

PAITHAN MEGA FOOD PARK PVT. LTD. AT PAITHAN (MH)

TENDER FOR FIRE HYDRANTS AND SAFETY SYSTEMS

BID NO.: PMFPPL – SFFTGS – 01 - 2015



Paithan Mega Food Park Pvt. Ltd.

Nath House, Nath Road, Aurangabad-431005, Maharashtra

Project Management Consultants (PMC)



Abhyuday Techno Economic Consultants Pvt. Ltd.
211-212, Patel Avenue, Near Gurudwara
S.G. Highway, Thaltej, Ahmedabad – 380054, Gujarat

A/E Consultants



SEM MAC Consultants Private Limited
'Conjeevaram House' , 2nd Floor, 6-1-276,
Padmarao Nagar, Secunderabad – 500 025.

PAITHAN MEGA FOOD PARK PVT. LTD.

AT PAITHAN (MH)

BOOK NO. 1

Bid Information, General Conditions, Special Conditions, Appendix

BID NO. PMFPPL – FHSS – 01 - 2016

Section 1	: Bid Information
Section 2	: Bidders Qualification Criteria
Section 3	: General Conditional of Contracts
Section 4	: Special Conditions of Contracts
Section 5	: Appendix



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Section 1: Instruction to Bidders

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A. General

1. Scope of Bid

- a) Paithan Mega Food Park Private Limited, Aurangabad (referred to as Employer in these documents) invite bids for Installation of Fire Hydrant & Safety Systems.(As defined in these documents and referred to as “the Works”) detailed in Preface.
- b) The successful bidder will be expected to complete the works within a period of 6 months including rainy season.

2. Source of Funds: It is a Central Government aided project

3. Eligible Bidders

- a) Eligible Bidder’s Qualification criteria
 - i. **The bidder should have satisfactorily completed at least one similar work (Installation of Industrial Fire Hydrant Systems) with a contract value of at least Rs. 2.40 Crs or two similar works of Rs. 1.50 Crs in any one of 12 month continuous period within last 5 financial years.**

The average annual turnover of the bidder should be more than Rs. 2.40 Crs for last three financial years.

The Bidders should have sound financial status, in support of which, the annual turnover statement of the preceding 3 years, Certified Balance sheet of the three proceeding 3 years for the previous year and Solvency Certificate from a Nationalised Bank shall be submitted.

- ii. The Solvency certificate shall be for a minimum amount equalling 20 percent of the quoted tender.
- iii. The bidder having successfully completed similar type of Industrial project of similar under reputed Consultants in last Five years. The bidder shall submit an attested copy of completion certificates of these projects.

The bidder shall also furnish details of work in hand on other contracts.

4. Forms of Bid and Qualification Information

- a) All bidders shall fill in Section 2, Forms of Bid and Qualification Information”.

5. One Bid per Bidder

- a) Each bidder shall submit only one bid for one contract. A bidder who submits or participates in more than one Bid (other than as a Sub-contractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder’s participation to be disqualified.
- b) Tender documents are not transferable

6. Cost of bidding

- a) The bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible and liable for those costs

7. Site visit

- a) The Bidder should visit the site and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

B. Bidding Documents

8. Contents of Bidding Documents

- a) The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 10:

Book 1 : Invitation for Bids containing Sections as below

<i>Section 1</i>	<i>: Instructions to Bidders</i>
<i>Section 2</i>	<i>: Forms of Bid and Qualification Information</i>
<i>Section 3</i>	<i>: General Conditions of Contract</i>
<i>Section 4</i>	<i>: Special Conditions of Contract</i>
<i>Section 5</i>	<i>: Appendix</i>

Book 2 : Bills of Quantity

Book 3 : Tender Drawings

Book 4 : Technical Specifications

- b) Only one set of original bidding document will be provided. The original documents prepared for submission have to be photocopied by the Bidder, for submission together with the Original.
- c) Each Bidder should submit one original documents & one duplicate document in all respect.
- d) Each Bidder should submit one copy of BOQ in Excel sheet in CD with financial bid.

9. Clarification of Bidding Document

- a) A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing or by fax at the Employer's address indicated in the invitation to bid. The Employer will respond to any request for clarification which he received earlier than 7 days prior to the deadline for submission of bids. Copies of the Employer's response will be forwarded to all purchasers of the bidding documents, including a description of the enquiry but without identifying its source.
- b) Pre-bid meeting
- i. The bidder or his official representative having authorization to attend, will be invited to attend a pre-bid meeting which will be arranged by the Employer. The purpose of meeting will be to clarify issues if any. The Bidder may send for points of clarifications with respect to tender if any by e-mail to Employer/ Consultants before Pre- bid meeting. Date, time and venue will be conveyed to the Bidder. **Pre bid meeting of this tender will be on 2nd April 2016 at Nath House, Aurangabad at 11.00 Am.** The notice of Pre Bid Meeting shall be displayed on the employer's website. Bidders are advised to check the website routinely.

10. Amendment of Bidding Documents

- a) Before the deadline for submission of bids, the Employer may modify the bidding documents by issuing tender addends.
- b) Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing through email or by fax to all the purchasers of the

bidding documents. Prospective bidders shall acknowledge receipt of each addendum by fax to the Employer. Addenda shall be incorporated in the bids submitted by the Bidder.

C. Preparation of Bids

11. Language of the Bid

- a) All documents relating to the bid shall be in the English language

12. Documents comprising the Bid

- a) The bid submitted by the bidder shall comprise the following:
 - i. The Bid (in the format indicated in Section 2) and the Bill of Quantities wherein the Bidder shall fill in the rates; original plus one photocopy
 - ii. EMD and Qualification Information Form and Documents; original plus one photocopy
 - iii. Originals only of Specifications and Drawing Volumes duly stamped on all pages by the Bidder
 - iv. Any other materials required to be completed and submitted by bidders in accordance with these instructions

All documents shall be filled in without exception. Supporting documents related to qualifying criteria shall be duly attested / notarised true copies.

13. Bid Prices

- a) The unit rate so quoted in the Bill of Quantity (BOQ) shall be applicable irrespective of any future change in quantities. Contractor has to quote for all items, if rate for any item/ items not quoted then Bid will be liable to reject.
- b) The quoted item rate shall include for all duties, taxes and other levies payable by the Contractor under the contract, and no claim whatsoever, in this respect shall be entertained by the Employer.
- c) The item rate quoted by the bidder shall be fixed during the tenure of the Contract.

