Step - 8	Sifter	1. Extract Powder - 200 Kgs	Sifting of material to 40 Mesh	2 Hours	1. Sifted Powder - 200 Kgs.
Step - 9	Blender	1. Sifted Powder - 200 Kgs	Blending material to make it homogenous. Mostly this equipment is used batch.		Blended Material - 200 Kgs batched extract powder to make one master
Step -10	Packing	Blended Ext Powder- 200 Kgs HDPE Drum 50 Lt- 8 Nos LDPE Bag 24*40 - 16 Nos	Packing in Hdpe Drum, Each drum will have 25 Kgs material in two LDPE Bags.	1 Hours	1. 25 Kgs Material in B Drums.

B. Product: Emblica Oficianalis Dry Fruit Seedless (Amla) Batch Size: 950 Kgs

Finished Product: Amla Extract 40% Tannin

Si.No	Equipment	input Details	Process Details	Process time	Output Details
Step -1	Pulverizer	1.Dry Amla Fruit-950 Kgs	Pulverization to smaller size	3 Hours	Pulverized Dry Amla - 950 Kgs
Step - 2	Extractor	1.Pulverized Amla -950 Kgs 2. Methanol - 13000 Litre	Active Component Extraction from Herb to Solvent at 65'Celsius	34 Hours	618 Kgs extracted Amila sent to belier for burning Miscella Quantity - 13332 Litre
Step - 3	Concentrator	1.Miscella - 13332 Litre	Desolventizer	20 Hours	Methanol Solvent - 12000 Litres Concentrated Miscella - 1332 Litre.
Step - 4	Reactor	1. Miscella - 1332 Litre 2. Water - 100 Litre	Removing the solvent completely from miscella.	7 Hours	Methanol Solvent - 1000 Litres Concentrated Syrup - 382 Kgs Water - 50 Litres
Step - 5	Nutsch Filter	1. Conc Syrup - 382 Kgs	Removing Impurities	3 Hours	1. Final Syrup - 375 Kgs
Step - 6	Spray Dryer	1. Final Syrup - 375 Kgs	Drying the syrup to fine powder to bring the moisture content below 5%.	12 Hours	1. Dried Material - 332 Kgs
Step - 7	Blender	1. Spray Dried Powder - 332 Kgs	Blending material to make it homogenous. Mostly this equipment is used		Blended Material - 332 Kgs batched extract powder to make one master batch.
Step -8	Packing	1. Blended Ext Powder- 332 Kgs 2. HDPE Drum 50 Lt- 14 Nos 3. LDPE Bag 24*40 - 28 Nos	Packing in Hdpe Drum. Each drum will have 25 Kgs material in two LDPE Bags.	1 Hours	25 Kgs Material in 13 Drums. 7Kgs Material in 1 Drum.

C. Product: Withania Somnifera Dry Whole Plant Dry (Ashwagandha Panchang) Batch Size: 950 Kgs Finished Product: Ashwagandha Extract 5% Withanolides

SI.No	Equipment	Input Details	Process Details	Process time	Output Details
Step -1	Pulverizer	1.Dry Ashwagandha Panchang-950 Kgs	Pulverization to smaller size	3 Hours	Pulverized Dry Panchang - 950 Kgs
Step - 2	Extractor	1.Pulverized Panchang -950 Kgs 2. Methanol- 13000 Litre	Active Component Extraction from Herb to Solvent at 70'Celsius	34 Hours	808 Kgs extracted Ashwagandha sent to boiler for burning 2.Miscella Quantity - 13142 Litre
Step - 3	Concentrator	1.Miscella - 13142 Litre	Desolventizer	20 Hours	Methanol Solvent - 12000 Litres Concentrated Miscella - 1142 Litre.
Step - 4	Reactor	1. Miscella - 1142 Litre 2. Water - 100 Litre	Removing the solvent completely from miscella.	7 Hours	Methanol Solvent - 1000 Litres Concentrated Syrup - 192 Kgs Water - 50 Litres
Step - 5	Nutsch Filter	1. Conc Syrup - 192 Kgs	Removing Impurities	3 Hours	1. Final Paste - 145 Kgs
Step - 6	Vacuum Tray Dryer	1. Final Paste - 145 Kgs	Drying the paste to chips to bring the moisture content below 5%.	12 Hours	1. Orled Material - 145 Kgs
Step - 7	Multimill	1.145 Kgs Dried Material	Milling of chips and rock like material to fine powder.	2 Hours	1. Fine Powder - 145 Kgs
Step - 8	Sifter	1. Extract Powder - 145 Kgs	Sifting of material to 40 Mesh	2 Hours	1. Sifted Powder + 145 Kgs.
Step - 9	Blender	1. Sifted Powder - 145 Kgs	Blending material to make it homogenous. Mostly this equipment is used		Blended Material - 145 Kgs batched extract powder to make one master batch.
Step -10	Packing	Blended Ext Powder- 145 Kgs HDPE Drum 50 Lb- 6 Nos LOPE Bag 24*40 - 12 Nos	Packing in Hdpe Drum. Each drum will have 25 Kgs material in two LDPE Bags.	1 Hours	25 Kgs Material in 5 Drums. 20 Kgs Material in 1 Drum.

D. Product: Andrographis Paniculata Dry Whole Plant (Kalmegh Panchang) Batch Size: 950 Kgs Finished Product: Kalmegh Extract 5% Andrographolides.

SI.No	Equipment	Input Details	Process Details	Process time	Output Details
Step -1	Pulverizer	1.Dry Kalmegh Panchang-950 Kgs	Pulverization to smaller size	3 Hours	Pulverized Dry Panchang - 950 Kgs
Step - 2	Extractor	1.Pulverized Panchang -950 Kgs 2. Methanol- 13000 Litre	Active Component Extraction from Herb to Solvent at 60'Celsius	34 Hours	808 Kgs extracted Kalmegh sent to boiler for burning Z.Miscella Quantity - 13095 Litre
Stop - 3	Concentrator	1,Miscella - 13095 Litre	Desolventizer	20 Hours	Methanol Solvent - 12000 Litres Concentrated Miscella - 1095 Litre.
Step - 4	Reactor	1, Miscella - 1095 Litre 2. Water - 100 Litre	Removing the solvent completely from miscella.	7 Hours	Methanol Solvent - 1000 Litres Concentrated Syrup - 145 Kgs Water - 50 Litres
Step - 5	Nutsch Filter	1. Conc Syrup - 145 Kgs	Removing Impurities	3 Hours	1. Final Paste - 145 Kgs
Step - 6	Spray Dryer	1. Final Paste - 145 Kgs 2. Brown Dextrin- 95 Kgs	Drying the paste to chips to bring the moisture content below 5%.	12 Hours	1. Dried Material - 190 Kgs
Step + 7	Blender	1. Sifted Powder - 190 Kgs	Blending material to make it homogenous. Mostly this equipment is used		Blended Material - 190 Kgs batched extract powder to make one master batch.
Step - 8	Packing	Blended Ext Powder- 190 Kgs HDPE Drum 50 Lt- 8 Nos LDPE Bag 24*40 - 16 Nos	Packing in Hidpe Drum, Each drum will have 25 Kgs material in two LOPE Bags.	1 Hours	25 Kgs Material in 7 Drums. 2. 20 Kgs Material in 1 Drum.

E. Product: Gymnema Sylvestre Dry Leaves (Gudmar Panchang)

Batch Size: 950 Kgs

Finished Product: Gudmar Extract 25% Gymnemic Acid.

SI.No	Equipment	Input Details	Process Details	Process time	Output Details
Step -1	Pulverizer	1.Dry Gudmar Panchang-950 Kgs	Pulverization to smaller size	3 Hours	Pulverized Dry Panchang - 950 Kgs
Step - Z	Extractor	1.Pulverized Panchang -950 Kgs 2. Methanol- 13000 Litre	Active Component Extraction from Herb to Solvent at 60'Celsius	34 Hours	808 Kgs extracted Gudmar sent to boiler for burning 2.Miscella Quantity - 13095 Litre
Step - 3	Concentrator	1.Miscella - 13142 Litre	Desolventizer	20 Hours	Methanol Solvent - 12000 Litres Concentrated Miscella - 1142 Litre.
Step - 4	Reactor	1. Miscella - 1142 Litre 2. Water - 100 Litre	Removing the solvent completely from miscella.	7 Hours	Methanol Solvent - 1000 Litres Concentrated Syrup - 192 Kgs Water - 50 Litres
Step - 5	Nutsch Filter	1. Conc Syrup - 192 Kgs	Removing Impurities	3 Hours	1. Final Paste - 145 Kgs
Step - 6	Vacuum Tray Dryer	1. Final Paste - 145 Kgs	Drying the paste to chips to bring the moisture content below 5%.	12 Hours	1. Dried Material - 145 Kgs
Step - 7	Multimill	1.145 Kgs Dried Material	Milling of chips and rock like material to fine powder.	2 Hours	1. Fine Powder - 145 Kgs
Step - 8	Sifter	1. Extract Powder - 145 Kgs	Sifting of material to 40 Mesh	2 Hours	1. Sifted Powder - 145 Kgs.
Step - 9	Blender	1. Sifted Powder - 145 Kgs	Blending material to make it homogenous. Mostly this equipment is used		Blended Material - 145 Kgs batched extract powder to make one master batch.
Step -10	Packing	Blended Ext Powder- 145 Kgs HDPE Drum 50 Lt- 6 Nos LDPE Bag 24*40 - 12 Nos	Packing in Hdpe Drum, Each drum will have 25 Kgs material in two LDPE Bags.	1 Hours	1. 25 Kgs Material in 5 Drums, 2. 20 Kgs Material in 1 Drum.

Si.No.	Product	Specification	Analysis Method	Reference	Price(Rs.)
1	Andrographis Paniculata Extract	Andrographolide 5%	By HPLC	US Pharmacopoeia	520
2	Emblica Officianalis Extract	Tannin 40%	By Gravimetry	Indian Pharmacopoeia	550
3	Gymnema Sylvestre Extract	Gymnemic Acid 25%	By Gravimetry	Indian Pharmacopoeia	780
4	Tinospora Cordifolia Extract	Bitter 5%	By Gravimetry	Indian Pharmacopoeia	590
5	Withania Somnifera Extract	Withanolide 5%	By Gravimetry	Indian Pharmacopoeia	720

Chapter 9: Quality parameters of the produce (Herbal Extract)

Herbal substances are a diverse range of botanical materials including leaves, herbs, roots, flowers, seeds, bark etc. A comprehensive specification must be developed for each herbal substance even if the starting material for the manufacture of the herbal medicinal product is a herbal preparation. In the case of family or essential oils used as active substances of herbal medicinal products, a specification for the herbal substance is required unless justified.

The specification should be established on the basis of recent scientific data and should be set out in the same way as the European Pharmacopoeia Guideline on specifications: test procedures and acceptance criteria for herbal substances, herbal preparations and herbal medicinal products/traditional herbal medicinal

The following tests and acceptance criteria are considered generally applicable to all herbal substances.

- **a. Definition:** a qualitative statement of the botanical source, plant part used and its state (e.g. whole, reduced, powdered, fresh, dry). It is also important to know the geographical source(s) and the conditions under which the herbal substance is obtained.
- **b. Characters:** a qualitative statement about the organoleptic character(s) where characteristic and the macroscopic and microscopic botanical characters of the herbal substance.
- c. Identification: identification testing optimally should be able to discriminate between related species and/or potential adulterants/substitutes, which are likely to be present. Identification tests should be specific for the herbal substance and are usually a combination of three or more of the following: Macroscopical characters, Microscopical characters, Chromatographic procedures and Chemical reactions.
- d. Tests: Foreign matter. Total ash. Ash insoluble in hydrochloric acid
 - a. Water soluble extractive
 - b. Extractable matter.

Particle size: For some herbal substances intended for use in herbal teas or solid herbal medicinal products, particle size can have a significant effect on dissolution rates, bioavailability, and/or stability. In such instances, testing for particle size distribution should be carried out using an appropriate procedure, and acceptance criteria should be provided. Particle size can also affect the disintegration time of solid dosage forms. Water content: This test is important when the herbal substances are known to be hygroscopic.

For non-pharmacopoeia herbal substances, acceptance criteria should be justified by data on the effects of moisture absorption.

A Loss on drying procedure may be adequate; however, in some cases (essential oill-containing plants); a detection procedure that is specific to water is required.

Contaminants: – Inorganic impurities, toxic (heavy) metals: The need for inclusion of tests and acceptance criteria for inorganic impurities should be studied during development and based on knowledge of the plant species, whether it is wild or cultivated and the manufacturing process.

Acceptance criteria will ultimately depend on safety considerations, where justified, procedures and acceptance criteria for Sulphated ash/Residue on ignition/Heavy metals should follow pharmacopoeia precedents.

Microbial limits:-There may be a need to specify the total count of aerobic micro-organisms, the total count of yeasts and moulds, and the absence of specific objectionable bacteria. The source of the herbal material should be taken into account when considering the inclusion of other possible.

Guideline on specifications:

test procedures and acceptance criteria for herbal substances, herbal preparations, and herbal medicinal products /traditional herbal medicinal products pathogens (e.g. Campylobacter and Listeria species) in addition to those specified in the Indian Pharmacopoeia. Microbial counts should be determined using pharmacopoeial procedures or other validated procedures.

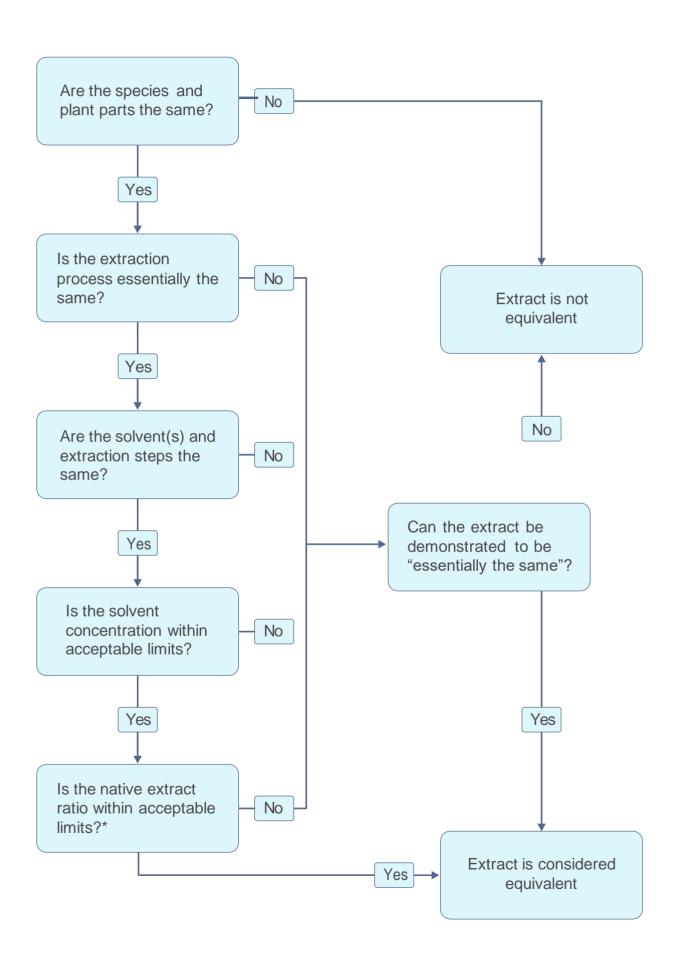
Guidance on acceptance criteria: -

- A. **Mycotoxins** (**aflatoxins**, **ochratoxin**):- The potential for mycotoxins contamination should be fully considered. For aflatoxins, procedure and acceptance criteria should follow pharmacopoeial precedents) and for ochratoxin A, the procedure is described and acceptance criteria are given in specific monographs.
- **B. Pesticides, Fumigation agents etc.: -** The potential for residues of pesticides, fumigation agents etc. should be fully considered. Where necessary suitable validated methods should be used to control potential residues and the acceptance criteria should be justified. In the case of pesticide residues, the acceptance criteria of the Indian Pharmacopoeia should be applied unless fully justified. —
- **C. Radioactivity: -** Radioactive contamination should be tested for if there are reasons for concerns.
- **D.** Assay:- In the case of herbal substances with constituents of known therapeutic activity or

with active markers, assays of their content are required with details of the analytical procedure. Where possible, a specific, stability-indicating procedure should be included to determine the content of the herbal substance.

E. Identification:- Identification tests should be specific for the herbal preparation, and optimally should be discriminatory with regard to substitutes/adulterants that are likely to occur. Identification solely by chromatographic retention time, for example, is not regarded as being specific; however, a combination of chromatographic tests (e.g. HPLC and TLC-densitometry) or a combination of tests into a single procedure, such as HPLC/UV-diode array, HPLC/MS, or GC/MS may be acceptable. Guideline on specifications: test procedures and acceptance criteria for herbal substances & herbal preparations.

FLOWCHART: EQUIVALENCE OF EXTRACTS



Chapter 10: Pollution Control and Energy Conservation

The unit strategy towards eco-friendly extraction process encompasses the following

- Scientific production process
- Effective pollution control measures.
- · Optimisation of resource utilisation.
- · Regular monitoring.
- · Biological reclamation.
- Rain water harvesting & Solar roof top
- Rural and community development.
- Strategy for Afforestation Eco-development and creation of massive green cover envisages plantation of hard wood trees to meet the future timber needs of the country, besides restoration of ecology.
- Additionally, certain areas have been covered by shrubs and grass for greening effect and checking erosion. The company's approach towards afforestation incorporates the following:
- General afforestation in and around mines with appropriate scientific techniques with species suitable for the area.
- Specific afforestation on mine spoil dump using integrated biotechnology.
- Rejuvenation of mine spoils dumps through integrated biotechnical approach.
- · Installation Gas feed boilers.
- Advanced ETP with controlled treatment and disposal procedure adhered to PCB norms and guidelines

Chapter 11: Working Hours, Capacity Utilization & Human Resource

The Critical Equipment in a Herbal Extraction Unit is an Extractor.

The plant capacity is defined by the numbers of Extractors and the capacity of Extractors. In the Proposed Herbal Extraction Unit we have 8 Unit Extractors having capacity to load approximately 950 Kgs of raw material in single batch.

Total Processing Capacity Per month

- Extractor Herb Loading Capacity: 950 Kgs.
- Average Extraction time per batch: 34 Hours.
- Total Working days: 29 days (1 day off is taken for Plant maintenance, Breakdown and other regional commitments)
- Total Available working hours: 29 Days* 24 Hours = 696 Hours.
- Total Batch that can be processed in a single extractor per month: 696 Hours / 34 Hours = 20 Batches.
- Total Batches that can be processed in 8 Extractors per month: 20 Batches* 8 Extractors = 160 Batches.
- Total Raw Material that can be processed per month in complete unit :- 160 Batches *950 Kgs = 152 MT.

As per above calculation we can process approximately 150 Metric Ton of Herbal Raw Material in the proposed Herbal Extraction Unit when running in 100% capacity.