14. Currencies of Bid and Payment

- a) The rates and the prices given are in Indian Rupees.

15. Bid Validity

- a) Bids shall remain valid for a period not less than 90 (Ninety) days from the last date for bid submission. A bid corrected by the Bidder as valid for a shorter period shall be rejected by the Employer as non-responsive.
- b) In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a

specified additional period. The request and the bidders' responses shall be made in writing or by fax. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid except as provided in 15(a) hereinafter, but will be required to extend the validity of his bid security for a period of the extension.

- c) The rates in BOQ shall remain fixed during the extended period of validity/extended period of contract.

16. Earnest Money Deposit:

- a) The Bidder shall furnish, as part of his Bid, an EMD of **Rs. 1.50 Lacs** in favour of Paithan Mega Food Park Private Limited, Aurangabad ; and may be in one of the following forms:
 - i. A bank guarantee issued by a Nationalized / Scheduled Commercial banks notified by RBI (excluding co-operative / Rural banks)
 - ii. Demand draft or Bankers Cheque or Pay order drawn on Nationalized / Scheduled Commercial banks notified by RBI (excluding co-operative / rural banks) in favour of Paithan Mega Food Parks Private Limited.
- b) Bank guarantees issued as surety for the bid should be valid for 45 days beyond the validity of bid.
- c) Any bid not accompanied by an acceptable Bid Security and not secured as indicated in Sub-Clauses 16 (a) and 16(b) above shall be rejected by the Employer as non-responsive.
- d) The EMD of unsuccessful bidders will be returned within 30 days from the end of the bid validity period specified.
- e) The EMD of the successful bidder will be returned/ discharged when the bidder has signed the Agreement and furnished the required Performance Bank guaranty.
- f) The EMD may be forfeited
 - i. If the Bidder withdraws the Bid after Bid opening during the period of Bid validity.
 - ii. If the Bidder does not accept the correction of the Bid Price, pursuant to Clause 28.
 - iii. In the case of a successful Bidder, if the Bidder fails within the specified time limit to
 - a) Sign the Agreement or Furnish the required Performance Bank Guarantee.
- g) No interest shall be paid on any EMD/ Performance Bank Guarantee in lieu thereof.

17. Alternative Proposals by Bidders

- a) Alternative bids shall not be considered for any part of the Works.

18. Format and Signing of Bid

- a) The Bidder shall prepare the Bid as specified in clause 12 and following the instruction in clause 19.
- b) The original and copy of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder. All pages of the bid where entries or amendments have been made shall be initialled by the person or persons signing the bid.

- c) The Bid shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialled by the person or persons signing the bid.

D. Submission of Bids

19. Sealing and Marking of bids

- a) There shall be two parts for the bids, part 'A' and part 'B'. The part 'A' shall contain Technical part of the bid and Part 'B' shall contain financial part of the bid. The Bidder shall enclose the original and one photocopy of Part A in one envelope marking it as, Envelope-A, TECHNICAL BID-ORIGINAL and COPY. He will then enclose the original and one photocopy of Part-B in another envelope marking it as Envelope B, FINANCIAL BID ORIGINAL and COPY. These envelopes shall then be put inside one outer envelope.

Part 'A', Technical BID of the bid shall contain

- i. EMD as per tender requirement. If the EMD is not deposited the tender shall be declared as non-responsive and rejected
- ii. The Technical Qualification Information indicated in Section 2 duly filled in original and photocopy
- iii. Conditional Tender will be rejected outright.
- iv. Originals only of Book - 1 Conditions of Contract and Book - 3 Drawing volume duly stamped and initialled on each page by the bidder as proof of their having scrutinized the documents.

Part 'B', Financial bid shall contain

- i. Form of Bid duly filled in original plus photocopy
 - ii. Book - 2 Bill of Quantities wherein the Bidder shall fill in the unit rates in digits and words and each page duly signed and sealed
- b) The inner and outer envelopes shall
Be addressed to the Employer at the following address:

Paithan Mega Food Park Pvt Ltd

Nath House , Nath Road ,
Aurangabad - 431005
Maharashtra State , India

20. PMC Address : Abhyuday Techno Economic Consultants Pvt. Ltd., 211-212, Patel Avenue, Near Gurudwara, S.G. Highway, Ahmedabad-380054.

E-mail : pmc@abhyuday.in

- a) Bear the following identification
 - i. Bid for **Installation of Fire Hydrant And Safety Systems**
 - ii. Bid Reference No.: PMFPPL - FHSS - 01 - 2016.
- b) In addition to the identification required in Sub-Clause 19(b), the inner envelopes shall indicate the name and address of bidder.

- c) If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

21. Deadline for Submission of the Bids

- a) Bids must be received by the Employer at the address specified above no later than **17.30 Hours on 11th April 2016**. In the event of the specified date for the submission of bids declared a holiday for the Employer, the Bids will be received up to the appointment time on the next working day.
- b) The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

22. Late Bids

- a) Any Bid received by the Employer after the deadline prescribed in Clause 21 will be liable to rejection.

23. Modification and withdrawal of bid: No modification or withdrawals shall be permitted after submission. EMD shall not be refunded.

E. Bid Opening and Evaluation

24. Bid Opening: The received bids will be opened after closing hours of the Bid on same day or next day. Any changes in the date will be notified on the website.

25. Process to Be Confidential

- a) Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to the Bidders or any other persons not officially concerned with such process until the award to the successful Bidder had been announced. Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his Bid

26. Clarification of Bids

- a) To assist in the examination, evaluations and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his Bid, including of the unit rates.
- b) Subject to sub clause 25 (a), no bidder shall contact the employer on any matter relating to its bid from the time of the bid opening to the time the contract is awarded. If the bidder wishes to bring additional information to the notice of employer, he should do so in writing.
- c) Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decision may result in the rejection of the Bidders' bid.

27. Examination of Bids and Determination of Responsiveness

- a) Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid (a) meets the eligibility criteria defined in Clause 3; (b) has been properly signed; (c) is accompanied by the required securities and; (d) is substantially responsive to the requirements of the Bidding documents.
- b) A substantially responsive Bid is one which conforms to all the terms, conditions and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality or performance of the Works; (b) which limits in any substantial way, inconsistent with the Bidding documents, the Employer's right or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.
- c) If a Bid is not substantially responsive, it will be rejected by the Employer and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

28. Correction of Errors

- a) Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:
 - i. Where there is a discrepancy between rates in figures and in words, the rate in words will govern; and
 - ii. Where there is a discrepancy between the unit and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.
- b) The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Bidder, if the Bidder does not accept the corrected amount the Bid will be rejected and the Bid security may be forfeited in accordance with Sub-Clause 16.(f)

29. Short listing of Eligible Bids: The bids shall be evaluated for technical capability first. An empowered Committee shall evaluate the qualification criteria based on internally decided scoring pattern and shall shortlist contractors based on the information and supporting evidence provided.

30. Evaluation of Bids.

- a) **The contractor shall be shortlisted on the basis of their technical bid.**
- b) The Employer will open, evaluate and compare the financial Bids only for shortlisted proposals (based on their technical evaluation) and take his decision for award of work. The process of Evaluation shall not be disclosed to any Bidder or others.
- c) Shortlisted contractor shall be invited for negotiations by the employer.
- d) The Employer reserves the right to accept or reject any variation, deviation from the bid document, or any alternative offer. Variations, deviations and alternative offers and other factors which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Bid evaluation

F. Award of Contract

31. Award Criteria

As per clause 30, the bids will be evaluated on technical and financial basis and the bidder will be selected on the basis of capability and price offer.

32. Employer's Right to Accept any Bid and to Reject any or all Bids

- a) Notwithstanding Clause 30, the Employer reserves the right to accept or reject any Bid or part of the Bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder of Bidders of the grounds for the Employer's action.

33. Notification of Award and Signing of Agreement

- a) The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by fax confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").
- b) The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance Bank Guarantee in accordance with the provisions of Clause 33 (a) of Contract Price.
- c) The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be kept ready for signature of the successful bidder in the office of employer within 15 days of receipt of Letter of Acceptance; the successful Bidder will sign the Agreement and deliver it to the Employer.
- d) Upon accepting the Performance Bank Guarantee for the Successful Bidder and signing of the agreement, the employer shall issue a LOI / Notice to Proceed' to the Contractor, in which the date of commencement of the Contract shall be indicated.
- e) Upon furnishing of the Performance Bank Guarantee by the successful Bidder, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

34. Performance Bank Guarantee (PBG)

- a) Within 15 days of receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Bank Guarantee (PBG) in any of the forms given below for an amount equivalent to 5% of the Contract price.

- b) A Performance bank guarantee, Validity shall be **13 months** from the date of Mobilisation or up to completion of work, whichever is later in the form given in Section 2.
 - i. Bank draft, in favour of Paithan Mega Food Park Private Limited, Aurangabad, payable at Aurangabad.
 - ii. If the Performance security is provided by the successful Bidder in the form of a Bank Guarantee, it should be issued by a Nationalized Bank or a Scheduled Commercial Bank in the format attached herewith.
- c) Failure of the successful bidder to comply with the requirements of sub-clause 33(b) shall constitute a breach of contract, cause for annulment of the award, forfeiture of the EMD, and any such other remedy the Employer may take under the contract and the Employer may resort to awarding the contract to the next ranked bidder.

35. Mobilisation Advances and Security

- a) The Employer will provide a Mobilisation Advance Payment, @ **10 % of the Contract Price** as stipulated in the Conditions of Contract against submission of Bank Guarantee from Nationalised Bank or a Scheduled Bank only. Validity of this BG should be **13 months** or up to complete recovery of Mobilisation advances or as decided by the management at the time of negotiation with the party.

36. Corrupt or Fraudulent Practices

- a) The Employer expects the Bidders, Suppliers, Contractors and Consultants; observe the highest standard of ethics during the procurement and execution of such contracts. Therefore, the Employer
 - i. Defines, for the purpose of this provision, the terms set forth below as follows:
 - a) “corrupt practice” means the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence the action of the Employer in the procurement process or in contract execution;
 - b) “fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;
 - c) “collusive practice” means a scheme of arrangement between two or more Bidders, with or without the knowledge of the Employer, designed to establish bid prices at artificial, non-competitive levels; and
 - d) “Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract.
 - ii. Will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question;

SECTION - 2: FORMS OF BID, QUALIFICATION INFORMATION AND LETTER OF ACCEPTANCE, SECURITIES

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FORMATS	
- <i>Format for Credit Facility</i>	18
- <i>Letter of Acceptance</i>	19
- <i>Notice to Proceed with the Work</i>	20
- <i>Agreement Form</i>	21
- <i>Bank Guarantee Formats</i>	24

NOTE:-

*BOTH THESE FORMS ARE TO BE FILLED IN BY THE TENDERER AND SUBMITTED AS PART OF HIS BID.

Form 1: Contractor's Bid

This will be submitted with Financial Bid. In this book Bidder are requested to submit this letter without mentioning contract price.

Description of the Works : Installation of Fire Hydrant & Safety Systems.

BID No. : PMFPPL – FHSS – 01 - 2016

To : Paithan Mega Food Park Private Limited.

Address : Nath House, Nath Road, Aurangabad – 431005, Maharashtra

GENTLEMEN,

Having examined the bidding documents including addendum, we offer to execute the Works described above in accordance with the Conditions of Contract, Specifications, Drawings and Bill of Quantities accompanying this Bid, for a contract price as submitted in Financial Bid.

This bid shall be valid for a period of 90 (Ninety) days from the day the bid is opened.

This Bid and your written acceptance of it shall constitute a binding contract between us. We understand that you are not bound to accept the lowest or any Bid you receive.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

We also undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988"

We hereby confirm that this Bid complies with the Eligibility, Bid Validity and Bid Security required by the Bidding documents.

Yours faithfully,

Authorized Signature:

Name & Title of Signatory : _____

Name of Bidder : _____

Address : _____

Contractor No. : _____

Email ID : _____

Company Seal/ Stamp

Form 2: Qualification Information

The information to be filled in by the Bidder in the following pages will be used for purposes of Evaluation of Technical Submission as provided for in Clause 29 of the Instructions of Bidders.

The Contractor shall use this format and prepare the submission in as many pages as he wishes.