Plant Capacity Utilization over the period of 5 Years & Beyond: -

YEAR	2023-	2024-	2025-	2026-	2027-	2029-	2031-	2032-
	2024	2025	2026	2027	2028	2030	2032	2033
CAPACITY UTILIZATION	65%	70%	75%	80%	85%	90%	95%	100%
RAW	585 MT	1260	1350	1440	1530	1620	1710	1800
MATERIAL		MT						
REQUIREMENT								

We are expecting the commercial production to start from October 2023 are taking 15 months of setup time, Therefore in the Year 2023- 2024 the production will be for 6 Months And accordingly raw material should be planned.

Manpower Requirement:

SI. No.	Description	Nos
1	Production Manager	1
2	Lab Chemist	3
3	Production Supervisor	4
4	Machine Operators Skilled	5
5	Semi Skilled Employees	10
6	Unskilled Employees	20
7	Ofice Staff	5
8	Security Guard	3
	Total Employees	51

Chapter 12: Plant and Machinery

List of Machinery for Herbal Extraction Unit.

A. EXTRACTION UNIT

Sr. No.	Description	Nos
1.	VERTICAL EXTRACTOR 6KL	4
2.	ROTARY EXTRACTOR 8KL	4
3.	REACTOR 5KL	2
4.	REACTOR 3KL	2
5.	REACTOR 2 KL	2
6.	REACTOR 1 KL	2
7.	GLR REACTOR 3 KL	2
8.	RFE CONCENTRATOR	2
9.	LIQUID EXTRATCTOR 6KL	2
10.	SOLVENT DISTILLATION UNIT	1
11.	SS TANKS 10 KL	8
12.	SS TANKS 5 KL	5
13.	SS TANKS 3 KL	5
14.	SS FILTER PRESS	2
15.	CENTRIFUGE 48"	3
16.	AGITATED NUTSCH FILTER DRYER 3KL	1
17.	NUTSCH FILTER	1
18.	MEMBRANE DISTILLATION FILTER	1
19.	WATER SEPARATOR	3
20.	DECANTER	2
21.	CONCENTRATION COLUMNS	2
22.	MIXING TANKS 2 KL	3
23.	VACUUM TRAY DRYER 48 TRAYS	3
24.	FLUID BED DRYER	1
25.	SPRAY DRYER 120 L/HR	1
26.	ROTARY VACUUM PEDAL DRYER	1
27.	MULTIMILL 250KG/HR	3
28.	SIFTER 250 KG/HR	3
29.	BLENDER 500 KG/HR	2
30.	BLENDER 1000 KG/HR	1
31.	SS PIPELINES & MS PLATFORM	1 SET
32.	SS VALVES	1 SET
33.	PRESSURE/TEMP/VACCUM GAUGES	1 SET

B. FINISHING AND FORMULATION UNIT

Sr. No.	Description	Nos
1	AUTOCLAVE 250 KGS/HR	1
2	BLENDER 550 KGS/HR	1
3	SS WEIGHINHG BALANCE 100 KGS	1
4	ROLL COMPACTOR 100 KGS/HR	1
5	RMG 100 KGS/HR	1
6	DYANOMILL 100 KGS/HR	1

C. WAREHOUSE UNIT

Sr. No.	Description	Nos
1	PULVERIZER 500 KGS/HR	1
2	FLAKER 500 KGS/HR	1
3	PELLETIZER 500 KGS/HR	1
4	MS WEIGHING SCALES 500 KGS	1
5	WEIGHING BRIDGE	1
6	PORKLIFT TROLLEY	4
7	PELLET TROLLEY	4
8	DRUM TROLLEY	4
9	MS TANK 20KL	6
10	MS TANK 10 KL	3
11	MS TANK 5 KL	3

D. UTILITIES

Sr. No.	Description	Nos
1	BOILER 3MTH	2
2	HOT WATER SYSTEM	1
3	RO SYSTEM 2.5KL/HR	1
4	SOFTENER	1
5	COOLING TOWER 400 TR	2
6	CHILLED WATER 100 TR	1
7	CHILLER 50 TR	1
8	HIGH VACCUM OIL PUMP	2
9	WATER RING PUMP	9
10	AIR COMPRESSOR 100 CFM	1
11	NITROGENERATOR	1
12	BRIQUETTE PLANT	1
13	SOLVENT CIRCULATION PUMP	12
14	TRANSFER PUMPS	12
15	DOSING PUMP	4
16	QC & R&D LABORAOTORY EQUIPMENT	1 SET
17	ELECTRIFICATION & PANEL	1 SET
18	AIR HANDLING UNIT	1 SET

Research & Development Laboratory Equipment and Accessories

Block	Description	Qty.
	Fume hood	4
	Lab stirrer	10
	Lab CF	1
E	Column hood	1
DEVELOPME	Rotavapour	3
	Pilot rotavapour	1
	Pilot reactors Glass	1
	SS herbal pilot plant	2
	Magneti hot plate stirrer	2
$\frac{1}{2}$	Chromatography column	2
RESEARCH ANDDEVELOPMENT	Lab chilled water circulatir	1
	High vacumm pump	1
	Lab VTD	2
	Lab FBD	1
	Lab Hydrogenator	1
	Point exhaust	4
	All related glass wares	
	Chemicals & solvents	

QUALITY CONTROL DEPARTMENT EQUIPMENT LIST

Sr. No.	Name of the Equipment	Make	Locati on
1.	Analytical balance	Precisa	FTIR room
2.	Centrifuge machine	Multitech	Instrumentation Room
3.	Refrigerator	Ariston	Chemical Testing Room
4.	Magnetic stirrer	Multitech	Instrumentation Room
5.	Moisture analyzer	Multitech	Instrumentation Room
6.	Oven for drying glass ware (Not in use)	Multitech	Washing Area
7.	pH meter (Digital)	El	Chemical Testing Room
8.	Refractometer	Multitech	Instrumentation Room
9.	Vacuum oven	Multitech	Washing Area
10.	Heating mentle	Multitech	Instrumentation Room
11.	Hot plate	AIREX	Chemical Testing Room
12.	Water bath	Multitech	Chemical Testing Room
13.	Bulk density apparatus	Multitech	Instrumentation Room
14.	UV light (Viewing cabinet)	Multitech	Instrumentation Room
15.	Vacuum pump	JEET Electrical	Washing Area
16.	Conductivity meter	Lab India	Chemical Testing Room
17.	HPLC System 1	Merck Hitachi	HPLC Room
18.	HPLC System 2 (Merck Hitachi)	Merck Hitachi	HPLC Room
19.	Ultrasonic Cleaner	Fast clean	Chemical Testing Room
20.	Column Oven for HPLC 1	Saitech Scientific	HPLC Room
21.	Column Oven for HPLC 2	HCO-01	HPLC Room
23.	HPLC for column washing	Tiger Waters	HPLC room
24.	UV-Spectrophotometer	Shimadzu	Dissolution Testing Room
25.	HPLC System (Agilent 1120)	Agilent	HPLC Room
26.	Muffle Furnace	Multitech	Chemical Testing Room
27.	Micrometer	Mitutoyo	Chemical Testing Room
28.	Vacuum Pump for Mobile Phase Filtration	Value Ve115 N	Chemical Testing Room
29.	Pin Hole Tester	In House	Packing Analysis Room
30.	Sieve #14	Electro Pharma	Chemical Testing Room
31.	Sieve #16	Electro Pharma	Chemical Testing Room
32.	Sieve #18/20	Electro Pharma	Chemical Testing Room
33.	Gas chromatograp[hy	Perkin	Chemical Testing Room
34.	Computerized label printer	Intermec	Packing Material analysis room.

Sr. No.	Name of the Equipment	Make	Location
35.	Calibrated weight box	Multitech	Chemical Testing Room
36.	TLC Chamber	-	Instrumentation Room
37.	Humidity Chamber (Long Term)	Newtronic	Stability Room
38.	Humidity Chamber (Accelerated)	Newtronic	Stability Room
39	Drying Oven	Newtronic	Q.C Washing Area
40.	Water Purification System	ToshvinTKA	Q.C Washing Area
41.	Karl Fischer	Veego	Instrumentation Room
42.	Melting Point apparatus	Multitech	Instrumentation Room
43.	Polarimeter	Multitech	Instrumentation Room
44.	Digital stop watch	Diamond	HPLC Room
45.	Sampling container	-	Clean equipment room of
			stores department
46.	Sampling container	_	Clean equipment room
			stores department
47.	Sampling scoop	-	Clean equipment room of
			stores department

DETAILED DESCRIPTION OF THE PLANT AND MACHINERY

Equipment List for Herbal Extraction Unit

Item No.1: Vertical Extractor 6KL

1.a Vertical Extractor

Design Cap.:- 6500 Ltrs. Working Cap.: - 6000 Ltrs.

Shape:- Vertical Cylindrical with dishends on both sides. Size: - Ø 1675 x 2750 mm

M.O.C:-

- a) Inner Shell: SS 304, 8.0 mm Thk.
- b) Top Dishend SS 304, 8.0 mm Thk
- c) Bottom Dishend SS 304, 8.0 mm Thk
- d) Outer Shell & Bottom Dishend: M.S. 8.0 mm Thk.
- e) Perforated plate:- SS 304, 10.0 mm Thk.

Design Parameter:

- a) Working Pr. :- 4 Kg/cm²
- b) Test Pr. :- 5 Kg/cm²
- c) Design Pr. :- 6 Kg/cm²

Vertical Extractor will have inlet, outlet, vapour outlet, Manhole (Top & Side) (2 Nos.), sight & view glass, Steam inlet, condensate outlet & two spare connections.

Note: Final nozzle orientation will be as desired and as per approved drawing

1.b SS Condensor

Area :- 15 M²

Single Pass. Shell & Tube type

M.O.C:- S.S. 304

Size: - Ø 370 x 2.0 Mtr. long.

Tube: - Ø1" x 2.0 mm Thk. ERW x 98 Nos.x 2.0 Mtr. long. Tube Plate: - 16/18 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 5 Nos.

Condensor will have vapour inlet, condensed outlet, non condensable outlet, cooling water inlet & outlet connection.

1.c SS Condensor

Area :- 6 M²

Single Pass. Shell & Tube type

M.O.C:- SS 304

Size: - Ø 314 x 1.5 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 52 Nos.x 1.5 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 4.5 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, outlet, non condensable outlet, cooling water inlet & outlet connection.

1.d SS Receiver

Max. Volume: - 225 Lts. Operating Capacity: - 200 Lts.

Shape: - Vertical Cylindrical with top & bottom conical Size:- Ø 600 x 800 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Receiver will have inlet, outlet, level gauge, other connections required by you & 4 Nos. SS 304

Legs with SS Pad

Inside & outside of the receiver will be matt finished.

Item No.2: Rotary Extractor 8KL

2.a S.S. Rotary Extractor Design Cap.:-8500 Ltrs. Working Cap.: -

8000 Ltrs.

Shape:-Horizontal Cylindrical with dishends on both sides. Size: - Ø 1750 x 3400 mm

Filters: 4 Nos. Perforated

Filter size: Ø 125 x 1800mm x 3.0 mm Thk.

M.O.C:-

a) Inner Shell: - SS 304, 8.0 mm Thk.

b) Dishends - SS 304, 10.0 mm Thk

c) Outer Shell (Jacket) - M.S. 6.0 mm Thk.

Design Parameter :-

a) Working Pr. :- 4 Kg/cm²

b) Test Pr. :- 5 Kg/cm²

c) Design Pr. :- 7 Kg/cm²

Extractor is fitted with reduction gear running at approximately 1.5-2.0 RPM (10.0 HP FLP Motor)

Extractor will have standard connections & fittings i.e., Solvent In & Out, Steam In & Condensate Out, Bearings, gearbox, pinion & Gear, 2 Nos. Manholes will be provided.

Note:1) Equipment drawing will be provided for your approval after confirm P.O is raised

2. Solvent Side Shaft will be cladded with SS 304 from inside

Inside the extractor will be matt finished, outer jacket will be painted with red oxide and other M.S. parts will be painted using standard colour.

2.b SS Condensor

Area :- 15 M²

Single Pass. Shell & Tube type

M.O.C:- S.S. 304

Size: - Ø 370 x 2.0 Mtr. long.

Tube: - Ø1" x 2.0 mm Thk. ERW x 98 Nos.x 2.0 Mtr. long. Tube Plate: - 16/18 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 5 Nos.

Condensor will have vapour inlet, condensed outlet, non condensable outlet, cooling water inlet & outlet connection.

2.c SS Condensor

Area :- 6 M²

Single Pass. Shell & Tube type

M.O.C:- SS 304

Size: - Ø 314 x 1.5 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 52 Nos.x 1.5 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 4.5 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, outlet, non condensable outlet, cooling waterinlet & outlet connection.

2.d SS Receiver

Max. Volume: - 1100 Lts. Operating Capacity: - 1000 Lts.

Shape: - Vertical Cylindrical with top flat & bottom conical Size:- Ø 1050 x 1250 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Receiver will have handhole, inlet, outlet, air vent, Level gauge connections & 4Nos. SS Legs with SS pad

Inside & outside of the tank will be matt finished.

Item No.3: Reactor 5KL

SS Reactor

Design Cap.:-5000 Ltrs. Working Cap.: - 5000 Ltrs.

Shape:- Vertical Cylindrical with dishends on both sides. Size: - Ø 1800 x 2000 mm

Stirrer - Anchor type

M.O.C:-

- a) Inner Shell: SS 304, 8.0 mm Thk.
- b) Top Dishend SS 304, 8.0 mm Thk
- c) Bottom Dishend SS 304, 8.0 mm Thk
- d) Outer Shell & Bottom Dishend: M.S. 8.0 mm Thk.

Design Parameter :-

- a) Working Pr. :- 4 Kg/cm²
- b) Test Pr. :- 5 Kg/cm²
- c) Design Pr. :- 6 Kg/cm²

Reactor will have inlet, outlet, vapour outlet, Top Manway (400 mm), sight & view glass, Steam inlet, condensate outlet & two spare connections.

Note: Final nozzle orientation will be as desired and as per approved drawing

Reactor will also have S.S. Agitator(Shaft 75mm) with FLP Geared Motor drive 10.0 HP x 45-48 rpm, bearing housing, Stuffing box, Mechanical Seal & 4 Nos. M.S. Pedastals.

Inside the equipment will be matt finished & M.S. parts will be painted with red oxide.

3.b SS Condensor

Area :- 20 M²

Single Pass. Shell & Tube type

M.O.C:- S.S. 304

Size: - Ø 396 x 3.0 Mtr. long.

Tube: - 25.4 mm x 2.0 mm Thk. ERW 90 Nos.x 3.0 Mtr. long. Tube Plate: - 20/22 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 5 Nos.

Condensor will have vapour inlet, condensed outlet, non

condensable outlet, cooling water inlet & outlet connection.

3.c SS Condensor

Area :- 10 M²

Single Pass. Shell & Tube type

M.O.C:- S.S. 304

Size: - Ø 346 x 2.0 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 68 Nos.x 2.0 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, condensed outlet, non condensable outlet, cooling water inlet & outlet connection.

3.d SS Receiver

Max. Volume: - 225 Lts. Operating Capacity: - 200 Lts.

Shape: - Vertical Cylindrical with top & bottom conical Size:- Ø 600 x 800 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Receiver will have inlet, outlet, level gauge, other connections required by you & 4 Nos. SS 304 Legs with SS Pad

Inside & outside of the receiver will be matt finished.

Item No.4: Reactor 3KL

4.a SS Reactor

Design Cap.:- 3300 Ltrs. Working Cap.: - 3000 Ltrs.

Shape: - Vertical Cylindrical with Top & Bottom dishends. Size: - Ø 1450 x 1875 mm (Cyl. Ht.)

Stirrer - Anchor type

M.O.C:-

a) Inner Shell: - SS 304, 6.0 mm Thk.

b) Top & Bottom dished - SS 304, 6.0 mm Thk

c) Outer Shell: - MS jacket 6.0 mm Thk.

Design Parameter :-

a) Working Pr. :- 4 Kg/cm²

b) Test Pr. :- 5 Kg/cm²

c) Design Pr. :- 6 Kg/cm²

Reactor will have Product inlet, outlet, vapour outlet, Manway, sight & view glass, Steam inlet, condensate outlet & two spare connections. Pressure Gauge, Safety valve, temperature gauge provision will be provided.

Note: Final nozzle orientation will be as desired and as per approved drawing

Reactor will also have S.S. Agitator (75 mm Shaft) with Geared Motor drive 7.5 HP x 35-40 rpm, bearing housing, Stuffing box, Mechanical Seal & 4 Nos. M.S. Pedastals.

Inside the reactor will be matt finished & M.S. parts will be painted with red oxide.

4.b Vapor Column with bends & Flanges

Size - 6" x 20'

MOC - SS 304, Sch.10

4.c SS Condensor

Area :- 15 M²

Single Pass. Shell & Tube type

M.O.C:- S.S. 304

Size: - Ø 370 x 2.0 Mtr. long.

Tube: - Ø1" x 2.0 mm Thk. ERW x 98 Nos.x 2.0 Mtr. long. Tube Plate: - 16/18 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 5 Nos.

Condensor will have vapour inlet, condensed outlet, non condensable outlet, cooling water inlet & outlet connection.

4.d SS Condensor

Area :- 6 M²

Single Pass. Shell & Tube type

M.O.C:- SS 304

Size: - Ø 314 x 1.5 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 52 Nos.x 1.5 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 4.5 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, outlet, non condensable outlet, cooling water inlet & outlet connection.

4.e SS Receiver

Max. Volume: - 225 Lts. Operating Capacity: - 200 Lts.

Shape: - Vertical Cylindrical with top & bottom conical Size:-Ø 600 x 800 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Receiver will have inlet, outlet, level gauge, other connections required by you & 4 Nos. SS 304

Legs with SS Pad

Inside & outside of the receiver will be matt finished.

Item No.5: Reactor 2KL

5.a SS Reactor

Design Cap.: - 2200 Ltrs. Working Cap.: - 2000 Ltrs.

Shape: - Vertical Cylindrical with Top & Bottom dishends. Size: - Ø 1300 x 1510 mm (Cyl. Ht.)

Stirrer - Anchor type

M.O.C:-

a) Inner Shell: - SS 304, 6.0 mm Thk.

b) Top & Bottom dished - SS 304, 6.0 mm Thk

c) Outer Shell: - MS jacket 6.0 mm Thk.

Design Parameter:

a) Working Pr. :- 4 Kg/cm²

b) Test Pr. :- 5 Kg/cm²

c) Design Pr. :- 6 Kg/cm²

Reactor will have Product inlet, outlet, vapour outlet, Manway, sight & view glass, Steam inlet, condensate outlet & two spare connections. Pressure Gauge, Safety valve, temperature gauge provision will be provided.

Note: Final nozzle orientation will be as desired and as per approved drawing

Reactor will also have S.S. Agitator (60 mm Shaft) with Geared Motor drive 5.0 HP x 35-40 rpm, bearing housing, Stuffing box, Mechanical Seal & 4 Nos. M.S. Pedastals.

Inside the reactor will be matt finished & M.S. parts will be painted with red oxide.

5.b Vapor Column with bends & Flanges

Size - 5" x 20'

MOC - SS 304, Sch.10

5.c SS Condensor

Area :- 10 M²

Single Pass. Shell & Tube type

M.O.C:- S.S. 304

Size: - Ø 346 x 2.0 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 68 Nos.x 2.0 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, condensed outlet, non condensable outlet, cooling water inlet & outlet connection.

5.d SS Condensor

Area :- 6 M²

Single Pass. Shell & Tube type

M.O.C:- SS 304

Size: - Ø 314 x 1.5 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 52 Nos.x 1.5 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 4.5 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, outlet, non condensable outlet, cooling water inlet & outlet connection.

5.e SS Receiver

Max. Volume: - 225 Lts. Operating Capacity: - 200 Lts.

Shape: - Vertical Cylindrical with top & bottom conical Size: - Ø 600 x 800 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Receiver will have inlet, outlet, level gauge, other connections required by you & 4 Nos. SS 304 Legs with SS Pad

Inside & outside of the receiver will be matt finished.

Item No.6: Reactor 1KL

6.a SS Reactor

Design Cap.:- 1100 Ltrs. Working Cap.: - 1000 Ltrs.

Shape: - Vertical Cylindrical with Top & Bottom dishends. Size: - Ø 1050 x 1250 mm (Cyl. Ht.)

Stirrer - Anchor type

M.O.C:-

a) Inner Shell: - SS 304, 5.0 mm Thk.

b) Top & Bottom dished - SS 304, 5.0 mm Thk

c) Outer Shell: - MS jacket 5.0 mm Thk.

Design Parameter:

a) Working Pr. :- 4 Kg/cm²

b) Test Pr. :- 5 Kg/cm²

c) Design Pr. :- 6 Kg/cm²

Reactor will have Product inlet, outlet, vapour outlet, Manway, sight & view glass, Steam inlet, condensate outlet & two spare connections. Pressure Gauge, Safety valve, temperature gauge provision will be provided.

Note: Final nozzle orientation will be as desired and as per approved drawing

Reactor will also have S.S. Agitator (50 mm Shaft) with Geared Motor drive 3.0 HP x 35-40 rpm, bearing housing, Stuffing box, Mechanical Seal & 4 Nos. M.S. Pedastals.

Inside the reactor will be matt finished & M.S. parts will be painted with red oxide.

6.b Vapor Column with bends & Flanges

Size - 5" x 20'

MOC - SS 304, Sch.10

6.c SS Condensor

Area :- 10 M²

Single Pass. Shell & Tube type

M.O.C:- S.S. 304

Size: - Ø 346 x 2.0 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 68 Nos.x 2.0 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, condensed outlet, non condensable outlet, cooling water inlet & outlet connection.

6.d SS Condensor

Area :- 6 M²

Single Pass. Shell & Tube type

M.O.C:- SS 304

Size: - Ø 314 x 1.5 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 52 Nos.x 1.5 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 4.5 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, outlet, non condensable outlet, cooling water inlet & outlet connection.

6.e SS Receiver

Max. Volume: - 225 Lts. Operating Capacity: - 200 Lts.

Shape: - Vertical Cylindrical with top & bottom conical Size:- Ø 600 x 800 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Receiver will have inlet, outlet, level gauge, other connections required by you & 4 Nos. SS 304 Legs with SS Pad

Inside & outside of the receiver will be matt finished.

Item No.7: GLR Reactor 3KL

7.a Glass Reactor

Design Cap.:- 3300 Ltrs. Working Cap.: - 3000 Ltrs.

Shape: - Vertical Cylindrical with Top & Bottom dishends. Size: - Ø 1450 x 1875 mm (Cyl. Ht.)

Stirrer – Anchortype

M.O.C:-

a) Inner Shell: - MS, 6.0 mm Thk. With Glass Lined

b) Top & Bottom dished – MS, 6.0 mm Thk with Glass Lined

c) Outer Shell: - MS jacket 6.0 mm Thk.

Design Parameter :-

a) Working Pr. :- 4 Kg/cm²

b) Test Pr. :- 5 Kg/cm²

c) Design Pr. :- 6 Kg/cm²

Glass Reactor will have Product inlet, outlet, vapour outlet, Manway, sight & view glass, Steam inlet, condensate outlet & two spare connections. Pressure Gauge, Safety valve, temperature gauge provision will be provided.

Note: Final nozzle orientation will be as desired and as per approved drawing

Glass Reactor will also have SS with Glass lined Agitator (75 mm Shaft) with Geared Motor drive 7.5 HP x 35-40 rpm, bearing housing,

Stuffing box, Mechanical Seal & 4 Nos. M.S. Pedastals.

7.b SS Condensor

Area :- 10 M²

Single Pass. Shell & Tube type

M.O.C:- S.S. 304

Size: - Ø 346 x 2.0 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 68 Nos.x 2.0 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, condensed outlet, non condensable outlet, cooling water

inlet & outlet connection.

7.c SS Condensor

Area :- 6 M²

Single Pass. Shell & Tube type

M.O.C:- SS 304

Size: - Ø 314 x 1.5 Mtr. long.

Tube: - Ø25.4mm x 2.0 mm Thk. ERW x 52 Nos.x 1.5 Mtr. long. Tube Plate: - 17/18 mm Thk.

Shell: - 4.5 mm Thk.

Baffle: - 2.0 mm Thk. x 3 Nos.

Condensor will have vapour inlet, outlet, non condensable outlet, cooling waterinlet & outlet

connection.

7.d SS Receiver

Max. Volume: - 225 Lts. Operating Capacity: - 200 Lts.

Shape: - Vertical Cylindrical with top & bottom conical Size:- Ø 600 x 800 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Receiver will have inlet, outlet, level gauge, other connections required by you & 4 Nos. SS 304

Legs with SS Pad

Inside & outside of the receiver will be matt finished.

Item No.8: RFE Concentrator

8 FFE CONCENTRATOR MOC: - SS 304

Evaporation Rate (Alcoholic): - 650 Ltr / hr. Evaporation Rate (Hydroalcoholic 70:30): -

600 Ltr/hr Evaporation Rate (Water): - 500 Ltr/hr

Note:

Evaporation Rate depends on nature of the product also. Cooling water temperature should be Min. 15 deg.C and chilled water should be provided in secondary condensor.

Evaporator Consists of following:-

a) Feed / Recirculation Balance Tank - 01 No.

Cap:- 2000 Ltrs

M.O.C:- S.S. 304, 5.0 mm Thk.

Size: Ø 1325 x 1500 mm

Shape: - Vertical Cylindrical with Top & Bottom conical along with inlet, outlet, return, vent, Level Indicator & Hand hole Connection is provided.

b) Product Pump = 01 No.

Cap: - 2000 Ltrs / hr.

M.O.C:- S.S. 316, with Double Mechanical Seal & Motor Drive of

1.5 HP of Reputed make suitable to transfer Feed

c) Feed Pump = 01 No.

Cap: - 1500 Ltrs / hr.

M.O.C:- S.S. 316, with Single Mechanical Seal & Motor Drive of

1.0 HP of Reputed make suitable to transfer product

d) Calandria = 01 No.

It will be vertical Cylindrical with top & Bottom dished Size: - Ø 690 x 4.2 Mtr. long.

i) Tubular Heat Exchanger

Area :- 54 M²

Size: - Ø 690 x 3.0 Mtr. long.

Tube: - Ø 38 mm x 1.6 mm Thk. Seamless x 150 Nos.x 3.0 Mtr. long.

ii) Distributor

To distribute the Product Through all the tubes.

iii) Receiver

To Collect the Product after Passing Through Tubes. It will have Product outlet, vapour outlet & Manway Connections.

Calandria also have steam inlet and Condensate outlet

connections.

e) Vapour Separator = 01 No.

Size: Ø800 x 1000 mm

It will Separate / Collect the vapour from the Product after passing through the tubes.

It will have vapour inlet, outlet, temperature indicator connections.

f) SS 304 Tubular Condenser = 02 Nos.

i) Area: - 38 M² - 01 No. Size: - Ø 600 x 3.0 Mtr. long.

Tube: - Ø 38 mm x 1.6 mm Thk. Seamless x 105 Nos.x 3.0 Mtr. long. Tube Plate: - 20/22 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 5 Nos.

ii) Area: - 15 M² - 01 No. Size: - Ø 345 x 3.0 Mtr. long.

Tube: - Ø 25.4 mm x 1.6 mm Thk. ERW x 64 Nos.x 3.0 Mtr. long. Tube Plate: - 20/22 mm Thk.

Shell: - 5.0 mm Thk.

Baffle: - 2.0 mm Thk. x 5 Nos.

It will have vapour inlet, outlet, condensed outlet connections. It will also have cooling tower / chilled water inlet & outlet connections.

g) Condensate Collection Vessel = 01 No.

Cap: - 500 Ltrs.

M.O.C:- S.S. 304, 5.0 mm Thk.

Size: Ø 725 x 1200 mm

Shape: - Horizontal Cylindrical with dish end both sides. Inlet, outlet, spare, vent, view glass connections will be provided

h) Condensate Pump.

Cap: - 2000 Ltrs / hr.

With Double Mechanical Seal & drive Motor of 1.5 HP.

It will transfer condensate from collection vessel to storage

tank.

Item No9: Liquid Liquid Extractor

9 Liquid Liquid Extractor Design Cap.:- 6500 Ltrs. Working Cap.:

- 6000 Ltrs.

Shape: - Vertical Cylindrical with Top & Bottom dishends. Size: - Ø 1675 x 2750 mm (Cyl. Ht.)

Stirrer - Pitched Blade Turbine type

M.O.C:-

a) Shell: - S.S. 304, 6.0 mm Thk.

b) Top & Bottom dished - SS 304, 6.0 mm Thk

Extractor will have Product inlet, outlet, Manway, sight & view glass & two spare connections.

Note: Final nozzle orientation will be as desired and as per approved drawing

Extractor will also have S.S. Agitator with Geared Motor drive 7.5 HP x 40-45 rpm, bearing housing, Stuffing box & 4 Nos. S.S. Pedastals.

Inside & outside of the extractor will be matt finished

Item No.10: Solvent Distillation Unit

10 Solvent Distillation Unit Capacity: - 800 Lt/hr Operating

Capacity:- 800 Lt/hr

Shape: - Vertical with dishends on both sides Shell Size: - Ø 1290 x 6000 mm

Jacket Size :- Ø 1400 x 5800 mm

M.O.C:-

a) Shell: - SS 304 6.0 mm Thk.

b) Dishends: - SS 304 8.0 mm Thk.

SS 304 U Bundle

Area :- 8 M²

Single Pass. U bundle.

M.O.C:- S.S. 304

Size: - Ø 350 x 2.0 Mtr. long.

Tube: - Ø1" x 1.6 mm Thk. ERW x 68 Nos.x 2.0 Mtr. long. Tube Plate: - 22 mm Thk.

Header of U-bundle:- SS with standard design

Item No.11: SS Tank 10KL

11 SS Storage Tank

Max. Volume: - 10.5 KL. Operating Capacity: - 10.0 KL.

Shape: - Vertical Cylindrical with top & bottom conical Size:- Ø 1900 x 3750 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Tank will have manhole, inlet, outlet, Level gauge & other connections required by you, 4 Nos. SS Leas

Inside & outside of the tank will be matt finished.

Item No.12: SS Tank 5KL

12 SS Storage Tank

Max. Volume: - 5.4 KL. Operating Capacity: - 5.0 KL.

Shape: - Vertical Cylindrical with top & bottom conical Size:-Ø 1750 x 2200 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Tank will have manhole, inlet, outlet, Level gauge & other connections required by you, 4 Nos SS Legs

Inside & outside of the tank will be matt finished.

Item No.13: SS Tank 3KL

13 SS Storage Tank

Max. Volume: - 3.3 KL. Operating Capacity: - 3.0 KL.

Shape: - Vertical Cylindrical with top & bottom conical Size: - Ø 1500 x 1750 mm

M.O.C:-

a) Shell: - SS 304 5.0 mm Thk.

b) Top & Bottom: - SS 304 5.0 mm Thk.

Tank will have manhole, inlet, outlet, Level gauge & other connections required by you, 4 Nos SS Legs

Inside & outside of the tank will be matt finished.

Item No.14: SS Filter Press

14 SS/PP FILTER PRESS

Size: 24 Trays

Filter Press will have Inlet, outlet, Vent, Air Purging, PP Filter Plates &

SS/MS base Structure

Item No.15: Centrifuge 48"

15 SS Centrifuge

Capacity - 48" GMP model

M.O.C:- Contact parts SS 316, Non contact parts SS 304 Size: - 48"

4 Point Suspension Top Discharge Bag lifting type Motor: 10.0 HP 1440 RPM FLP

Basket RPM: Max 900 RPM in 4 stages

Finish: External Matt finish, Internal Mirror Finish

Item No.16: Agitated Nutsch Filter Dryer 3KL

16 Agitated Nutsch Filter Dryer Design Cap: 3300Lts Working Cap.

: 3000ts

Size:- Ø 1450 x 1875 mm

M.O.C:-

- a) Shell: S.S. 304, 6.0 mm Thk.
- b) Bottom dished SS 304, 6.0 mm Thk
- c) Filter plate SS 304 8mm Thk perforated plate

Agitated Nutch Filter Dryer will have outlet, view glass & other standard connections

Item No.17: Nutsch Filter

17 Nutsch Filter

Design Cap: 2000Lts Working Cap.: 1500lts Size:- Ø 1300 x

1650 mm M.O.C:-

- a) Shell: S.S. 304, 6.0 mm Thk.
- b) Bottom dished SS 304, 6.0 mm Thk
- c) Filter plate SS 304 8mm Thk perforated plate

Nutsch Filter will have outlet, view glass & other standard connections

Item No.18: Membrane Distillation Filter

18 Membrane Distillation Filter Design Cap: 2000Lts Working Cap.

: 1500lts

Size:- Ø 1300 x 1650 mm

M.O.C:-

a) Shell: - S.S. 304, 6.0 mm Thk.

b) Bottom dished - SS 304, 6.0 mm Thk

Membrane Distillation Filter will have outlet, view glass & other

standard connections

Item No.19: Water Separator

19 Water Separator

Design Cap.:- 3300 Ltrs. Working Cap.: - 3000 Ltrs.

Shape: - Vertical Cylindrical with Top & Bottom dishends. Size: - Ø 1450 x 1875 mm (Cyl. Ht.)

Stirrer - Pitched Blade Turbine type

M.O.C:-

a) Shell: - S.S. 304, 6.0 mm Thk.

b) Top & Bottom dished - SS 304, 6.0 mm Thk

Separator will have Product inlet, outlet, Manway, sight & view glass & two spare connections.

Separator will also have S.S. Agitator with Geared Motor drive 7.5 HP x 40-45 rpm, bearing housing, Stuffing box & 4 Nos. S.S. Pedastals.

Inside & outside of the Separator will be matt finished

Item No.20: Decanter

20 Decantor

Design Cap.:- 2200 Ltrs. Working Cap.: - 2000 Ltrs.

Shape: - Vertical Cylindrical with Top & Bottom Conical Size: - Ø 1300 x 1650 mm (Cyl. Ht.)

Stirrer - Pitched Blade Turbine type

M.O.C:-

a) Shell: - S.S. 304, 6.0 mm Thk.

b) Top & Bottom dished - SS 304, 6.0 mm Thk

Decantor will have inlet, outlet, Manway, sight & view glass & two spare connections.

Decantor will also have S.S. Agitator with Geared Motor drive 5.0 HP x 40-45 rpm, bearing housing, Stuffing box & 4 Nos. S.S. Pedastals.

Inside & outside of the Decantor will be matt finished

Item No.21: Concentration Columns

21 Concentration Columns MOC: - SS 304

Concentration Column Consists of following:-

a) Feed / Recirculation Balance Tank - 01 No.

Cap:- 2000 Ltrs

M.O.C:- S.S. 304, 5.0 mm Thk. Size: Ø 1325 x 1500 mm

Shape: - Vertical Cylindrical with Top & Bottom conical along with inlet, outlet, return, vent, Level Indicator & Hand hole Connection is provided.

b) Product Pump = 01 No.

Cap: - 2000 Ltrs / hr.

M.O.C:- S.S. 316, with Double Mechanical Seal & Motor Drive of

1.5 HP of Reputed make suitable to transfer Feed

c) Feed Pump = 01 No.

Cap: - 1500 Ltrs / hr.

M.O.C:- S.S. 316, with Single Mechanical Seal & Motor Drive of

1.0 HP of Reputed make suitable to transfer product

d) Calandria = 01 No.

It will be vertical Cylindrical with top & Bottom dished Size: - Ø 690 x 4.2 Mtr. long.

i) Tubular Heat Exchanger

Area :- 54 M²

Size: - Ø 690 x 3.0 Mtr. long.

Tube: - Ø 38 mm x 1.6 mm Thk. Seamless x 150 Nos.x 3.0 Mtr. long.

e) Vapour Separator = 01 No.

Size: Ø800 X 1000 mm

It will Separate /Collect the vapour from the product after passing through the tubes

It will have vapour inlet, outlet, temperature indicator connections.

f) SS 304 Tubular Condenser – 2 Nos.

i) Area: 38 M² – 01 No.

g) Condensate Collection Vessel-1No.

Cap: 500 Ltr.

MOC: SS 304.5mm Thk Size: Ø 725 x 1200 mm

Shape: Horizontal Cylindrical with dish end both sides. Inlet, Outlet, spare, vent, view glass connections will be provided.

h)Condensate Pump

Cap: 200 Ltrs./hr.

With double mechanical seal & drive moytor of 1.5 HP. It will transfer condensate from collection vessel to storage tank.

Item No.22: Mixing Tanks 2 KL

22 Mixing Tanks

Design Cap.:- 2200 Ltrs. Working Cap.: - 2000 Ltrs.

Shape: - Vertical Cylindrical with Top & Bottom dishends. Size: - Ø 1300 x 1650 mm (Cyl. Ht.)

Stirrer - Pitched Blade Turbine type

M.O.C:-

a) Shell: - S.S. 304, 5.0 mm Thk.

b) Top & Bottom dished - SS 304, 5.0 mm Thk

Mixing Tank will have Product inlet, outlet, Manway, sight & view glass & two spare connections.

Mixing Tank will also have S.S. Agitator with Geared Motor drive 5.0 HP x 40-45 rpm, bearing housing, Stuffing box & 4 Nos. S.S.

Pedastals.