Particular care shall be taken to submit certification from the previous clients in support of the Bidder's claims. *(The supporting documents should be duly attested or notarized)*

1.1 Constitution or legal status of Bidder *[Attach copy]*

Place of registration:

Principal Place of business:

Power of attorney of signatory of Bid *[Attach]*

1.2 Total value of Civil Engineering construction work
Executed and payments received in the last three year
(In Rs. Crores)

2012-2013 _____ #

2013-2014 _____ #

2014-2015 _____ #

1.3 Work performed as prime contractor (in the same name) on works of a similar nature over the last three years.

<u>Project Name</u>	<u>Name of the Employer*</u>	<u>Description of work</u>	<u>Contract no.</u>	<u>Value of contract (Rs. Millions)</u>	<u>Date of issue of work order</u>	<u>Stipulated period of completion</u>	<u>Actual date of completion*</u>	<u>Remark explaining reasons for delays and work completed</u>

1.4 Information on Bid Capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

(A) Existing commitments and on-going works:

<u>Description of work</u>	<u>Place & State</u>	<u>Contract No. & Date</u>	<u>Name and Address of Employer</u>	<u>Value of Contract (Rs. Millions)</u>	<u>Stipulated period of completion</u>	<u>Value of works* remaining to be completed (Rs. Millions)</u>	<u>Anticipated date of completion</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

- 1.5 Contractor's Plant, tool and Equipment essential for carrying out the Works shall be listed below

	Item of equipment	Requirement		Availability proposals		
		No.	Capacity	Owned/ leased/ to be procured	Nos/ capacity	Age/ condition
1	Torch Welding, Welding Rods.	3				
2	Wrenches, Nut & Bolts.	All				
3	Grinding and Drilling Tools.	3	Sets			
4	Teflon Tapes.		As			
5	"O" rings.		required			
6	Hydro Pump Pressure Checking Tools.	2	As			
7	Pressure Gauge/ Valve.		required			
8	Safety Harness for Workers.		Sets			
9	Diesel Electricity Generator.	1				
10	Extendable Ladders.	3				
11	Oil Cans	2				
12	Flow measuring device					
13	Discharge test tanks					
14	Various sized engineered orifice nozzles					
15	Pump appliance					
16	Multi stage hydrostatic test pump					
17	Signage (Occupational Health and Safety)					
	Any other Equipment (Please Specify)					

- 1.6 Construction management and QC Organisation, Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data.

<u>Position</u>	<u>Name</u>	<u>Minimum Qualification</u>	<u>Years of experience(Years) (general)</u>	<u>Years of experience in the proposed position(Years)</u>
Project Manager -1 Nos.		Mechanical Engineering Graduate	15	8
Site Engineers- 2 Nos.		Engineering Graduate/Diploma	4-7	5
Site Supervisors- 2 Nos.		Engineering Diploma/ITI	4-7	3

- 1.7 A statement regarding the number of skilled and unskilled workers, the company has on its rolls at the time of tender submission. The statement also should indicate the number of skilled and unskilled workers proposed to be deployed on this project.
- 1.8 evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List them below and attach copies of support documents [sample format attached]
- 1.9 Name, address and telephone, telex and fax numbers of the Bidders' bankers who may provide reference if contracted by the Employer.

- 1.10 Information on litigation history in which the Bidder is involved.

<u>Other party(ies)</u>	<u>Employer</u>	<u>Cause of dispute</u>	<u>Amount involved</u>	<u>Remarks showing Present status</u>

- 1.11 Statement of compliance under the requirements of Sub Clause 3.(a) of the instructions to Bidders.
- 1.12 Proposed work method and schedule of work demonstrating monthly targets so that the work is completed within the desired time frame. The Bidder should attach descriptions, drawings and charts as necessary to comply with the requirements of the Bidding documents.

SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT FACILITIES (ON THE LETTER HEAD OF BANK)**BANK CERTIFICATE**

This is to certify that M/s.is a reputed company with a good financial standing.

If the contract for the work, namely..... is awarded to the above firm, we shall be able to provide overdraft/ credit facilities to the extent of Rs. to meet their working capital requirements for executing the above contract.

__Sd.__

Name of Bank

Senior Bank Manager

Address of the Bank

Letter of Acceptance
(Letterhead paper of the Employer)

To: _____ [name and address of the Contractor] _____-____-2015

Dear Sirs,

This is to notify you that your Bid dated _____ for execution of..... (Bid No.: PMFPPL - FHSS - 01 - 2016) for the Contract Price of Rs. _____ (Rupees _____) as corrected and modified in accordance with the Instructions to Bidders' is hereby accepted by our Agency.

We note that as per bid, you do not intend to subcontract any component of work.

[OR]

We note that as per bid, you propose to employ M/s. as sub-contractor for executing

[Delete whichever is not applicable]

You are hereby requested to furnish Performance bank Guarantee for an amount of Rs. ----- within 15 days of the receipt of this letter of acceptance valid up to 28 day from the Defects Liability Period i.e. up to and sign the contract, failing which action as stated in Para 33 c of Section 1, clause 33c may be taken.

Yours faithfully,

Managing Director
Paithan Mega Food Park Private Limited

Issue of Notice to proceed with the work(Letterhead of the Employer)

____-____-2015

To

----- (name and address of the Contractor)

Dear Sirs:

Pursuant to your furnishing the requisite Bank Guarantee as stipulated in clause 33(a) Section 1 and signing of the contract agreement for.....@ a Bid Price of Rs. _____ (Rupees _____) you are hereby instructed to proceed with the execution of the said works in accordance with contract documents. The date of commencement will be _____.

Yours faithfully,

Managing Director
Paithan Mega Food Park Private Limited

Agreement Form**Agreement**

This agreement, made the _____-2015, between Paithan Mega Food Park Private Limited (hereinafter called "the Employer") of the one part and _____ [name and address of Contractor] (hereinafter called "the Contractor") of the other part.

Whereas the Employer is desirous that the Contractor executes the said work (Bid No: PMFPPL - FHSS - 01 - 2016) (Hereinafter called "the Works") and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein, at a contract price of Rs. _____ (Rupees _____)

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
 - i. Letter of Acceptance;
 - ii. Contractor's Bid;
 - iii. Book 1 containing Invitation to bid, General Conditions of Contract, Special Conditions of Contract, Appendix
 - iv. Book 2: Duly filled Bill of Quantities & Rates
 - v. Tender Drawings-Book 3 including Technical Specifications

In witness whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____

Was hereunto affixed in the presence of:

Signed, Sealed and Delivered by the said _____

In the Presence of:

Binding Signature of Employer _____

Binding Signature of Contractor _____

Forms of Securities

Approved forms of Securities are attached here with. The performance and Mobilisation Advance are to be given by the successful bidder after the Employer issues the Letter of acceptance.

- Bank Guarantee in lieu of EMD with the Bid Submission
- Performance Bank Guarantee with letter of acceptance
- Bank Guarantee for Mobilisation Advance Payment (before receiving mobilization Advance)

BANK GUARANTEE IN LIEU OF EARNEST MONEY DEPOSIT

BANK GUARANTEE (To be executed on Stamp Paper of Rs.100/- or such higher value as per this Stamp Act of the State in which the Guarantee is issued. Stamp Paper should be in the name of the Nationalized Bank Issuing the Guarantee.)