Inside & outside of the Mixing Tank will be matt finished

Item No.23: Vacuum Trav Drver

SS 316 Vacuum Tray Dryer (48 Trays) c-GMP model 23

(with Trays, Condensor, Receiver, Skirting & Insulation)

Technical Specifications

a. Heating Shelves : 1250 mm x 830mm (Hallow type) b. No. of Shelves : 16 + 1 (tested at 5kg/cm2)

c. No. of Trays/shelf 3

d. Thickness of Shelf T & B : 3.15mm SS 316

e. Stiffener inside of shelf 20mm, 3mm Thk

: SS 304 12mm Square bars Frame support for shelf: Rect. Pipe 40mm x

: Rect. Pipe 40 mm x 20mm x 3 mm Thk f. Frame support for shelf

g. No. of Trays : 48, SS 316

: 812mm x 406mm x 32mm (LxWxH) h.Dimension of Tray

i. Thickness of Tray : 1.2mm i. Volume of one Tray : 10 Ltrs

k. Max powder loading/tray : 3-4 kgs (Depending on Bulk density)

I. C/C distance between shelf : 100mm

m. Steam/Hot water header : 40mm pipe, 2.5mm Thk.

n. Valves: 1" (Vacuum release/Nitrogen purge/Drain/Condesor outlet

o. Heating Media : Steam/Hot water p. Desing Temperature : 0-150 deg.C

: 0 - 760mm Hg. (Full Vacuum) q. Design Vacuum r. Instrumentation (Optional) : Vacuum Gauge/Digital indicator s. RTD Sensor/Controller : 150mm length PT-100 RTD Sensor and digital FLP Temp. Indicator

t. Pressure Relief Valve : ½ BSP Pressure relief valve on body

u.Condensor Capacity

v. Receiver Capacity : 75L, Horizontal with 1" drain valve and view glass

w. Overall Dimensions : 2200 x 1950 x 2000 +/- 100 mm

with condensor & receiver

Material of Construction:

: Vertical, Rectangular x. Type : SS 316, 6mm Thk. y. Vacuum Chamber body

z. Vacuum Chamber door : SS 316 6mm Thk. and SS 316 45mm

Square bar welded surrounding

d. Shelves MOC : SS 316 3.15mm Thk. and 12mm Reinforced SS 304 bars inside

: SS 316 1.2mm Thk. e. Trays MOC

f. External non-contact parts : SS 304

: 100 and 75mm MS 'C' Channel g. Stiffeners

h. Insulation Thickness : 75mm i. External finish : Mirror i. Internal finish : Mirror : Rockwool k. Insulation material

I. Legs : SS 304 8.0mm Heavy duty legs

: 1" Connection from the centre of the VTD to rear bottom m. Drain

n. Toughened glass : 100mm dia - 2Nos.

: SS 304 6.0mm Heavy duty o. Hinges

p. Locking bolts : SS 304 Ø40.0mm square threaded q. Door sealing : 16mm Square silicon food grade gasket

r. Inlet and Outlet Header : SS 304, 11/2" Sch.40 s. Sensor Port Provision : SS 316, 11/2" Coupling

t. Fasteners in side the chamber : SS 316

u. Insulation : Total body with door **Design Specifications**

a. Main Bodyb. Condensor and Receiverc. Shelves760 mm Hg.760 mm Hg.5.0 Kg/cm2

d. Silicon Rubber : to withstand upto 200 deg.C

e. Temperature : 150 deg.C f. Tray Capacity : 10 Ltrs

Testing Specifications

a. Main Body : 750 - 760 mm Hg. b. Conderson & Receiver : 750 - 760 mm Hg. c. Shelve : 5.0 Kg/cm2

Condensor 2.0 M2 SS 316 Tubes & SS 304 Shell

120 Lts Receiver SS 316, 3.0 mm thick SS 316 Rupture Dist (200 x 200)

Item No.24: Rotary Vacuum Paddle Dryer (2.5 KL)

24 Rotary Vacuum Paddle Dryer (2.5 KL) c-GMP model

(with Condensor, Receiver & Insulation)

Technical Specifications

a. Gross Volume : 2500 Lts b. Working Volume : 1500 Lts c. Capacity : 800 Kgs

d. Shell Dia & Length : 1100 mm & 2750 mm

e. Dust Collector Filter Area : 1.5 M² f. RPM of Paddle 8

g. Charging & Discharging Ht. : 2450 mm & 750 mm h. Charging & Discharging Port : 450 mm & 350 mm

i. Gear Box : 7"
j. Main Drive Motor : 15.0 HP
k. Heat Transfer Area : 10.2 M²

Overall Dimensions

a. Length (with Cyclone) : ~ 4750 mm b. Width (with Safety Guards) : ~ 1775 mm c. Height : ~ 4150 mm d. Approximate Weight : ~ 3200 Kgs

Thickness

a. Shell & End Plates : 10.0 mm & 12.0 mm b. Heating Jacket : 3.0 mm Limpet c. Insulation Jacket : 60.0 mm

d. Paddle Shaft & Drum Dia : 120 mm & 350 mm

Utility Connections

a. Limpet Steam Inlet & Outlet : 1" NB
b. Condensor Inlet & Outlet : 1" NB
c. Vacuum Connection : 1.5" NB
d. Nitrogen Purge : ½" NB
e. Vacuum Release : ½" NB
f. Receiver Drain : 1" NB
g. Hot Water Jacket Drain : 1" NB

Design Data

a. Shell Design Pressure : Full Vacuum
b. Shell Test Pressure : FV / 1 Bar
c. Limpet Coil Design Pressure : 3.5 Bar
d. Limpet Coil Test Pressure : 5.0 Bar
e. Design Temperature : 150 Deg C

Finish

Inner/ Contact Parts 320 Grit Mirror Finish

Non Contact Parts / Outside 180 Grit Matt Finish

Material of Construction

All Product and Vapor Contact Parts in SS 316 L and Non Contact Parts in SS 304 / MS with SS 304 Cladding

- a. Shell & End Plates in SS 316
- b. Hallow Shaft and Paddles in SS 316
- c. Heating Limpet on Shell in SS 304
- d. Stand & Structure in SS 304 / MS with SS 304 Cladding
- e. Drive unit enclosed in SS 304 Cover
- f. Dry Mechanical Seal (Rolon Make) at Paddle Shaft
- g. Rotary Union for Paddle Steam In & Out
- h. FLP Motor & Worm Gear Box enclosed with SS 304
- i. FLP Operating Panel with SS 304 enclosure consisting of Push Button, Set Buttons, RPM Indicator, Temp. Indicators etc.,
- j. Non FLP Control Panel (MS) with MCB, Contactor etc.
- k. Pulse Jet Valve on Dust Collector
- I. Provision for Nitrogen purging/vacuum release
- m. Drive: Gear Box to Paddle shaft gear drive & gearbox to motor, Bull Gear Drive
- n. Online Sampling Port without vacuum break

Item No.25: Multimill

25 Multimill

Working Capacity - 250 Kg/hr

Bulk Density of powder - 0.3 to 0.9 g/cc Phase - Crystalline Solid

Operational hours – 10 hours/day Screen (mesh) – 40,60,100,120 mesh

Drum – SS 316L, 180 Grit mirror finish Screen – SS 316L, 240 Grit mirror

finish Charging hopper – SS 316L

Discharge chute – SS 316L Blade – SS 316L

Motor type – 5.0 HP TEFC, FLP

Lubricant – Food grade, suitable of high temperature Contact surfaces – 240 grit, electropolished

 $Indirect \, contact \, surfaces \, -240 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, Non \, contact \, surface \, -180 \, grit, \, mirror \, finish \, -180 \, grit, \, mirror \, -$

polish Working area Temp - 23 ± 2°C

Relative humidity – 50% ± 5% Clean room class – 100,000 Hazard

level – Flame proof area

Inside & outside of the tank will be matt finished.

VFD with RPM Regulator

Item No.26: Vibro Sifter

26 Vibro sifter

Working capacity - 250 kg/hr Diameter - 36"

Bulk density – 0.3 – 0.9 g/cc Phase – crystalline solid Operational time

- 10hrs/day Power supply - 415V/3Ph/50Hz Screen (mesh) -

40,60,100 mesh

Drum - SS 316L, 180 grit mirror finish Screen - SS 316L, 240 grit mirror

finish Charging hopper - SS 316L

Discharge chute - SS 316L Fasteners - SS 304

Motor type – flameproof

Lubricant - Food grade, suitable for high temperature Contact surfaces - 240 grit,

electropolished

Non contact surface – 180 grit, mirror polish

Item No.27: Double Cone Blender

27 Double Cone Blender

Working capacity - 1000 liter (500 kg powder blending) TOTAL Vol. 1000L

Specific gravity - 0.65 - 1.5

Phase - Liquids & syrups

Motor - Flame proof

MOC contact part - SS 316L

Non-contact part - SS 304

Charging hopper - SS 316 (upper dia-350mm, lower dia 190mm

Charging discharging opening – 200mm (easy removable)

Operational time - 18hrs/day

Instrumentation – temp, vacuum, pressure gauge

5.0 Hp's VFD with Panel board (RPM 1 - 6)

Item No.28: Double Cone Blender

28 Double Cone Blender

Working capacity - 2000 liter (1000 kg powder blending) TOTAL Vol. 2000L

Specific gravity - 0.65 - 1.5 Phase - Liquids & syrups Motor -

Flame proof

MOC contact part - SS 316L Non contact part - SS 304

Charging hopper - SS 316 (upper dia-350mm, lower dia 190mm Charging discharging opening -

200mm (easy removable) Operational time - 18hrs/day

Instrumentation – temp, vacuum, pressure gauge

7.5 Hp's VFD with Panel board (RPM 1 - 6)

Item No.29: Utilities & Pumps

29 Cooling Tower 400 TR including 15.0HP Monobloc pump

50.0TR Air Cooled Chilling Unit

RO System 2.5m3/hr (Standard make)

Coal/Wood/Petcoke fired Boiler 3000kg/hr (Thermax/IBL make)

MS Chimney (as per standard)

Softner 3.0m3/hr (Thermax/any standard make)

Hot Water System

Air Compressor 7.5HP (ELGI make)

SS Circulation/Transfer Pumps with motors (Standard make)

Water Ring Vaccum Pump

Oil Vacuum Pump/high vacuum

Nitrogenator

ETP Liquid Effluent 10 KL/Day

ETP Treated Effluent 7 KL/Day

Briquette Plant

Dosing Pumps

PLANT ERECTION & PIPING

Fabrication & Erection of Structure required to install Process equipments including material & labor.

SS 316 pipeline connections from strorage tanks, Reactors, condensors, receivers, transfer pumps including matl. & labor.

SS/MS/CI Valves, fittings, pressure guages, temperature guages, vaccuum guages, safety valves, air vents etc.

MS Pipeline from utility area including piping, valves & fittings along with material & labor.

ELECTRICAL & FITTINGS

Electrical panels, cabling (armoured), earth pits, push buttons, digital temperature indicators with sensors including material & labor

INSULATION

50mm Mineral wool insulation on Reactors, FFE, Vapor lines, Steam line & condensate line. GI Cladding on Reactor & FFE. Aluminum cladding on Steam line & condensate line. 50mm Thermocol Insulation & Aluminum cladding on chilling line.

Laboratory Equipment List

Item No.1: Weighing Balance

1 PIONEER® PHARMACY,

BALANCE with internal calibration MODEL: PXP225D Make: OHAUS (SUBSIDIARY OF METTLER TOLEDO)

HSN CODE: 90160010

Item No.2: Weighing Balance

2. RING WATER BATH -Inner-SS

304grade-Outer-SS 304 grade. Digital Control

Number of Holes:6 Hole Model:RWB6 Size:35X25X10

Power Consumption: 2000W HSN CODE: 84198990

Item No.3: Conductivity Meter

3 Orion 3 Star Conductivity Meter Make: Thermo HSN Code:90279090

Item No.4: pH Meter

4 Ohaus pH Meter

Model: ST5000-F

pH Calibration 1-9 points HSN Code:90279090

Item No.5: Bacteriological Incubator

5 Bacteriological Incubator + 10 °C above ambient to 65°C. Ducted-Inner-SS-304grade-SS-304(320Lts)

Model: BI-D-24- SS304

Inner Dimension (mm): 600 x600 x900

Power Consumption: 1000W No of Trays: 3No

ISN CODE:84198990

Item No.6: Vacuum Pump

6 Indigenous Single stage oil free, Vacuum Pump, HSN Code: 84141000,

Specification:

1) Max Flow (Ltrs/min): 45

2) Max Vacuum (In Hg): 22"

3)Max Press (PSig): 40

4)Motor HP: 1/8

Item No.7: UV Spectrophotometer

7 UV Spectrophotometer with UV Probe software Make: Shimadzu, Model:1900 HSN Code:90279090

Item No.8: Gas Chromatography

8 GC 2014Plus along with headspace with autosampler consists of,

a)SPL Injector and FID detector

b)Autosampler:AOC 20Series

Make: Shimadzu Model:GC 2014 HSN Code: 90279090

Item No.9: HPLC

Shimadzu Prominence Low-pressure Gradient HPLC with UV Detector and LC-Solution software.

Make:Shimadzu

Model: Prominence

- PUMP (LC-20AD)-1No
- Degasser(DGU-20A5)-1No
- LPGE Unit—1No
- Gradient Mixer -1 No,
- UV Detector (SPD 20A)- 1No
- Auto Injector with cooler(SIL- 20AC)-1No
- Column Oven-CTO-10ASvp-1No
- Communication Bus Module (CBM-20Alite)1No

Solvent Tray-1No

Item No.10: Hot Air Oven

10 HOT AIR OVEN

HOT AIR OVEN -200°C-Inner-SS

304grade-Outer-MS Powder coated Specification:

Capacity: 320Liters Model: HAO-D-24/36-200

Inner Dimension (mm): 600 x600 x900 Outer Dimension (mm): 920 x850 x 1400 Power: 3000W

Number of trays: 03 HSN Code:84191920

Item No.11: BOD Incubator

11 BOD Incubator + 10 °C above ambient to 65°C. Ducted-Inner- SS-304grade-SS-304(340Lts)

Model: BOD-12- SS304

Inner Dimension (mm): 600 x550 x1050 Outer Dimension(mm): 740 x1030 x 1830 Power Consumption

:3000W

No of Trays:3No HSN CODE:84198990

Item No.12: HPLC

12 HEATING MANTLE

HSN Code: 84191190

SPECIFICATIONS:

- Insulation: Gap between the mantle and outer chamber is filled with glass wool insulation.
- Capacity in Litres: 500ml
- Body: Non-rusting Aluminum duly

Item No.13: Hot Plate

13 HOT PLATE - 300°C-Top Plate -304 grade-

Outer-SS 304 grade Model: HP-1218-304 Size:12X18 inch

Power Consumption: 2000W

Item No.14: Viscometer

14 Viscometer Brand: Brookfield Model: RVDVE

SPECIFICATION

Please refer enclosed Catalog for technical

HSN CODE:90279090

Item No.15: Refractometer

15 Refractometer Brand: Hanna Model: HI96800

Sugar Content Range: 0.0 to 85.0% Brix; 1.3300 to 1.5080 nD; 1.3330 to 1.5040 nD₂₀

Sugar Content Resolution: 0.1 % Brix; 0.0001 nD; 0.0001 nD₂₀

Sugar Content Accuracy: ±0.2% Brix;

 $\pm 0.0005 \, \text{nD}; \, \pm 0.0005 \, \text{nD}_{20}$

Temperature Range: 0 to 80°C (32 to 176°F) • Temperature Resolution 0.1°C (0.1°F)

Temperature Accuracy: ±0.3 °C (±0.5°F)

Temperature Compensation: automatic between 10 and 40°C (50 to 104°F)

Battery Type/Life: 9V / approximately 5000 readings Minimum Sample Volume: 100 µL (to cover prism totally) Sample Cell: stainless steel ring and flint glass prism

HSN CODE:90279090

Item No.16: Weighing Machine

Standard Weight F1 Class 23 nos SS Sheet weight 1mg to 200g
With NABL Calibration Certificate, HSN Code: 8423

Item No.17: Polarimeter

17.

Polarimeter

Technical Information

- Measurement range ± 180°
- Division Value 1°
- Reading 0.05°
- Magnifying Factor of the
- Magnifying Glass 4 times
- Monochromatic Light Source (Sodium Lamp)
- Gross Weight 7.6kg
- Overall dimensions [L X W X H mm] 600 X 220 X 400

Item No.18: Moisture Meter

18

Moisture Analyzers

Model: MB 95

Make: Ohaus(SUBSIDIARY OF METTLER TOLEDO) WITH DOT MATRIX PRINTER WITH DATE, TIME

AND PASSWORD PROTECTION AND VALIDATION CHARGES

- HSN CODE: 8423
- Maximum Capacity 90 g
- Pan Size 90 mm
- Heater Type Halogen Lamp
- Communication USB host x 2; USB device; RS232
- Dimensions 7.9 in x 13.98 in x 8.31 in (180 mm x 355 mm x 211 mm)
- Display Full-Color 4.3 in Touchscreen WQVGA
- Heating Profiles Standard; Ramp; Step; Fast
- In-use cover included
- Moisture Range 0 % 100 %
- Net Weight 11.53 lb (5.23 kg)
- Operating Range (Temp.) 10 °C 40 °C
- Power 200 240 VAC 2.5A 50/60 Hz
- Sample Size 0.5 g 90 g
- Shut-Off Criteria Manual; Timed; Automatic Preset Weight Loss/Time
- Temperature Range 40 °C 200 °C
- Test Library 20
- Units of Measurement Gram; %MC; %RG; %DC
- Working Environment 50°F 104°F, 85%RH, non-condensing (10°C 40°C, 85%RH, non-condensing)

Item No.19: Water Purification System for HPLC

Water purification System for HPLC and dissolution Instrument with 100Lts tank capacity
Make: Lablink

Note: Detailed specification for the major equipment's is listed above. Other all the equipment's can be purchased as per requirement.

Indicative Pictures of Equipments



Equipment Vertical Extractor Application Herb Extraction



Equipment: Rotary Extractor Application: Herb Extraction



Equipment - Vertical Reactor Application - Miscella Reaction.



Equipment: SS Storage Tank Application: Liquid Extract Storage



Equipment: Rising Film Evaporator Application: Miscella Concentration



Equipment: Water Separator

Application: Separates Water or lighter liquid from heavy



Equipment: Mixing Tank Application: Liquid Mixture



Equipment: Agitated Nutsch Filter Dryer (ANFD) Application: Semi liquid filtration and drying equipment



Equipment: Rapid Mixer Granulator (RMG). Application: FG Mixer and granules-making

machine





Equipment: Rotary Dryer Application: Bulk Semi Liquid dryer to powder



Equipment: Centrifugal Transfer Pump Application: Transfer of miscella between equipment



Equipment: Membrane Filter Application: Filtration Equipment



Equipment: Multi Column Chromatography.

Application: Higher purification of extractive



Equipment: Centrifuge Application: Extractive Filteration Equipment



Equipment: Filter Press Application: Filtration of resinous material



Equipment: Decanter Application: Horizontal decanting system



Equipment: Seiving Machine Application: Particle Size Sorter



Equipment: Air Compressor

Application: Compressed Air Generator



Equipment : Autoclave Application : Extract Sterilizing Machine



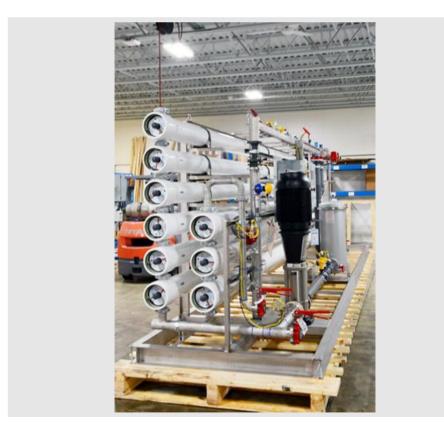
Equipment: Fluid Bed Dryer. Application: Water Insoluble Extract drying system.



Equipment: Dyanomill. Application: Wet Grinding System.



Equipment: Double Cone Blender. Application: Powder homogenizer.



Equipment: Reverse Osmosis System. Application: Water purification & demineralization.



Equipment: Vacuum Tray Dryer.
Application: Heat Sensitive Extract drying system.



Equipment: Multimill. Application: Milling of dry extract to powder



Equipment: Reactor.
Application: Sensitive and controlled reaction system.



Equipment: Chilling Plant. Application: Chilled water supply for condensation.



Equipment: Spray Dryer.

Application: Bulk Water-Soluble Extract Drying System.



Equipment: Effluent Treatment Plant. Application: Waste water treatment unit.



Equipment: Cooling Tower.

Application: Cooled water circulation to reaction vessel.



Equipment: Steam Boiler. Application: Steam producing machine.



Equipment: AHU. Application: Air Handling Unit.



Equipment: Roll Compactor. Application: Powder bulk density enhancement machine.



Equipment: SS Pipelines & Valves. Application: Material Transfer.

Herbal Extraction Unit Electrification & Electric Load

Sr. No.	Description	Nos
1	Total Motor Power in HP	760
2	Total KW	567
3	Total Working Hours/Day	8
4	total Working Days/Year	300
5	Total KwH	1360704
6	Average Unit Cost in Rs.	7

This includes the scope of Supply, Transportation installation, testing & commissioning of equipment's/panels as listed below.

- The main equipment's 11 KV LBS + Metering Panel equipment's/panels as listed below. The main equipment's 11 KV LBS + Metering Panel/ Transformer / LT panels shall be supplied by Client as a free issue Material to contractor or Installation.
- Contractor to consider all consumable required for Installation for free issue material including all Hardware. HT & LT cables / Light fixtures / UPS System / Flameproof items / Distribution Boards / Structural Steel / Consumable items like GI cable tray and Accessories , Floor & Wall Raceway and accessories , conduits & conduits accessories
- ,Earthing material ,Flexible wire for point wiring , Cable glands , Networking System Material , CCTV System , Access Control System , Door Interlock System etc shall be supplied by contractor along with erection materials and hardware.
- The equipment's supplied by Client and contractor scope of supply material shall be unloaded from transport shiEed to owner's store, if store is not ready so shiEing to temporary store, resiEed from owner's store/temporary store to place of erection, unpacking, site assembly of loosely furnished accessories, installation on foundation (civil work done by owner), proper alignment, levelling, tightening of bus bars with required torque under supervision and instruction of panel manufacturer.
- Fixing of steel supporting channels, grip bolts, anchor bolts and all other accessories as require & minor civil works, touch up paint but not limited to but complete complete the work in all respect respect ready for operation operation & to the entire satisfaction satisfaction of Engineer-Engineer In-charge.

Water Requirements for the Unit 45 KL per day

Maintenance Plan

As per the history card maintenance schedule will be planned by the site maintenance team in coordination with production team.

Maintenance Plan for Plant & Machinery

Adequate maintenance of plant and equipment is necessary to ensure that the plant and equipment is working reliably and effectively. Maintenance can be part of a planned programme or may have to be carried out at short notice aEer a breakdown. It is carried out to prevent equipment problems and to put fault right. It always involves non-routine activities and can expose those involved and others as well to a range of risks.

An effective maintenance programme can result into more reliable plant and equipment. Fewer breakdowns will mean less dangerous contact with machinery is required. It also results into cost benefits because of beMer productivity and eficiency.

Additional hazards can occur when machinery becomes unreliable and develops faults. Maintenance allows these faults to be diagnosed early to manage any risks. However, maintenance needs to be correctly planned and carried out. Unsafe maintenance can cause accidents and serious injuries either during the maintenance or to those using the badly maintained or wrongly maintained/repaired equipment.

Maintenance activity consists of taking the decisions and actions regarding the upkeep of the plant and equipment. These are inclusive, but not limited to the following.

- Actions focused on maintaining and analyzing the data related to plant and equipment health.
- Planning of adequate and necessary inventory of spare parts, lubricants, fast moving consumables and storage items. This includes standardization of spares and consumables.
- Actions focused on scheduling, procedures, work/system control and optimization.
- Performance of routine, preventive, predictive, scheduled and unscheduled actions aimed at preventing equipment failure as well as achieving the goal of increasing efficiency, reliability and safety.

There are several maintenance practices which are being followed. These include routine or reactive maintenance, preventive maintenance, predictive maintenance and reliability centered maintenance.

Note: All the regular maintenance descriptions, schedule and checklists will be provided in Detail Project Report.

Herbal Extraction Units and Machinery Manufacturers

- 1. Anand Refrigeration Co. PvtLtd –Delhi
- 2. Acmas Technocracy (Pvt) Ltd-Delhi
- 3. Cethar Vessels Ltd., Trichy
- 4. ELGI Equipments Ltd., Coimbatore
- 5. Fluid Control Equipments, Coimbatore
- 6. HI-TechChemi Equip, Mumbai
- 7. Techno Process Equipments(India)Pvt. Ltd.-Mumbai
- **8.** K.G.Khosla Compressors Ltd, Faridabad
- 9. Kumar Metal Industries-Mumbai
- 10. Dee Development Engineers Ltd Haryana
- 11. MA Engineering Corporation, Mumbai
- 12. Oilex Engineers(India)Pvt. Ltd.-Mumbai
- 13. Kumar Metal Industries, Mumbai
- 14. Real Engineers and Boiler Repair, Ahmadabad
- 15. Richard Engineering (Bombay)Pvt. Ltd., Mumbai

Chapter 13: Construction and Building Design

A. DESCRIPTION OF DESIGN

Construction of Herbal extract processing plant is subjected to development of various units including distillation plant, effluent treatment plant, finished goods and storage yard, quality and R&D lab along with solvent yard, spray dryers, chiller unit and admin block. Space for future expansion is also well thought.

The processing plant is provided with multiple amenities along with judicious placement of units as per workflow. The entrance to the processing plant is provided with a secondary road connecting to the existing 25 m wide main road. Ample space for parking is provided. Entrance to the site is crossed through a security check. Close to the security office both HT panel room and boiler are provided.

As we move further on the site, raw material storage yards are designed adjacent to production blocks and the distillation plant. Similarly, the location of packing material and storage along with finished goods and storage are placed accordingly. A quality and R & D yard are also designed to ensure best of its quality.

Several other supporting facilities such as chiller plant, solvent yard, spray dryer and boiler along with onsite marketing and accounting office with an administration block are designed.

S. No.	DESCRIPTION OF ITEMS
1	BOUNDARY WALL
2	ROAD DEVELOPMENT
3	RAW MATERIAL STORAGE
4	PROCESSING AREA
5	DISTILLATION PLANT
6	BOILER
7	PACKING MATERIAL STORAGE
8	SECURITY / HT & PANEL ROOM
9	QUALITY AND R&D LABORAOTORY
10	MARKETING & ACCOUNT OFFICE
11	FINISHED GOODS STORAGE
12	ADMINISTRATIVE
13	EXTERNAL PLUMBING
14	SITE ELECTRIFICATION
15	TRANSFORMER
16	INTERNAL ELECTRIFICATION
17	INTERNAL PLUMBING

B. AREA STATEMENT

S.NO.	ITEMS	FLOOR AREA	
1	PLOT AREA	29054.41 SQ.M.	
2	RAW MATERIAL STORAGE	900 SQ.M.	
3	PRODUCTION BLOCK 1	M O2 000	
4	PRODUCTION BLOCK 2	900 SQ.M.	
5	PRODUCTION BLOCK 3	450 SQ.M.	
6	PRODUCTION BLOCK 4	450 SQ.M.	
7	DISTILATION PLANT	300 SQ.M.	
8	RAW STORAGE MATERIAL 2	900 SQ.M.	
9	ETP	456 SQ.M.	
10	PACKING AND MATERIAL STORAGE	300 SQ.M.	
11	FINISHED GOODS AND STORAGE	400 SQ.M.	
12	QUALITY AND R&D LAB	400 SQ.M.	
13	MARKETING AND ACCOUNT OFFICE	400 SQ.M.	
14	SOLVENT YARD	121 SQ.M.	
15	FIRE HYDRANT	150 SQ.M.	
16	SECURITY		
17	HT PANEL ROOM	90 SQ.M.	
18	BOILER	100 SQ.M.	
19	HARD PARK 1	324 SQ.M.	
20	HARD PARK 2	868 SQ.M.	
21	ADMIN BLOCK	400 SQ.M.	
	TOTAL FLOOR AREA	7909 SQ.M.	

C. REPORT AND SPECIFICATION

NAME OF	CONSTRUCTION OF PROPOSED INTEGRATED MAHUA		
WORK	PROCESSING UNIT PATAN DIST. –DURG C.G.		
AUTHORITY	CHHATTISGARH STATE MINOR FOREST PRODUCE		
PROVISIONS	The Following Provisions has been made in this Estimate:		
1.Foundation And	Column and Footing with R.C.C. M-20 for the following structures till		
Frame	11': Pump room, Fire hydrant, Solvent yard, ETP, Raw Material Storag		
	2, Admin Block, Security, HT Panel Room, Finished goods and storage,		
	Quality and R&D lab and marketing and account office.		
2.Foundation And	•		
Frame	following structures: - Boiler, Raw material Storage 1, Production Block		
	1, Production Block 2, Production Block 3, Production Block 4,		
	Distillation Plant, Packing material and storage		
3.Plinth	Sand/crusher dust and hard moorum has been/used for filling under floors		
	Ant termite treatment provision has been given below plinth.		
	Brick work with FLY ASH lime bricks in C.M -1:6 has been provided		
	R.C.C. Grade slab at plinth level with M-20 grade of concrete		
4.Superstructure			
	kg/sq cm and PEB frame		
	R.C.C Slab with M-20 Grade of concrete		
	Poly Carbonate and Profile Sheeting Work with steel structure as per		
	approved make C.G. PWD		
_	i.Terrazzo flooring with complete polishing and wall tiling up to 900 mm		
tiling	inside the processing area all around with adhesive of approved make		
	per C.G. PWD		
6. Doors	All door frames and shutters of UPVC framework		
	For main doors and entry in processing area will be of fire proof doors of		
	approved make approved as per C.G. PWD		
7. Windows	All windows and ventilators are Aluminum section windows shutters of A		
0.04 1.77	class aluminum sections approved in C.G. PWD		
8.Steel Work	M.S grills in windows, ventilators and stainless steel railing has been		
	provided in ramp and stair case (if any)		
9. Plastering	12mm thick plaster for smooth side, 15 mm thick plaster for rough side,		
10 = 1	6mm thick plaster for ceiling has been used in this building.		
10.Painting	All wood work and steel work is painted with synthetic enamel paints and		
	inner walls are painted with acrylic luxury emulsion (plastic) with putty of		
	A class fire proof materials as per approved C.G. PWD		

11. Water Supply	Specific item with ISI mark are used	
12. Rate	All rates are as per schedule of rates in C.G.P.W.D enforced from 01.01.2015 & Amendment up to 06.04.2016	
13.Specification	Work will be executed as per C.P.W.D & National Building Code specification	

PROVISIONS	Following provisions of Electrical Works have been made in this building:		
Type Of Wiring	Concealed type Wiring with Copper Conductor (FRLS) in PVC (Non-		
	Metallic) Conduit Separate wiring and Separate Meter System for each		
	Department		
Type of Switch	Modular Type Socket Switch as approved by approved C.G. PWD SOR		
Socket	2015		
Accessories	Energy Saving Light Fittings		
	T/5 in wall case of false ceiling concealed type of CFL Fittings.		
	Double Door, Distribution Board.		

Material Specification:

<u>S.No.</u>	MATERIAL	SPECIFICATION		
1	PEB	1. PRIMARY MEMBERS:- Primary Structure framing shall include the transverse rigid frames, lean-to-rafters and columns, canopy rafters, interior columns (beam and column frames) bearing frame rafters and corner columns and end wall wind column 2. SECONDARY MEMBERS:- Secondary structural framing shall include the purlins, girts eave struts, wind bracing, flang bracing, base angles, clips and other miscellaneous structure parts. 3. PAINT OF STRUCTURAL MEMBERS: - All structural members shall be cleaned by wire brushing to rmove dirt, grease, oil and loose mill scale and give one shop coat of red oxide, air drying, phenol modified alkyd resin primer. 4. CONNECTIONS:- All field connections shall be bolted (unless otherwise noted). Primary bolted connections shall be furnished with high strength bolts conforming to the physical specifications of ASTM A325 (or equivalent). Secondary bolted connections shall be furnished with machine bolts conform to the physical specification of ASTM A307 (or equivalent). 5. PHYSICAL SPECIFICATIONS OF STRUCTURAL MEMBERS:- Member fabricated from plate or bar stock shall have flanges and webs jointed on one side of the web by a continuous welding process and will conform to the physical specifications of ASTM A570 (Grade 50) or equivalent and having a minimum yield strength of 50, 00 P.S.I. (345 MPa).		

Members fabricated by cold forming process shall conform to the physical specifications of ASTM A570 (grade 50) or equivalent and having a minimum yield strength of 50,000 PSI (345 MPa).

Memmber fabricated from hot rolled structural shapes shall conform to the physical specification of ASTM A572 (grade 36) or equivalent and having a minimum yeild strength of 36,000 PSI (250 MPa).

Rod and angle bracing shall conform to the physical specification of ASTM A36 (or equivalent) and having a mnimum yield strength of 36,000 P.S.I.(250 MPa).

Roof and wall cladding shall conform to the physical specification of ASTM A653 grade 50 (or equivalent) and having a minimum yield strength of 50,000 P.S.I. (345 MPa).

All other miscellaneous secondary members shall have minimum yeild strength of 36,000 P.S.I. (250 MPa).

6.ROOF SHEETING (KR)/WALL SHEETING(KW) :- Roof and wall panels shall be 26 gauge thick profiled galvalume or galvalume color coated steel sheeting.

In case of pre-painted galvalume panels, the exterior facr is prepainted with 1 mil. thick factory applied polyester paint. The interior face is pre-painted with 0.5 mil. thick factory applied polyester paint. Each panel shall provide one meter coverage and can be shipped in any lentgh up to 10 m. color of exterior and interior faces shall be white/grey or as directed. Other materials, thicknesses and coating are available upon request.

The material shall conform to ASTM A792 and the galvalume coating to ASTM A792-AZ150. The yield strength of material shall be 550/300 mpa. Incase of KSS type of sheeting the yield strength shall be 300 mpa (minimum).

- 7.SHEETING FASTENERS: Standard fasteners shall be No. 14, Type A, self tapping sheet metal screws with metal neoprene washers. All screws shall have hexagonal heads, be color coated to match roof and wall sheeting and made of zinc plated steel.
- 8.SEALER/ROPE SEAL:- This is to be applied at all side laps and end laps of roof panels and around self flashing windows. sealer shall be 6mm wide x 5mm thick, asbestos fiber filled pressure sensitive butyi tape. The sealer shall be non toxic and shall have superior adhesion to metals, plastic and painted surfaces at temperatures from -51 deg. 'C' to +104 deg. 'C'.
- 9. CLOSURES / FILLER STRIPS :- Solid or closed cell E.T.P. (Ethylene polypropylene Terpolymet) closures matching the profile to the panel shall be installed along the eaves, rake and other locations specified on drawings.
- 10.RIDGE CAP :- A formed panel matching the materil color, slope and profile of adjoining Rib roof panels.
- 11. FLASHING AND TRIM :- Flashing and/or trim hall be furnishd at the rake, corners, eavs farmd opening and wherever necessary to

provide weather tightness and finished appearance. Color shall be white for rake and eave flashings and color of wall for corner flashing unless otherwise specified by client from one of the standard range of colors. Material shall be 26 G thick conforming to the physical specifications of ASTMA446 Grade C or equivalent and having minimum yield strength of 40,000 P.S.I. (275MPa).

12. EAVE GUTTERS AND DOWNSPOUTS:- Eave gutters shall be box shaped, color coate, and 0.5mm nominal thickness (26 gauges) galvanized steel. The outside face of the gutter shall be supported with color coated 0.5mm nominal thickness 926 gauge) galvanized straps to the eave member at a maximum spacing of 1.2 m.

Downspouts shall be rectangular shaped, color coated and 0.5mm nominal thickness (26 gauge0 galvanized steel. Downspouts shall have a 45 degree elbow at the bottom and shall be supported by attachment to the wall covering at 3.0m maximim spacing.

- 13. FIBERGLASS INSULATION: The fiberglass insulation when offrd as optional on mutual agreement shall be of 50mm thickness of density 10kg/m3. With one side aluminium facing, other thickness and density are available and will be provided on prior negotiation.
- 14. ANCHOR BOLTS: These are normally supplied prior to the delivery of pre-Engineered building.
- 4. BASIC BUILDING DESCRIPTION:-
- A. Frame type RF
- B. Width (m) m %
- C. Length (m) m%
- D. Eave height (M) 6.00 M clear
- E. Roof slope 1:10
- F. Bay spacing (m) 7@7.857 M
- G. Wind bracing Pipe Bracing
- H. Roof cladding (KR) 26 GA colour Galvalume high tensile profile
- I. Wall cladding (KW) 26 GA colour Galvalume high tensile profile
- J. Opening at front sidewall 3.0M height brick wall and above sheeting
- K. Opening at back sidewall 3.0M height brick wall and above sheeting
- L. Opening at left end wal 3.0M height brick wall and above sheeting
- M. Opening at right end wall 3.0M height brick wall and above sheeting
- N. Eave gutters Included
- O. Downspouts Included

BUILDING ADDITIONS

A. canopy loaction/description - 3.3M x 55.0M - 01No.

STANDARD BUILDING ACCESSSORIES

- A. Sky lights 1.0m x 3.305m 14 Nos. on the roof
- B. Ridge Vents 0.300m x 3.0m 05 nos. on the roof