To,
Paithan Mega Food Park Private Limited
Nath House, Nath Road,
Aurangabad – 431005, Maharashtra

1. In consideration of M/s. Paithan Mega Food Park Pvt Ltd. (herein called “the Employer”) having agreed to extend M/s _____ Contractor incorporated under the provision of the Companies Act, _____ demand, under the terms and conditions contained in the Tender No. _____ Dated _____ 2015 (hereinafter called “the said Tender”) of Earnest Money Deposit for the due fulfilment by the said Parties of the terms and conditions contained in the said Tender, on the production of a Bank Guarantee for Rs. _____ (Rupees _____ Only) we, name of _____ Bank, address _____ (hereinafter referred to as “the Bank”) do hereby undertake to pay to Employer an amount not exceeding Rs. _____ (Rupees _____ Only) against any loss of any breach by the said Party of any of the terms and conditions contained in the said tender.
2. We _____ (Name of Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Employer stating that the amount claimed is due by way of damage caused, to or would be caused to or suffered by the Company by reason of any breach by the said Party of any of the terms of conditions contained in the said Tender or by reason of the party’s failure to perform the said Tender. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee.
3. We _____ (name of Bank), further agree to that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Tender and that it shall continue to be enforceable till all the dues of the Company under or by virtue of the said Tender have been fully paid and its claims satisfied or discharged or till the Managing Director, Paithan Mega Food Park Private Limited, Certifies that the terms and conditions of the said tender have been fully and properly carried out by the said Party and accordingly discharge the guarantee. Unless a demand or claim under this Guarantee is made on us in writing on or before the date. _____ we shall be discharged from all liability under this Guarantee thereafter.
4. We _____ (name of Bank), further agree with the Company that the Company shall have the fullest liberty without our consents and without affecting in any manner

our obligation hereby to vary any of the terms and conditions of the said Tender or extend time of performance by the said Party from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Party and to forbear or enforce any of the terms and conditions relating to the said Tender and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said party or for any forbearance, act of omission on the part of the Company or any indulgence by the Company to the said party or by any such matter of thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

5. We, _____ name of Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing.

Notwithstanding anything contained hereinabove:

- a) The liability of the Guarantor under this guarantee is restricted to Rs _____ (Rupees _____ Only).
- b) This guarantee shall remain enforce until its expiry on _____.
- c) Unless a suit or action to enforce a claim under this guarantee is made against the rights within _____ months from the aforesaid date of expiry, i.e. _____ all the rights of the beneficiary under the said guarantee shall be forfeited and the guarantee shall be released and discharged and discharged from all liabilities thereof.

Witness

For _____

Signature _____

Seal

PERFORMANCE BANK GUARANTEE

PERFORMANCE BANK GUARANTEE (To be executed on Stamp Paper of Rs.100/- or such higher value as per this Stamp Act of the State in which the Guarantee is issued. Stamp Paper should be in the name of the Nationalized Bank Issuing the Guarantee.)

In consideration of the Paithan Mega Food Park Pvt. Ltd. (hereinafter called "the PMFPPL") having agreed to exempt M/s. _____ (hereinafter called "the said Contractor(s)") from the demand under the terms and conditions of an agreement dated _____ made between Paithan Mega Food Park Pvt. Ltd. and M/s. _____ for _____ work at Paithan Mega Food Park Pvt. Ltd, Aurangabad, (hereinafter called "the said Agreement") of security deposit for the due fulfilment by the said Contractor(s) of the terms and conditions contained in the said Agreement on production of a bank guarantee for Rs. _____ (Rupees _____) only.

We, _____ bank (hereinafter referred to as "the Bank") at the request of M/s. _____ (Contractors) do hereby undertake to pay to the PMFPPL an amount not exceeding Rs. _____ (Rupees _____ only) against any loss or damage caused to or suffered by the PMFPPL by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement.

We, _____ Bank do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from PMFPPL stating that the amount claimed is due by way of loss or damage caused to or is likely to be caused to or suffered by the PMFPPL by reason of breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement or by reason of the Contractor(s) failure to perform the said Agreement. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____ (Rupees _____ only.)

We, _____ Bank undertake to pay to the PMFPPL any money so demanded not withstanding any dispute or disputes raised by the Contractor(s) in whether any suit or proceedings before any Court or Tribunal or otherwise, relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.

We, _____ Bank further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the existence of the said Agreement and that it shall continue to be enforceable till all the dues of PMFPPL under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till _____ whichever is late, or Paithan Mega Food Park Pvt. Ltd. has certified that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this Guarantee. Unless a demand or claim under this Guarantee is made on us in writing on or before the _____ we shall be discharged from all liability under this Guarantee thereafter.

We, _____ Bank agree with the Paithan Mega Food Park Pvt Ltd shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance of the said terms and conditions by the said Contractor(s) from time to time, or to postpone for any time or from time to time any of the powers exercisable by the PMFPPL against the said Contractor(s) and/or forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor(s) or for any forbearance, act or omission on the part of the PMFPPL or any indulgence by the PMFPPL to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision have effect of so relieving us.

The Guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

We, _____ Bank lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the PMFPPL in writing.

Dated this _____ day of _____.

PERFORMANCE BOND FOR UNBALANCED ITEMS

Performance Bond will not be accepted.

BANK GUARANTEE FOR MOBILISATION ADVANCE PAYMENT

BANK GUARANTEE (ADVANCE) (To be executed on Stamp Paper of Rs.100/- or such higher value as per this Stamp Act of the State in which the Guarantee is issued. Stamp Paper should be in the name of the Nationalized Bank Issuing the Guarantee.)

To,
Paithan Mega Food Park Pvt. Ltd.
Nath House, Nath Road,
Aurangabad-431005, Maharashtra

With reference to your Letter, Order No.....Dated.....Concluded between Paithan Mega Food Park Pvt. Ltd. hereinafter referred to as "Employer" and M/s.....hereinafter referred to as "The Contractor" for Civil Construction of Paithan Mega Food Park Pvt Ltd. as detailed in the above contract, herein after referred to as "The said contract" and in consideration of the Employer having agreed to make an advance payment, in accordance with the terms of the said contract to the said Contractor. We "The Bank" hereby irrevocably undertake and guarantee to you that if the said Contractor would fail to complete Civil Construction work in conformity with the terms of the said contract for any reason whatsoever or fail to perform the said contract in any respect or should the whole or part of the said on account payment at any time become repayable to you for any reason whatsoever, we shall, on demand and without demur pay to you all and any sum up to a maximum of Rs.....