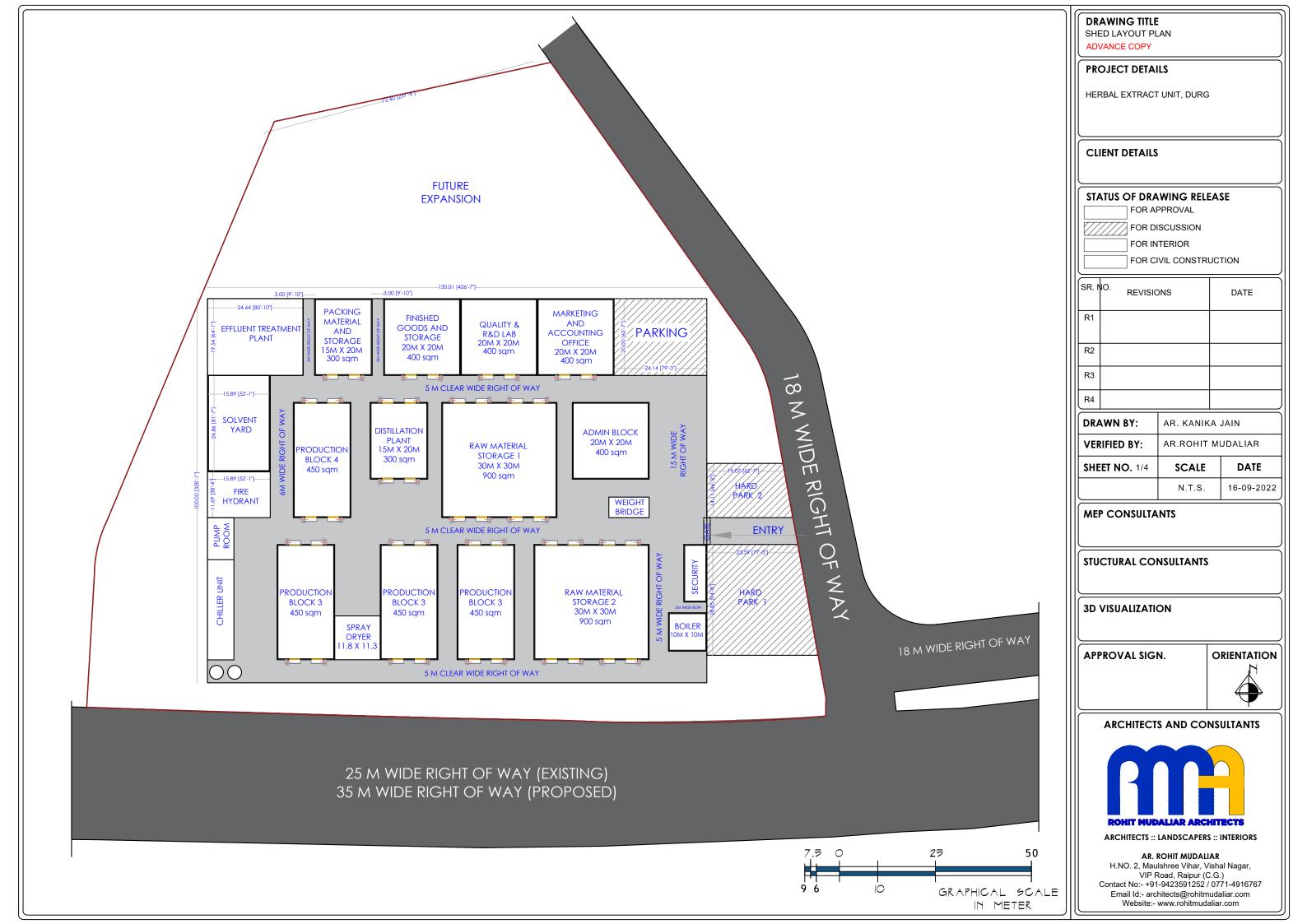
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		STEEL WORK FINISH A . Frames, Built-up / HR sections / Bracings - Red oxide 01 coat synthetic enamel paint in plant and 2nd coat paint material for site application B. Purlins / Girts - Red oxide 01 coat synthetic enamel paint in plant and 2nd coat paint material for site application C. Anchor bolts - Black (unpainted) DESIGN LOADS A. Dead load on Roof - Self weight B. roof live load on purlin - 0.75 KN/m2 C. Roof live load on frames - 0.75 KN/m2 D. Wind load - 44 M/S Rates should be all inclusive i.i. Taxes, transportation, intallation etc. P.E.B. structure should be certified by N.I.T or I.I.T. by contractor long with the stability certification.
		Steel to be used should be TMT bars confirming to IS: 1786: 2008.
	Steel Reinforcement	All steel shall be procured from original producers like SAIL, RINL,
		TISCO and JSPL or equivalent. No re-rolled steel shall be used in the
		work. TMT steel should be verified on elongation basis as per IS:
		1786 of 2008.
2		Only new steel shall be delivered to the site. Every bar shall be
		inspected before assembling on the work and defective, brittle or
		burnt bar shall be discarded. Cracked ends of bars shall be discarded.
		Steel for reinforcement shall be stored in such a way as to prevent
		distorting and corrosion at sites. (Bars of different types, sizes and
		lengths to be stacked separately).
3	Cement	Ordinary Portland cement, 53 Grade conforming to IS: 12269.
		Coarse aggregate shall consist of clean, hard, strong, dense, non-
		porous and durable pieces of crushed stone. They shall not consist
		pieces of disintegrated stones, soft, flaky, elongated particles, salt,
4	Aggregate for	alkali, vegetable matter or other deleterious materials. All coarse
4	Concrete	aggregate shall conform to IS: 383:1970 and tests for conformity
		shall be carried out as per IS: 2386:1963 I to VIII.
		The maximum value of flakiness Index for coarse aggregate shall not
		exceed 35 percent. The coarse aggregate shall satisfy grading

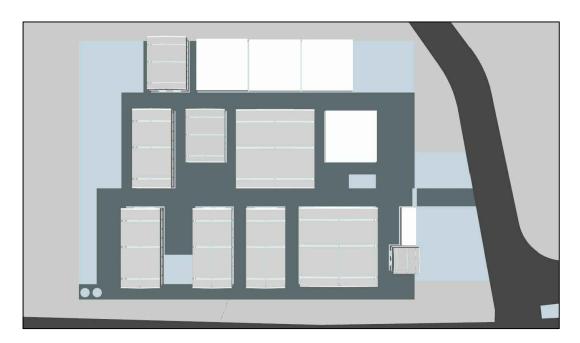
		requirements, according to the nominal size of aggregate as per the		
		table provide in CGPWDSOR 2015.		
		Fine aggregates shall not contain dust, lumps, soft or flaky materials,		
		mica or other deleterious materials. Fine aggregates having positive		
		alkali-silica reaction shall not be used. All fine aggregate shall		
5	Sand	conform to IS; 383. The fineness modulus of fine aggregate shall		
		neither be less than 2.0, nor greater than 3.5.		
		The fine aggregate should satisfy the grading requirement as per table		
		in CGPWDSOR 2015.		
		Aluminum work for doors, windows, ventilators and partitions		
		made out of extruded aluminum standard sections (main section		
		with minimum 1.5mm thickness) conforming to IS: 733, IS: 1285		
	D 0	mired and jointed mechanically including aluminum cleats,		
6	Door&	neoprene weather stripping gasket beveled edge beading, screws		
	Window	duly fixed in wall/ floor with fixing clips or hold fasteners or bolts		
		and nuts as required aluminum sections shall be anodized		
		transparent or dyed to approved shade according to IS: 1868,		
		minimum anodic coating shall be of grade AC-15.		
		4mm thick float glass panes with steel glazing clips and special		
7	Glass	metal sash putty of approved make in steel doors, windows,		
		ventilators.		
		Precast Boundary Wall 50mm thickness, column post of size		
1.1	Precast	150mmX150mm of hieght 2.1M height with intermidiate precast		
11	Concrete	slabs(Plank): 2100mm X 300mm X 50mm till hieght 2.1M from		
		Ground floor level including all excavation work and tie beams.		
12	Mortar	cement mortar 1 :2 (1 cement : 2 Coarse sand)		
		• Two coats of acrylic premium emulsion (plastic) paint of required		
14	Paint	shade.		
		• Painting exterior surface with ACRYLIC SMOOTH exterior paint		
		of required shade as per manufacturer's specifications to give		

		protective and decorative finish including cleaning washing of surface etc.
15	Brick	Fly ash brick shall conform to the requirements of IS: 12894-2002. The bricks shall be sound, compact and uniform in shape and colour. The bricks shall be free from visible cracks, flaws, warp edge and organic matter.
16	Water	Water used for mixing and curing shall be clean and free from injurious amounts of oils, acids, alkalis, salts, sugar, organic materials or other substances that may be deleterious to concrete. Potable water is generally considered satisfactory for mixing and curing of concrete.
17	Barbed Tape	G.I. barbed wire (93.8gram/m)
18	Road	Bituminous Macadam (as per clause 504 with mixed prepared in minimum 40-60 TPH capacity hot mix plant using crushed aggregates of specified grading premixed with bituminous binder with desired compaction)
19	Insect Screen	"NETLON insect screens" with 25mm wide Hook and loop tape a around to wooden/aluminum/ steel windows, ventilators and the lik complete.
21	Putty	2mm thick ready mix exterior grade approved make putty (like Bir wall care, Alltek Superfine W/R of (NCL), Asian, ICI, Nerolac, J.I wall putty) on walls to make the surface smooth and even with both 12mm and 15mm plaster
22	HT Panel	HT PANELS TECHNICAL SPECIFICATION OF HT PANEL HT PANEL CONSIST 9 NOS. OF 11 KV, 800A 3 PHASE, 26.2KA VCB Supply of HT panel consisting of nine numbers of free standing modular, cubicle type, dust and vermin proof, front operated 50 MVA Vacuum Circuit Breaker (VCB) for operation on 11kV, Phase, 50 Hz, AC supply system suitable for

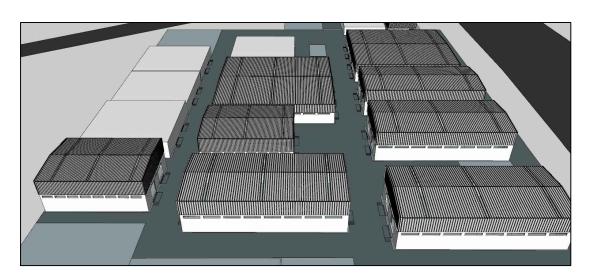
D. List of Drawing

S.No.	Drawing Title	Drawing Document
1	Shed Layout Plan	Attached
2	3d View	Attached
3	Detail of Boundary Wall	Attached
4.	Brickwork Detail of Boundary Wall	Attached
5.	Layout of Road	Attached
6.	Road Section	Attached
7.	Structural Drawing_ Raw Material	Attached
8	Structural Drawing_Processing Unit	Attached
9	Structural Drawing_Distillation Plant	Attached
10	Structural Drawing_ Boiler	Attached
11	Structural Drawing_Packing Material Storage	Attached
12	Structural Drawing_Security/HT & Panel room	Attached
13	Structural Drawing_ Quality and R & D and	Attached
	Marketing and Account Office	
14	Structural Drawing_Finished Good Storage	Attached
15	Structural Drawing_ Administration	Attached
16	External Plumbing – Clean Water Layout	Attached
17	External Plumbing – Fire Hydrant layout	Attached
18	External Plumbing – Open Drain Channel	Attached
19	External Plumbing – Sewage layout	Attached

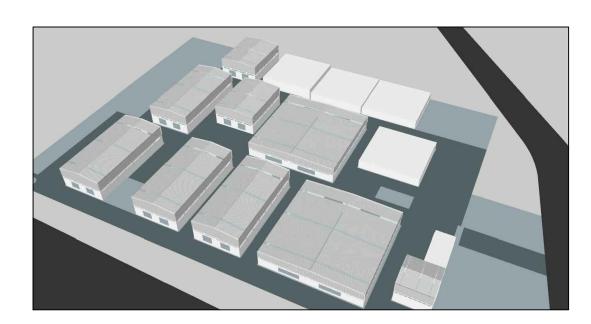




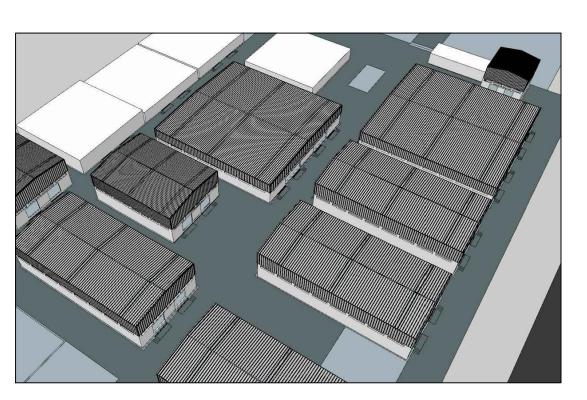
TOP VIEW



AERIAL VIEW



AERIAL VIEW



AERIAL VIEW

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CII	IENT DETAILS			
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AR. KANIKA JAIN

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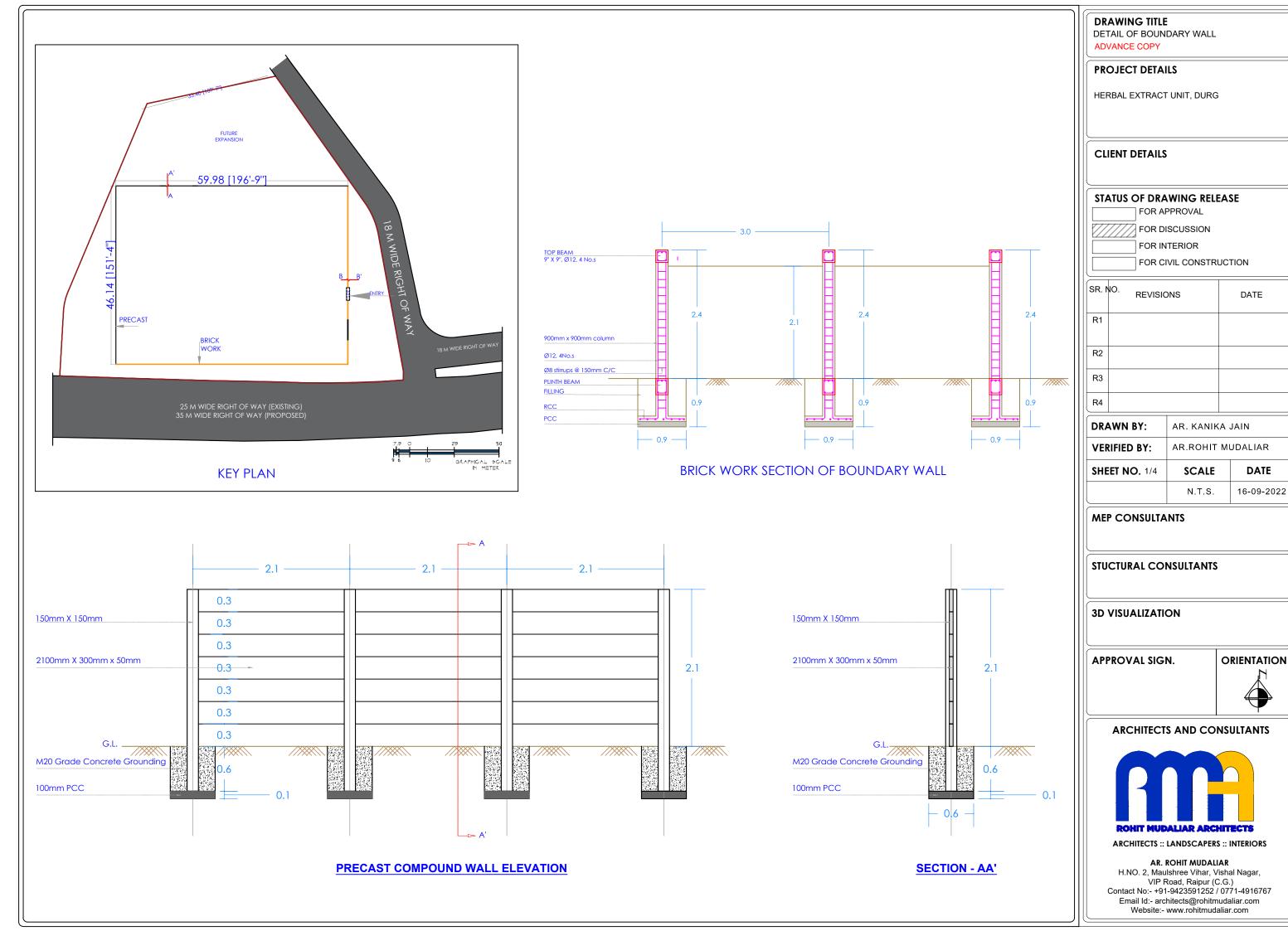


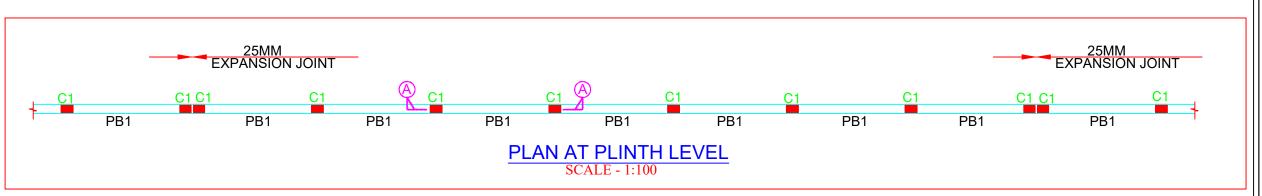
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AR. ROHIT MUDALIAR H.NO. 2, Maulshree Vihar, Vishal Nagar, VIP Road, Raipur (C.G.) Contact No:- +91-9423591252 / 0771-4916767 Email Id:- architects@rohitmudaliar.com Website:- www.rohitmudaliar.com



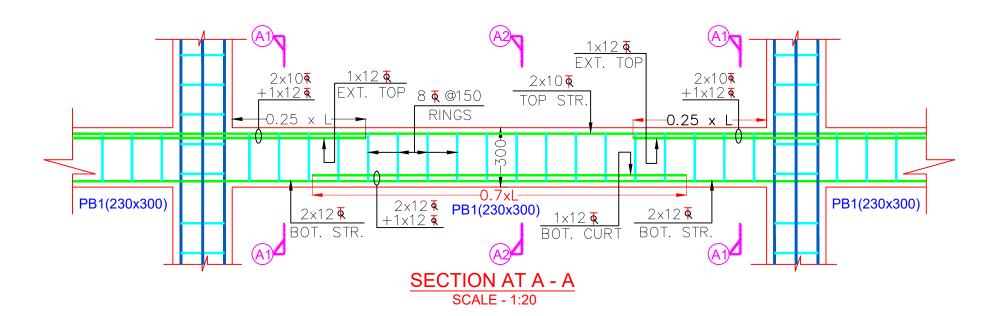


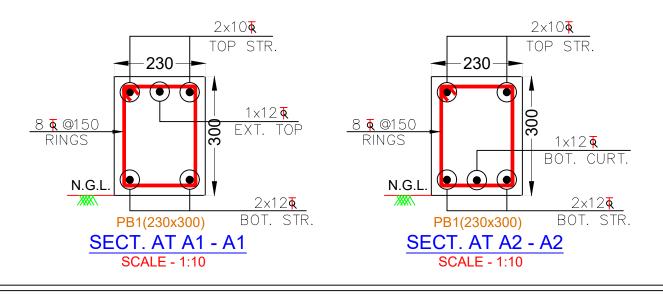
NOTE:-

- 1. ALL PLINTH BEAMS SHALL HAVE THEIR BOTTOM FLUSH AT N.G.L.
- 2. ALL PILE CAPS ARE TOP FLUSH AT N.G.L.