We further agree that the Employer shall be the sole judge as to whether the Contractor has failed to abide by the terms of said contract or has failed to perform the said contract in any respect or the whole part of the on account payment made by the Employer has become repayable.

- d) We further hereby unconditionally undertake to pay the amount due and payable under this guarantee without any demur merely on a demand from the Employer stating the amount claimed. Any such demand made on the bank shall be conclusive and binding upon us. The liability of the Guarantor under this guarantee is restricted to Rs_____ (Rupees_____ Only).

We further agree that this Guarantee shall remain in full force for a period ofMonths unless it is released by you, on an application by Contractor made after the Bank Guarantee period has expired or such extended period of Guarantee, whichever is later, provided the Contractor has:

- (a) Completed Civil Construction work its obligations for Civil Construction work under the said Contract and adjusted the advance amount covered under this Guarantee.
- (b) Produced a Certificate of due completion of the aforesaid Civil Construction work under the said Contract.
- (c) Submitted a "No Demand Certificate" signed by your Managing Director.

Should it be necessary to extend this Guarantee beyond the said date we undertake to extend the period of this Guarantee without reference to the Contractor. Immediately after its lodging period or extended lodging period has expired, this document is to be returned

to us. No matter whether this document has been returned or not, no claim after the expiry of lodging period/ extended lodging will be accepted.

This Guarantee shall not be affected by any change in the Constitution of the Contractor or us nor shall it be affected by any change in your constitution or by any amalgamation or absorbable by the Absorbing/amalgamated Company or concern.

We further agree that the Employer shall have the fullest liberty without affecting in any way our obligations hereby guaranteed us, as aforesaid, and we hereby expressly waive all our rights of surety ship and other rights if any which are in any way inconsistent with the above or any other provision of the guarantee.

We further agree that the Employer shall be the fullest without affecting in any way our obligation hereunder, with or without our consent or knowledge to vary any of the terms and conditions of the said contract or to extend the time of completion period from time to time or postpone for any time or from time to time any of the powers exercisable by the Employer against the Contractor and either of forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variation or any indulge or forbearance shown or any act or omission on the part of the Employer or by any such matter or thing whatsoever under the law relating to sureties would but for this provision have the effect of so relieving us.

It shall not be necessary for you to proceed against the Contractor before proceeding against us and the Guarantee herein contained shall be enforceable against us, notwithstanding any security which you may have obtained or obtain from the Contractor at any time or when proceeding taken against us, hereunder, be outstanding or realized.

We further agree that this Guarantee shall come into force simultaneously with your making the said advance payment to the Contractor and shall not be revoked by us whether before its coming into force or any time during its currency without your previous consent in writing signed by your Managing Director.

Notwithstanding anything contained herein before, our liability under this guarantee is restricted to Rs.....(Rupees.....) and it will remain in force up tounless a suit to enforce any claim under this Guarantee is filed against us on or before (The claim lodging period should be 60 days beyond the date of expiry of Guarantee, Thus if the Guarantee is valid up to date_____ the claim lodging period should be _____, all your rights under this Guarantee shall be forfeited and we shall be relived and discharged from all liabilities there under.

Dated this.....day of2015.

COUNTERSIGNED

WITNESS:

SIGNATURE: (BANK)

NAME:

SECTION 3 - GENERAL CONDITATION OF CONTRACT

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1. Interpretations

In construing these conditions, the specifications, schedule of quantities and the Contract Agreement, the following words shall have the meanings herein assigned to them except, where the subject or context otherwise requires.

- a) 'EMPLOYER/ OWNER 'shall mean Paithan Mega Food Park Pvt Ltd. having its registered office at Paithan and shall include their legal representatives, Assigns, successors or managing Committee or anyone authorized by them on their behalf
- b) 'CONTRACTOR' shall mean the tenderer and shall include his/ their legal representative/s, assigns/or successors
- c) 'PMC' shall mean M/s. Abhyuday Techno Economic Consultants Private Limited, 211-212, Patel Avenue, Near Gurudwara, S. G. Highway, Thaltej, Ahmedabad - 380054, Gujarat their nominees and also the Engineer-in-Charge or Engineer appointed by the Employer
- d) 'SITE' shall mean the site of the Contract works including any building and erections thereon and any other land (inclusively) as aforesaid allotted by the Employer for the Contractor' use
- e) 'THIS CONTRACT' shall mean the Articles of Agreement, the General Conditions, the Special Conditions, the Appendix, the Schedule of Quantities, Specifications, drawings, and other letters attached hereto and duly signed
- f) 'NOTICE IN WRITING' or 'WRITTEN NOTICE' shall mean a Notice in writing, typed or printed characters sent (unless delivered personally or otherwise Proved to have been received) by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post it would have been delivered
- g) 'ACT OF INSOLVENCY' shall mean any act of insolvency as defined by the Presidency Towns Insolvency Act, or the Provincial Act or any Act amending such original

Words importing the persons include firms and corporations

Words importing the singular only also include the plural and vice versa where the context requires

2. Scope of Contract

The Contractor shall carry out and complete the said work in every respect in accordance with this Contract and with the directions of and to the satisfaction of the Employer / PMC/Architect / Engineer-in-charge. The Architect and Engineer-in-Charge on their own may from time to time issue further drawings and/or written instructions, details, directions and explanations which are hereafter collectively referred to as "Works Instructions" in regard to:

- a) The variation or modification of the design, quality or quantity of works or the addition or omission or substitution of any work

- b) Any discrepancy in the Drawings or between the Schedule of Quantities and/or Drawings and / or Specifications
- c) The removal from the site of any material brought thereon by the Contractor and the substitution of any other material therefore
- d) The removal and / or, re-execution of any works executed by the Contractor
- e) The dismissal from the works of any persons employed thereupon
- f) The opening up for inspection of any work covered up
- g) The amending and making good of any defects under clause

The Contractor shall forthwith comply with and duly execute any work comprised in such works Instructions provided always that verbal instructions, directions and explanations given to the Contractor or his representative upon the works by the Architect and Engineer-in-charge shall, be confirmed in writing by the Contractor within seven days, and if not dissented from in writing within a further period of seven days, such shall be deemed to be "Works Instructions" within the Scope of the Contract

3. Inspection of Site

The Employer shall have made available to the Contractor such as data on sub-surface conditions as shall have been obtained by or on behalf of the Employer from investigations undertaken relevant to the Works, but the Contractor shall be responsible for his -own interpretation thereof and deemed to have visited the site and done own analysis.