SCHEDULE OF PLINTH BEAMS

	SIZE BOTTOM REINFO				TOP REIN	NFORCEMENT	STIRRU		
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH OUT	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	REMARK
PB1	230	300	2x12 ₹	1x12 ₹	2x10 ₹	1x12 ₹	8 @150	8 @ 150	





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BRICKWORK DETAIL OF BOUNDARY WALL

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CLIENT DETAILS

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Ш	VERIFIED BY:	AR.ROHIT MUDALIAR

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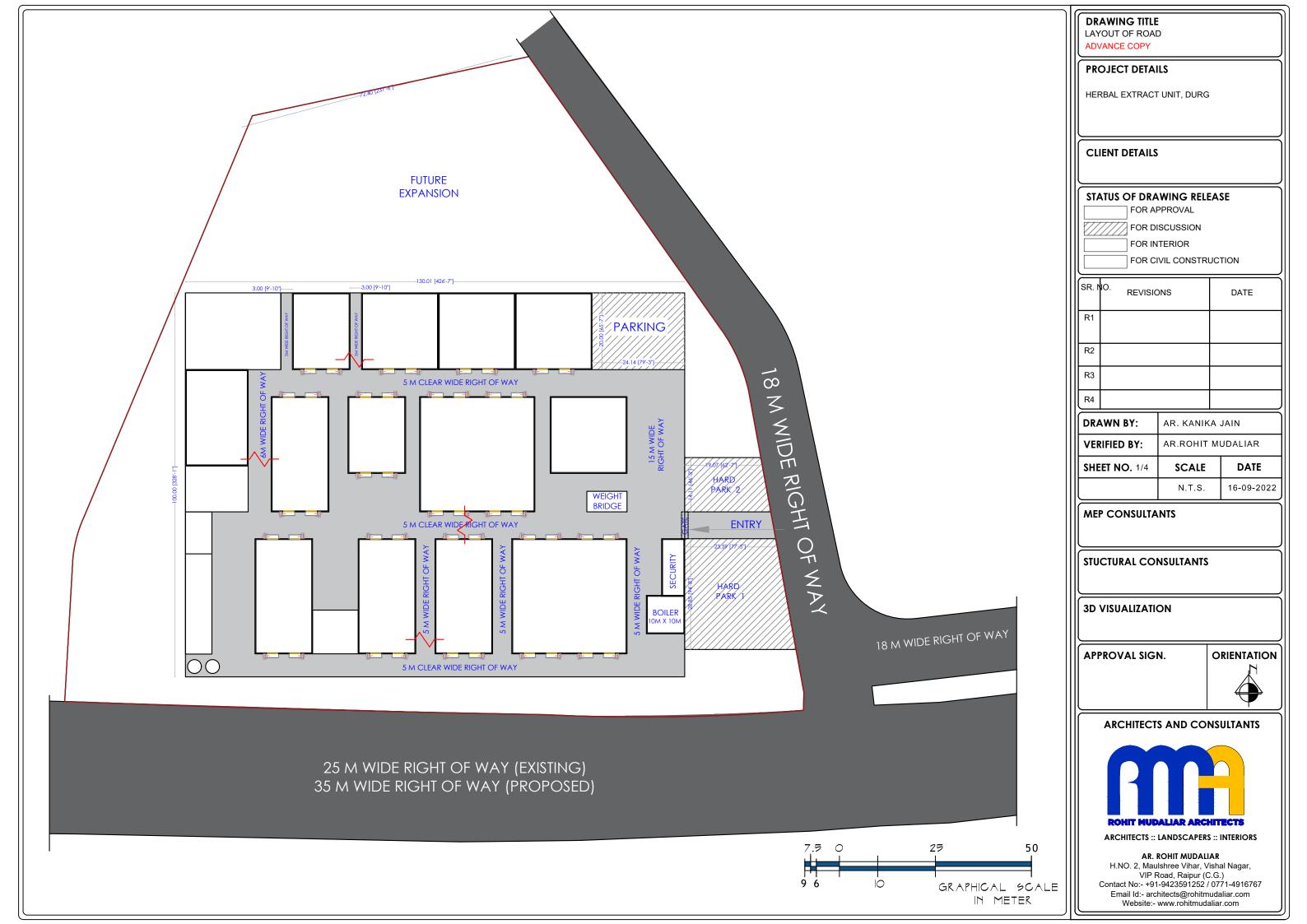
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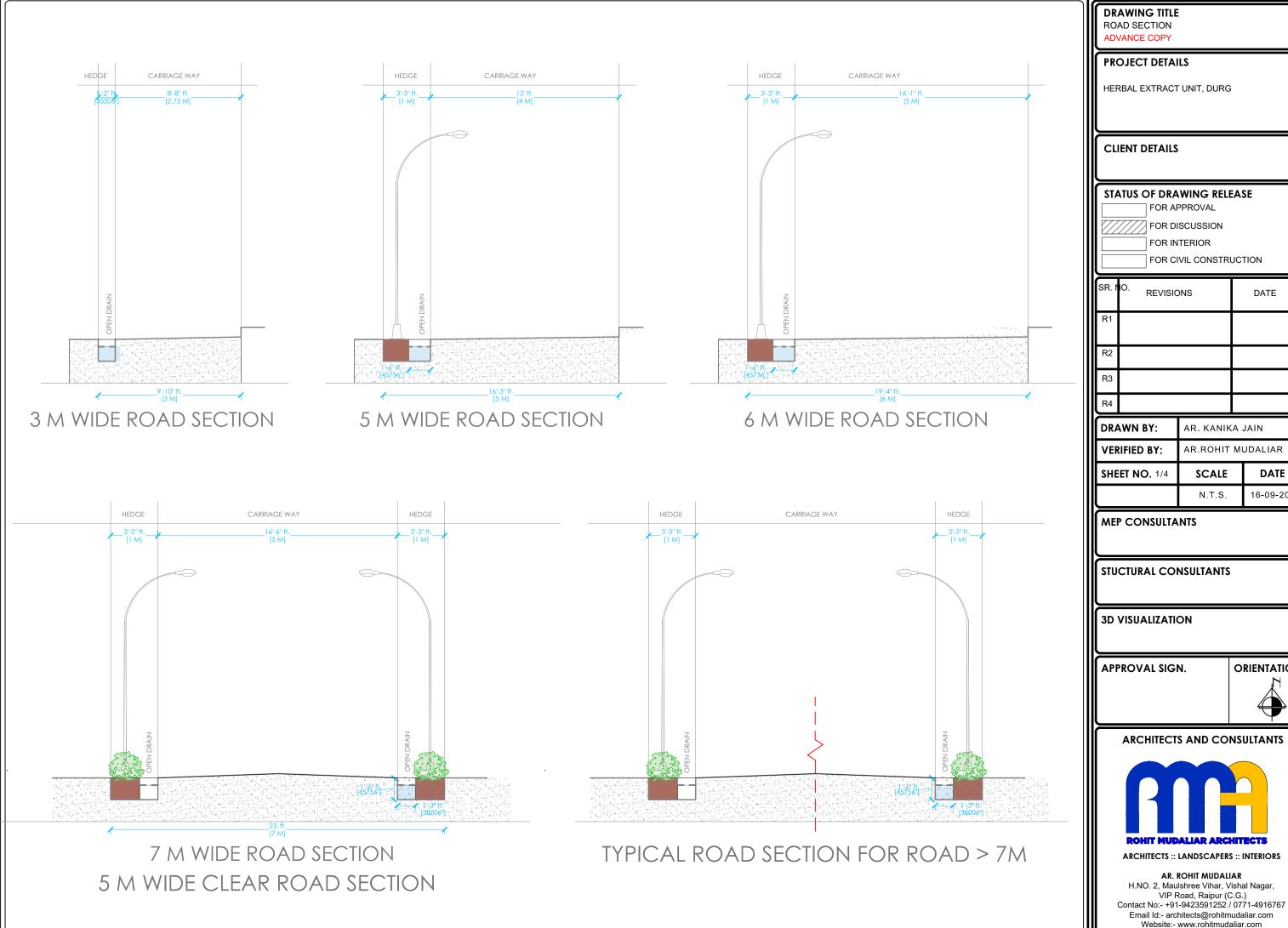
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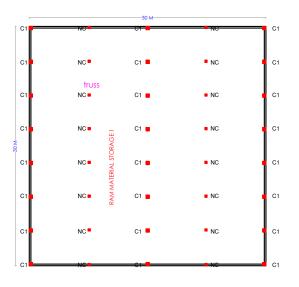


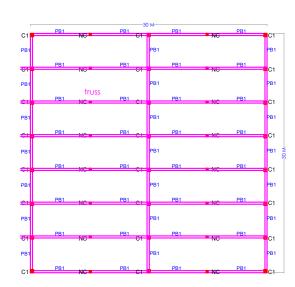
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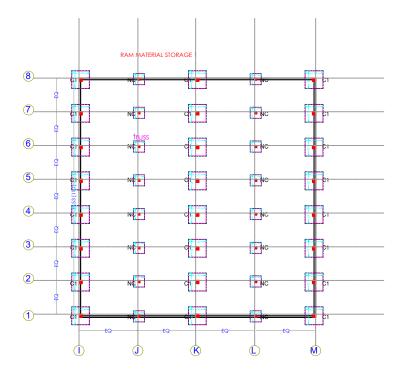
AR. ROHIT MUDALIAR

VIP Road, Raipur (C.G.)

RAW MATERIAL STORAGE







SCHEDULE OF PLINTH BEAMS

Г		SIZE		BOTTOM REIN	FORCEMENT			STIRRU	JPS	SIDE BARS	REMARK
	BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH OUT	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	REMARK
Γ	PB1	300	350	3x12 ₹	2x10¶	3x12 T	2x10¶	8₹@100	8₹ @150		

SCHEDULE OF COLUMNS & FOOTINGS

COLUMN	EXCAVATION	PCC.	FOUNDATION		REINFORCEMENT ALONG		COLUMN AT	GROUND FLO	OOR	DELLIBUR.
NO.	NO. SIZE		FOOTING SIZE	FOOTING DEPTH	LONG LOWER TIER	SHORT UPPER TIER	SIZE	VERT.BARS	TIES	REMARKS
C1	2700x2700	150	2400x2400	600	12₹@150	12 ६ @150	500x800	20x12 ₹	8 ₹ @100-150	
NC	1700 x 1700	150	1500 x 1500	450	12₹@150	12₹@150	550x350	20x12 ₹	8 ६ @100-150	TILL PLINTH

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RAW MATERIAL STORAGE STRUCTURAL DETAIL DRAWING

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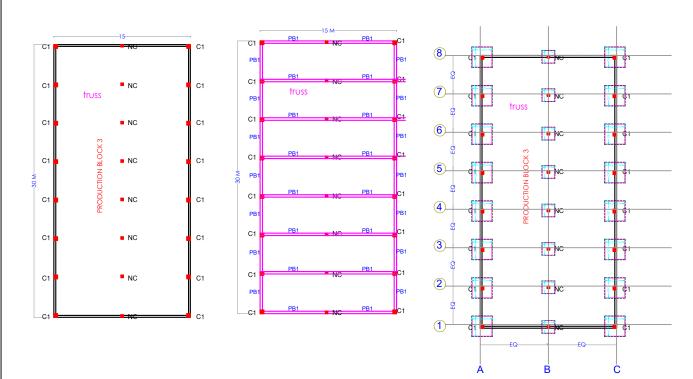
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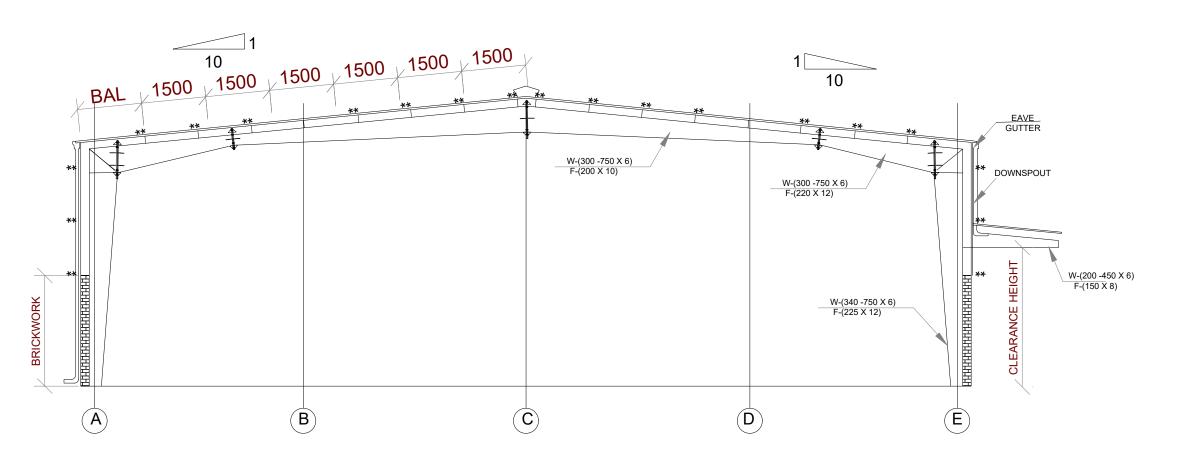


SCHEDULE OF COLUMNS & FOOTINGS

C			PCC.	FOUNDATION		REINFORCEMENT ALONG		COLUMN AT	GROUND FLO	OOR	DEMARKO
		THK.	FOOTING SIZE	FOOTING DEPTH	LONG LOWER TIER	SHORT UPPER TIER	SIZE	VERT.BARS	TIES	REMARKS	
	C1	2700x2700	150	2400x2400	600	12 T @150	12₹@150	500x800	20x12 ₹	8 ₹ @100-150	
	NC	1700 x 1700	150	1500 x 1500	450	12¶@150	12 ₹ @150	550x350	20x12 ₹	8 ₹ @100-150	TILL PLINTH

SCHEDULE OF PLINTH BEAMS

					ILDULL O	I I LINITI DEA	IVIO				
	SIZE BOTTOM REINFORCEMENT		TOP REIN	NFORCEMENT	STIRRUPS		0.05.04.00	DE144B1	l		
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL		EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UP10 2D	AT MID SPAN	SIDE BARS	REMARK	
PB1	300	350	3x12 ₹	2x10 T	3x12 T	2x10¶	8₹@100	8₹ @150			l



DRAWING TITLE

PROCESSING UNIT STRUCTURAL DETAIL DRAWING

PROJECT DETAILS

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3D VISUALIZATION

APPROVAL SIGN.

ORIENTATION

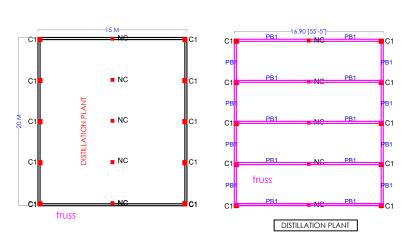
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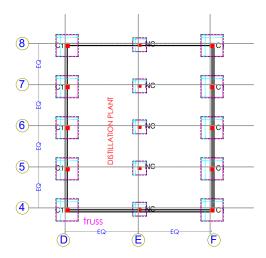


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DISTILLATIONS PLANT



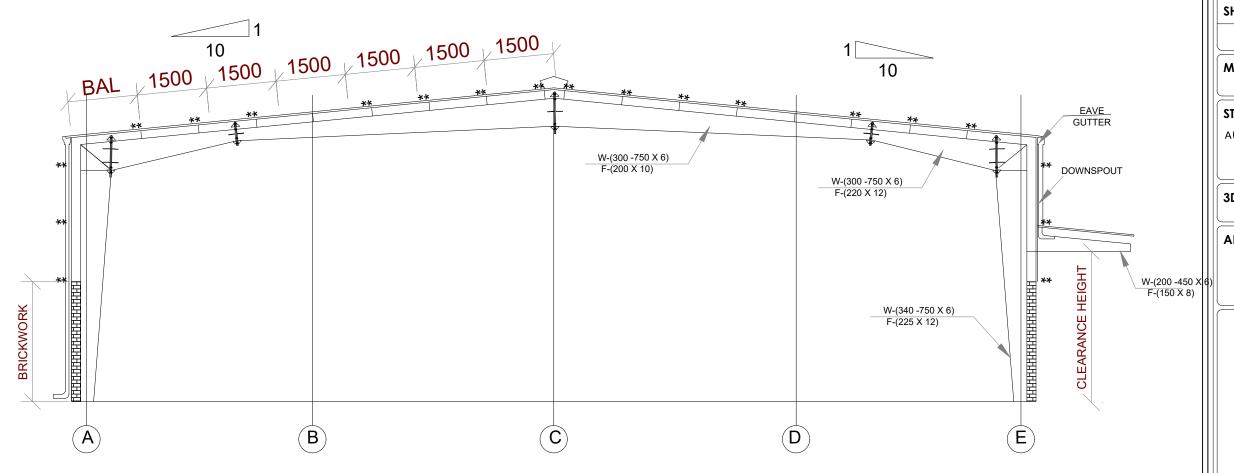


SCHEDULE OF COLUMNS & FOOTINGS

COLUMN NO.	EXCAVATION SIZE	PCC.	FOUNDATION		REINFORCEMENT ALONG		COLUMN AT	OOR		
		THK.	FOOTING SIZE	FOOTING DEPTH	LONG LOWER TIER	SHORT UPPER TIER	SIZE	VERT.BARS	TIES	REMARKS
C1	2700x2700	150	2400x2400	600	12¶@150	12 % @150	500x800	20x12 ₹	8¶@100-150	
NC	1700 x 1700	150	1500 x 1500	450	12¶@150	12₹@150	550x350	20x12 ₹	8 ₹ @100-150	TILL PLINTH

SCHEDULE OF PLINTH BEAMS

			BOTTOM REINFORCEMENT		TOP REIN	NFORCEMENT	STIRRU	JPS	OIDE DADO	REMARK
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	KEMAKK
PB1	300	350	3x12 ₹	2x10%	3x12	2x10 %	8₹@100	8₹ @150		



DRAWING TITLE

DISTILLATION PLANT
STRUCTURAL DETAIL DRAWING

PROJECT DETAILS

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HERBAL EXTRACT UNIT

CLIENT DETAILS

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AURA DESIGNS & CONSTRUCTION

3D VISUALIZATION

APPROVAL SIGN.

ORIENTATION

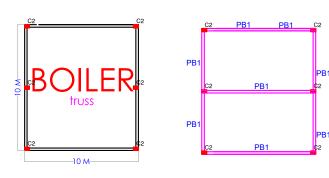
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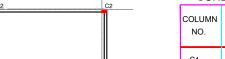


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BOILER





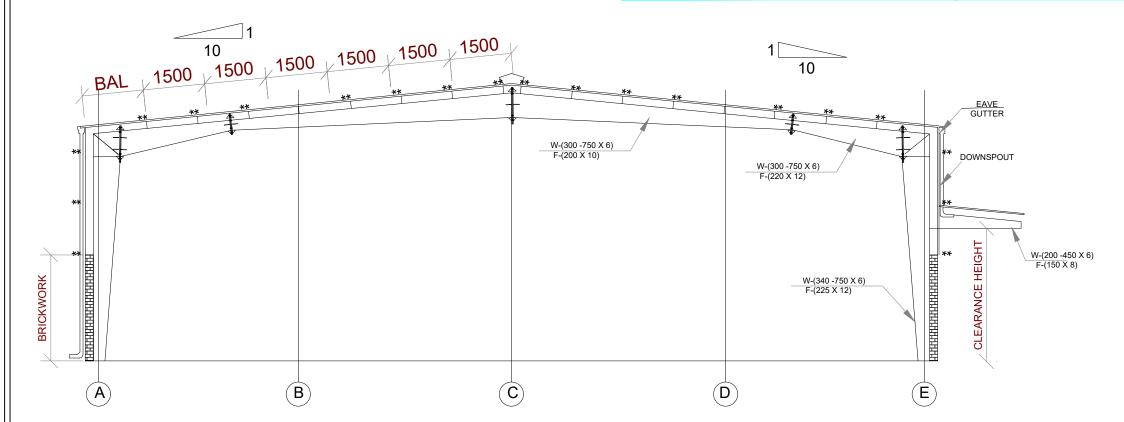
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SCHEDULE OF COLUMNS & FOOTINGS

Ţ	COLUMN NO.	-	PCC.	FOUNDATION		REINFORCEMENT ALONG		COLUMN AT	GROUND FLO	OOR	DEMARKS
l			THK.	FOOTING SIZE	FOOTING DEPTH	LONG LOWER TIER	SHORT UPPER TIER	SIZE	VERT.BARS	TIES	REMARKS
	C1	2700x2700	150	2400x2400	600	12 द @150	12 ६ @150	500x800	20x12 ₹	8 ₹ @100-150	
	NC	1700 x 1700	150	1500 x 1500	450	12 द @150	12 ६ @150	550x350	20x12 ₹	8 ₹ @100-150	TILL PLINTH

SCHEDULE OF PLINTH BEAMS

	SIZE BOTTOM REINFORCEMENT		TOP REIN	NFORCEMENT	STIRRU	JPS	SIDE BARS	REMARK		
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH OUT	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	REMARK
PB1	300	350	3x12 ₹	2x10₹	3x12¶	2x10 ≰	৪ ছ @100	৪ ছ @150		



DRAWING TITLE

BOILER

STRUCTURAL DETAIL DRAWING

PROJECT DETAILS

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VERIFIED BY:

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SHEET NO. 1/4 SCALE DATE

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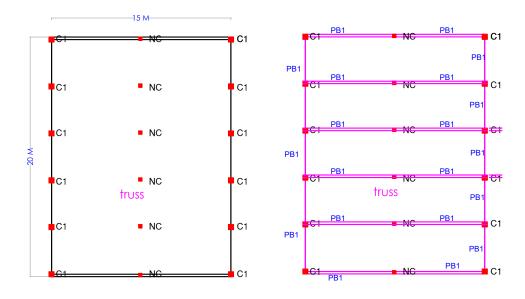
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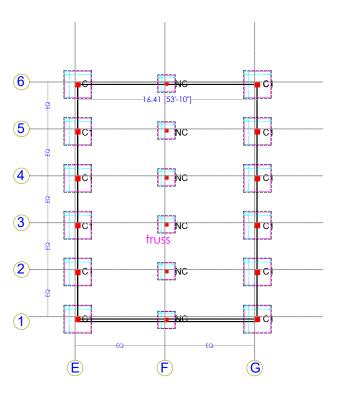


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PACKING MATERIAL STORAGE



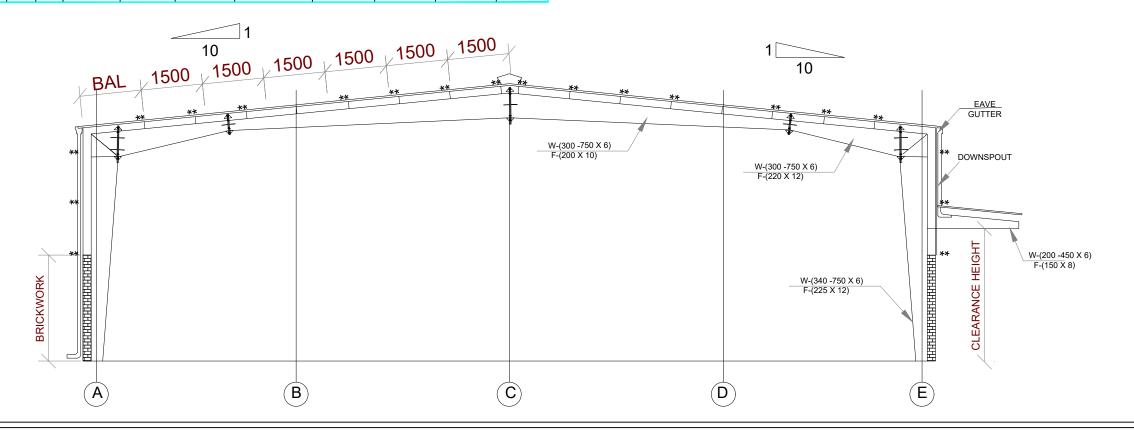


SCHEDULE OF COLUMNS & FOOTINGS

,	COLUMN	EXCAVATION	PCC.	FOUNDATIO	ON	REINFORCEM	REINFORCEMENT ALONG COLUMN AT GROUND FLOOR				DEMARKO
	NO.	SIZE	THK.	FOOTING SIZE	FOOTING DEPTH	LONG LOWER TIER	SHORT UPPER TIER	SIZE	VERT.BARS	TIES	REMARKS
	C1	2700x2700	150	2400x2400	600	12₹@150	12 ₹ @150	500x800	20x12 ₹	8 ₹ @100-150	
	NC	1700 x 1700	150	1500 x 1500	450	12 ₹ @150	12₹@150	550x350	20x12 ₹	8 ₹ @100-150	TILL PLINTH

SCHEDULE OF PLINTH BEAMS

	SIZE		BOTTOM REIN	NFORCEMENT	TOP REIN	NFORCEMENT	STIRRUPS		CIDE DADO	DEMARK
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH OUT	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	REMARK
PB1	300	350	3x12 ₹	2x10 ₹	3x12 ₹	2x10₹	8₹ @100	8₹ @150		



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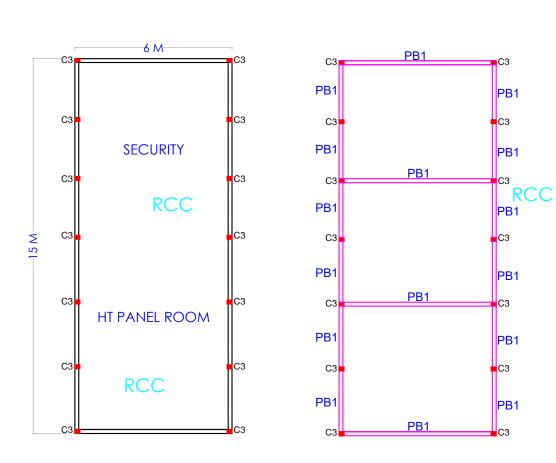
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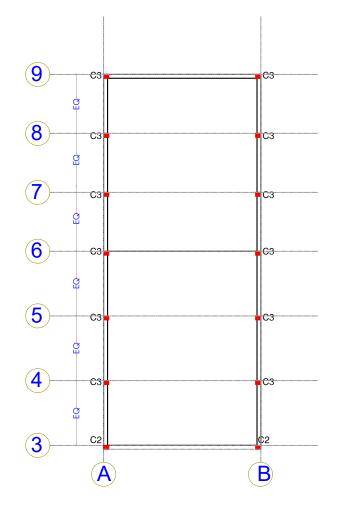


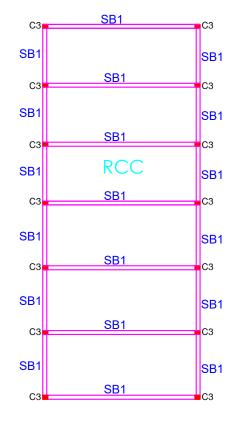
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SECURITY OR HT PANEL ROOM







SCHEDULE OF SLAB BEAMS

SCHEDULE OF PLINTH BEAMS

	SIZE		BOTTOM REIN	NFORCEMENT	TOP REIN	NFORCEMENT	STIRRUPS		CIDE BADO	DEMARK
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL		EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	REMARK
PB1	230	350	3x12₹	2x10₹	3x12₹		৪ ছ @100	৪ ছ @150		

	SIZE		BOTTOM REIN	IFORCEMENT	TOP REIN	NFORCEMENT	STIRRUPS		CIDE DADO	DEMARK
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH OUT	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	REMARK
SB1	230	350	3x12₹	2x10₹	3x12₹	2x10₹	৪ ছ @100	৪ ছ @150		

SCHEDULE OF COLUMNS & FOOTINGS

COLUMN	EXCAVATION	PCC.	FOUNDATIO	NC	REINFORCEM	REINFORCEMENT ALONG COLUMN AT GROUND FLOOR				
NO.	SIZE	THK.	FOOTING SIZE	FOOTING DEPTH	LONG LOWER TIER	SHORT UPPER TIER	SIZE	VERT.BARS	TIES	REMARKS
C3	1500x1800	150	1200x1500	380	10₹@125	10₹@125	230X300	6x12 ₹	8₹@100-150	

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SECURITY OR HT PANEL ROOM STRUCTURAL DETAIL DRAWING

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VERIFIED BY: AR ROHIT MUDALIAR

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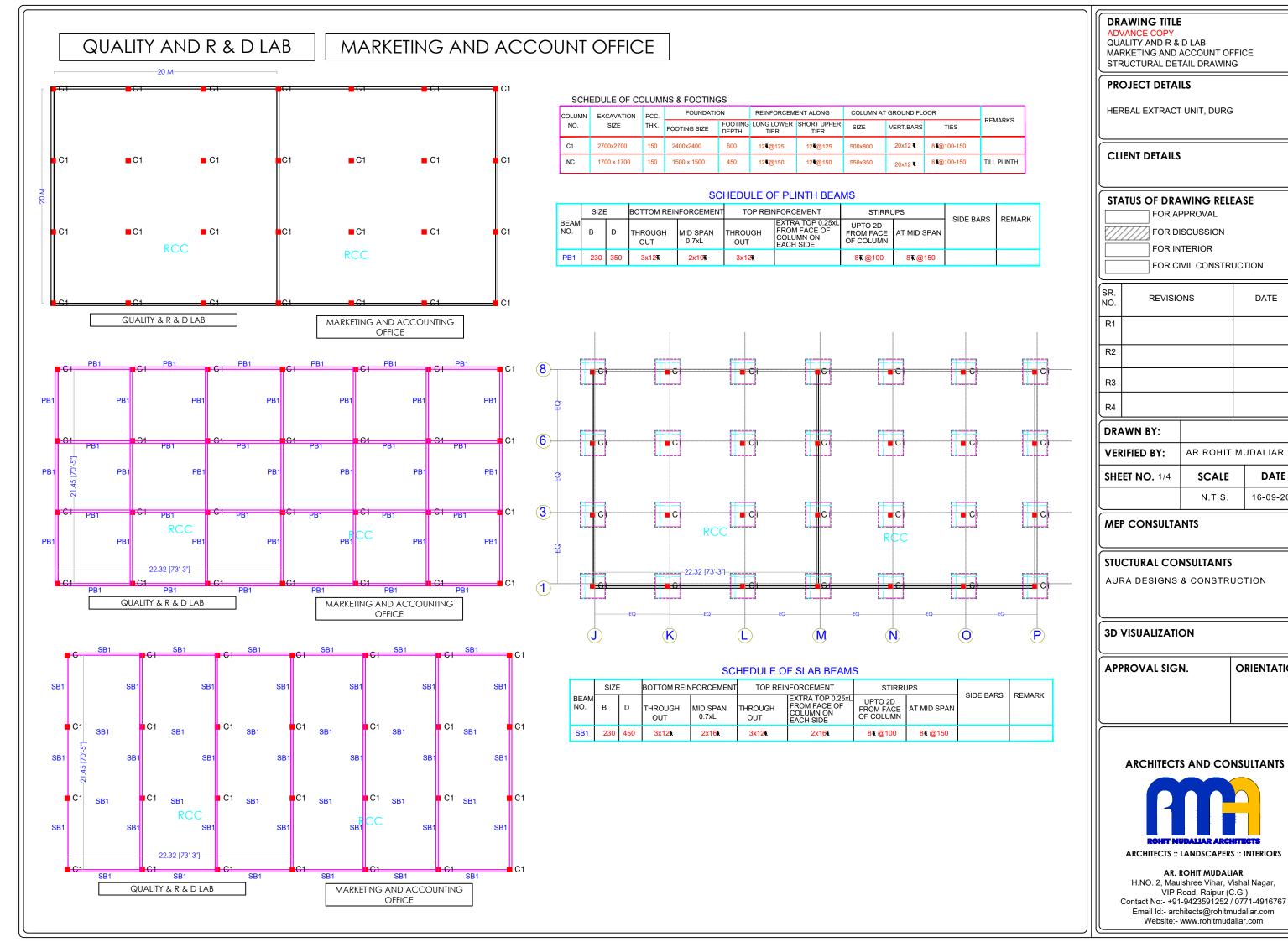
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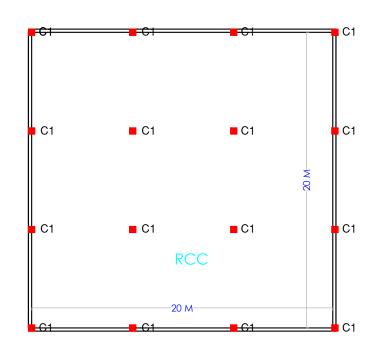
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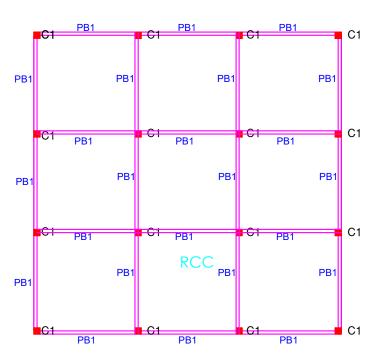
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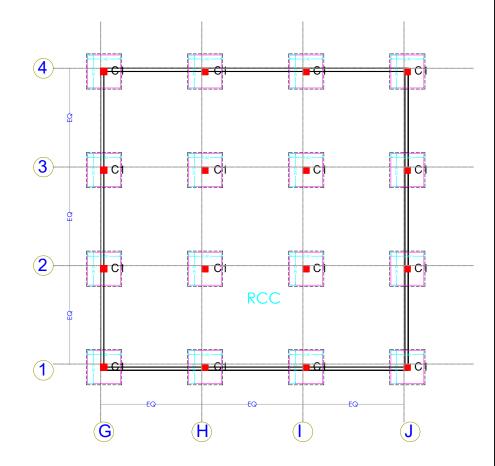
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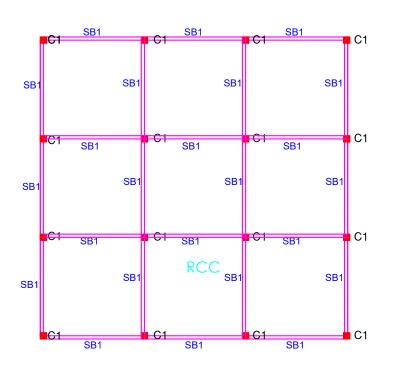
16-09-2022

FINISHED GOODS STORAGE









SCHEDULE OF PLINTH BEAMS

	SIZE		BOTTOM REIN	NFORCEMENT	TOP REIN	NFORCEMENT	STIRRU	JPS	OIDE DADO	DEMARK
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	REMARK
PB1	230	350	3x12 ₹	2x10 ₹	3x12 ₹		৪ इ @100	৪ ছ @150		

SCHEDULE OF SLAB BEAMS

			BOTTOM REINFORCEMENT				STIRRU	JPS	CIDE DADO	DEMARK
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	REMARK
SB1	230	450	3x12₹	2x16₹	3x12 ₹	2x16₹	৪ ছ @100	৪ ছ @150		

SCHEDULE OF COLUMNS & FOOTINGS

COLUMN	EXCAVATION	PCC.	FOUNDATIO	FOUNDATION REINFORCEMENT ALONG COLUMN AT GROUND FLOOR					OOR	DEMARKS
NO.	SIZE	THK.	FOOTING SIZE	FOOTING DEPTH	LONG LOWER TIER	SHORT UPPER TIER	SIZE	VERT.BARS	TIES	REMARKS
C1	2700x2700	150	2400x2400	600	12र्@125	12र्@125	500x800	20x12 ₹	8 4 @100-150	

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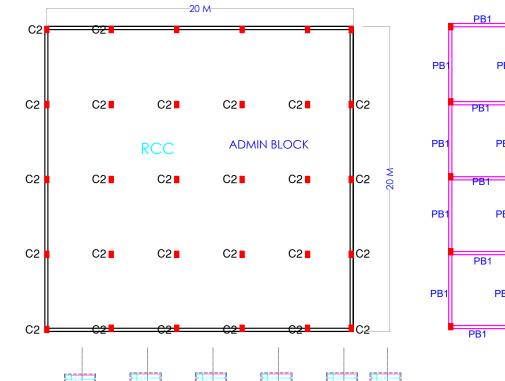
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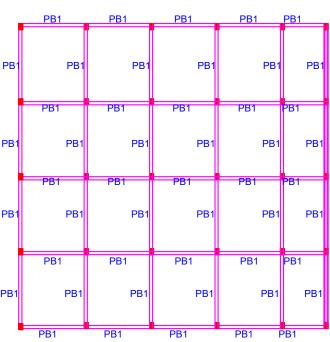


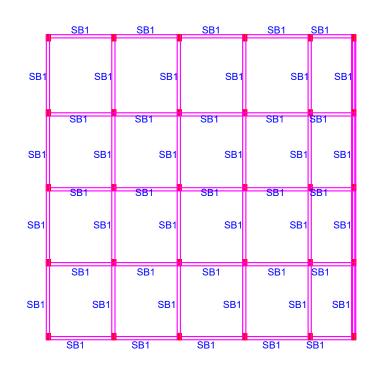
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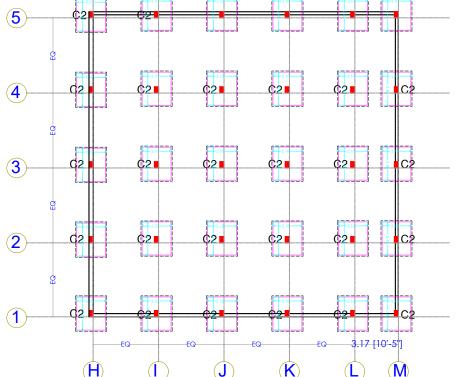
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ADMINISTRATIVE OFFICE









SCHEDULE OF PLINTH BEAMS

	SIZE	EXTRA TO			STIRRU	JPS	CIDE DADO	DEMARK		
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH OUT	EXTRA TOP 0.25xL FROM FACE OF COLUMN ON EACH SIDE	UPTO 2D FROM FACE OF COLUMN	AT MID SPAN	SIDE BARS	REMARK
PB1	230	350	3x12 ₹	2x10₹	3x12₹		৪ র @100	৪ ছ @150		

SCHEDULE OF SLAB BEAMS

	SIZE		BOTTOM REINFORCEMENT		TOP REINFORCEMENT		STIRRUPS		CIDE DADO	DEMARK
BEAM NO.	В	D	THROUGH OUT	MID SPAN 0.7xL	THROUGH OUT EXTRA TOP 0.25% COLUMN ON EACH SIDE		0P10 2D	AT MID SPAN	SIDE BARS	REMARK
SB1	230	450	3x12₹	2x16₹	3x12 ₹	2x16₹	৪ ছ @100	৪ ছ @150		

SCHEDULE OF COLUMNS & FOOTINGS

COLUMN	EXCAVATION	PCC.	FOUNDATIO	N	REINFORCEM	ENT ALONG	COLUMN AT	GROUND FLO	OOR	DEMARKO
NO.	SIZE	THK.	FOOTING SIZE	FOOTING DEPTH	LONG LOWER TIER	SHORT UPPER TIER	SIZE	VERT.BARS	TIES	REMARKS
C2	2400x2700	150	2100x2400	600	12र्@125	12र्@125	300x450	20x12 ₹	৪ ই@100-150	

DRAWING TITLE

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PROJECT DETAILS

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