4. Sufficiency of Tender

The Contractor shall also be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the works and of the rates and prices stated in the priced Bill of Quantities and the Schedule of Rates and Prices, which Tender rates and prices shall, except in so far as it is otherwise provided in the Contract, cover all his obligations under the Contract and all matters and things necessary for the proper execution and maintenance of the Works.

5. Program To Be Furnished

- a) Within the time stated of these Conditions, the Contractor shall, after the acceptance of his Tender, submit to the Engineer for his approval a program showing the order in which he proposes to carry out the works. The Contractor shall whenever required by the Engineer or Engineers' Representative, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of the works
- b) If at any time it should appear to the Engineer that the actual progress of the works does not conform to the approved program referred to in sub-clause of this Clause, the Contractor shall produce, at the request of the Engineer, a revised

program showing the modifications to the approved program necessary to ensure completion of the works within the time for completion as decided and reworked to the satisfaction of the Employer

6. Drawings and Schedule of Quantities

The Copy of the Contract shall remain in the custody of the Employer. The Contractor on the signing thereof shall be furnished by the Architect with a copy of the priced Schedule of Quantities, one copy of each of the said drawings and the specifications and three copies of all further drawings issued during the progress of the work. The Contractor shall keep' one copy of all the Drawings on the works and Employer, Engineer-in-Charge or the Architect or his representative shall, at all reasonable-times, have access to the same. Before the issue of the Final Certificate to the Contractor, he shall forthwith return to the Architect all drawings and specifications, All the drawings supplied by the Architect will be in the form of Hardcopy.

7. Contractor To Provide Everything Necessary

The Contractor shall provide everything necessary for the proper execution of the works according to the intent and meaning of the Drawings, Schedule of Quantities and Specifications taken together whether the same may or may not be particularly shown or described therein provided that the same can reasonably be inferred there from and if the Contractor finds any discrepancy in the Drawings or between the Drawings, Schedule of Quantities and Specifications, he shall immediately and in writing refer the same to the Architect who shall decide which is to be followed

8. Authorities, Notices and Patents

The Contractor shall conform to the provision of any act of the Legislature relating to the works and to the Regulations and Bye-Laws of any Authority, and of any Water, Lighting and other Companies and/or Authorities with whose system the structure is proposed to be connected and shall, before making any variations from the Drawings or Specifications that may be necessitated by so conforming, give to the Architect written notice specifying the variation proposed to be made and the reason for making it, and apply for instructions thereon. In case, the Contractor shall not within twenty days receive such instructions, he shall proceed with the work, conforming to the Provisions, Regulations or Bye-Laws in question, and any variation so necessitated shall be dealt with under clause no.13

The Contractor shall bring to the attention of the Architect all notices required by the said Acts, Regulations or Bye-Laws to be given to any Authority and pay to such Authority or to any Public office all fees that may be properly chargeable in respect of the works, and lodge the receipts with the Architect

The Contractor shall indemnify the Employer and Architect against all claims in respect of patent rights, and shall defend all actions arising from such claims and shall himself pay all royalties, license fees, damages, costs and charges of all and every sort that may be legally incurred thereof.

9. Setting Out Works

The Contractor shall set out the works and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time any error in this respect shall appear during the progress of the works, the Contractor shall at his own expense rectify such error if so required to the satisfaction of the Architect and the Engineer-in-Charge. The checking of any setting-out or of any line or level by the Engineer-in-charge or the Engineers representative shall not in any way relieve the contractor of his responsibility for the correctness thereof

10. Materials and Workmanship To Conform To Description

All materials and workmanship shall so far as procurable be of the respective kinds described in the Schedule of Quantities and/or Specification and in accordance with the "Works Instructions" and the Contractor shall, upon the request of the Employer/Architect, furnish him with all invoices, accounts receipts and other vouchers to prove that the materials comply therewith. The Contractor shall at his own cost arrange for and/or carry out any test of any materials which the Architect/ the Engineer-in-Charge may require

11. Contractors Superintendence And Representative On The Works

The Contractor shall give all necessary personal superintendence during the execution of the works, and so long thereafter as the Architect or Engineer-in-Charge may consider necessary until the expiration of the "Defects Liability Period" stated in the Appendix thereto. The Contractor shall also, during the whole time the works are in progress, employ a competent representative whose name is informed to the Employer/Architect who shall be constantly in attendance at the building while the men are at work. Any directions, explanations, instructions or notices given by the Architect or Engineer-in-Charge or Employer to such representative shall be held to be given to the Contractor. Such a person shall be a qualified engineer whose qualification and experience must be made known to the Architect / Engineer-in-charge and must have the approval

12. Dismissal of Workmen

The Contractor shall, on the request of the Architect or the Engineer-in-Charge or Employer, immediately dismiss from the works any person employed thereon by him who may, in the opinion of the Architect or the Engineer-In-Charge or the Employer, be incompetent or misconduct himself, and -such person shall not be again employed on the works without the permission of the Architect or Engineer-in-charge

13. Access To Works

The Architect and his representative or the Engineer-In-Charge or the Employer shall at all reasonable times have free access to the works and/or to the workshops, factories, or other places where materials are lying or from which they are being obtained and the Contractor shall give every facility to the Architect and his representative, the Engineer-In-Charge or the Employer necessary for inspections and examination and test of the materials and workmanship. Only persons authorized by the Architect, the Engineer-in-

Charge or the Employer, except the Representatives of Public Authorities, shall be allowed on the works at any time.

14. Engineer-In-Charge/ The Engineer

The term 'Engineer-in-Charge' shall mean the person nominated by the employer and acting under the orders of the Employer/ to inspect the works. The Contractor shall offer the Engineer-in-Charge every facilities and assistance for the inspection of the works and materials and for checking and measuring the works carried out by the Contractor. The Engineer-In-Charge or any representative of the Employer shall have power to give notice to the Contractor or his representative of non-approval of any work or materials and such work shall be suspended or the use of such material be discontinued. The work will from time to time be examined by the Architect ' the Engineer-in-Charge or the Employer but such examination shall not in any way exonerate the Contractor from the obligation to remedy any defect which may be found to exist at any stage of the work or after the same is completed. In case of Contractor not removing the rejected material nor rectifying the defective work pointed out by the Engineer-in-Charge, the Contractor will be liable to the consequences as per the Agreement. The Contractor shall honor all letters, notices issued by the Engineer-In-Charge as if they are issued by the Architect. The Engineer-In-Charge may be empowered by the Architect to issue certificates for payment and the Employer shall honor such certificates provided the Architect has obtained a written consent from the Employer or has informed the Employer in writing.

15. Care of Works

- a) From the Commencement of the Works until the date stated in the Certificate of Completion for the whole of the works pursuant to Clause 48 (d) hereof the Contractor shall take full responsibility for the care thereof. Provided that if the Employer/Architect issues a Certificate of Completion in respect of any part of the Permanent Works the Contractor shall cease to be liable for the care of that part of the Permanent Works from the date stated in the Certificate of Completion in respect of that part and the responsibility for the care of that part shall pass to the Employer. Provided further that the Contractor shall take full responsibility for the care of any outstanding work, which he shall have undertaken to finish during the Period of Maintenance until such outstanding work is completed. In case any damage, loss or injury shall happen to the Works or to any part thereof, from any cause whatsoever, save and except the excepted risks as defined in sub-clause (b) of this Clause, while the Contractor shall be responsible for the care thereof the Contractor shall, at his own cost, repair and make good the same, so that at completion the permanent works shall be in good order and condition and in conformity in every respect with the requirements of the Contract and the Engineers instructions. In the event of any such damage, loss or injury happening from any of the excepted risks, the Contractor shall, if and to the extent required by the Engineer-in-charge and subject always to the provisions of the contract, repair and make good the same as aforesaid at the cost of the Employer. The Contractor shall also be liable for any damage to the Works occasioned by him in the course of any operations carried out by him for the purpose of completing any outstanding work or complying with his obligations under clause 48 hereof.

b) Excepted Risks

The "excepted risks" are war, hostilities (whether war be declared or not), invasion, and act of foreign enemies, rebellion, and revolution. insurrection or military or usurped power, civil war, employees of the Contractor or of his sub-contractors and arising from the conduct of Works, riot, commotion or disorder, or a cause solely due to the design of the Works or ionizing radiations or contamination by radio-activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive, toxic explosive or other hazardous properties of any explosive, nuclear assembly or nuclear component thereof, pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds, or any such operation of the forces of nature are collectively referred to as "the excepted risks".

16. Assignment and Sub-Letting

The whole of the works included in the Contract shall be executed by the Contractor and the Contractor shall not directly or indirectly transfer, assign or underlet the Contract or any part share thereof or interest therein without the written consent of the Employer/Architect and no undertaking shall relieve the Contractor from the full and entire responsibility of the Contract or from active superintendence of the works during their progress

17. Variation Not To Vitate Contract

No alteration, omission or variation shall vitiate this contract but in case the Architect and the Engineer-in-Charge in consultation with the Employer thinks proper at any time during the progress of the works to make any alterations in or additions to or omissions from the works or any alteration in the kind or quality of the materials to be used therein and shall give notice thereof in writing under his hand to the Contractor, the Contractor shall alter, add to or omit from as the case may require, in accordance with such notice, but the Contractor shall not do any work extra to or make any alterations or additions to or omissions from the works or any deviation from any of the provisions of the Contract, Stipulation, Specification or Contract Drawings without the previous consent in writing of the Engineer-in-Charge and the Employer jointly.

18. Schedule of Quantities

The schedule of Quantities, unless otherwise stated, shall be deemed to have been prepared as per mode of measurement specified in Technical Specification and Bill of Quantity attached with the Tender, Any error in description or in quantity or in omission of items from the Schedule of quantities shall not vitiate this Contract but shall be rectified and the value thereof as ascertained under Clause hereof shall be added to or deducted from the Contract Amount (as the case may be) provided that there shall be no rectification of errors in the Contractor's Schedule of Rates.

19. Sufficiency Of Schedule Of Quantities

The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the works and of the prices stated in the Schedule of Quantities and / or the Schedule of Rates and Prices which rates and prices

shall cover all his obligations under the Contract, and all matters and things necessary for the proper completion of the works.

20. Measurement Of Works

The measurement and valuation in respect of the Contract shall be completed within "Period of final measurement" stated in the Appendix or if not so stated then within three months of the completion of the contract works as defined in Clause hereof.

21. Non Tender Items

The Contractor shall, when ordered in writing by the Architect and with the concurrence of the Employer, perform work not covered by the specifications or included in the Bills of Quantities but forming part of the work contracted for, on the same conditions in all respect in which he agrees to do the main work. Extra work and supply of such material shall be carried out at a rate settled by written agreement between the Contractor and the / the Engineer-in-Charge with the concurrence of the Employer.

22. Status of Workmen

None of the employees of the contractor shall be construed or deemed to be the employees of PMFFPL at any time and the Contractor shall indemnify and keep indemnified PMFFPL against any claim, loss or whatsoever in this connection.

There shall never exist any employer and employee relationship between PMFFPL and the manpower engaged by Contractor. PMFFPL shall not have any responsibility to nor shall be held directly or indirectly responsible or liable for the person so employed by the contractor for performing/providing services in terms of this agreement to PMFFPL in terms of its contractual obligations hereunder.

23. Quality of Materials & Workmanship and Tests

- a) All materials and workmanship shall be of the respective kinds described in the Contract and in accordance with the Engineer's instructions and shall be subjected to tests from time to time to such other place or places as may be specified in the Contract, or at all or any of such places. The Contractor shall provide assistance instruments, machines, labor and materials as are formally required for examining, measuring and testing any work and the quality, weight or quantity of any material used and shall supply samples of materials before incorporation in the work for testing as may be selected and required by the Engineer.
- b) Cost of Samples / Shop Drawings: All samples / shop drawings / fabrication drawings shall be supplied by the Contractor at his own cost.
- c) Cost of Tests: The Cost of making any Tests shall be borne by the Contractor.

24. Inspection of Operation

The Engineer and any person authorized by him shall at all times have access to the works and to all workshops on or off the site and places where work is being prepared

or from where materials, manufactured articles or machinery are being obtained for the works and the Contractor shall afford every facility for and every assistance in or in obtaining the right to such access. All works carried out off the site shall be duly brought to the notice of the Engineer.

25. Examination of work

- a) No work shall be covered up or put out of view without the approval of the Engineer or the Engineer's Representative and the Contractor shall afford full opportunity for the Engineer or the Engineer's Representative to examine and measure any work which is in view and to examine foundations about to be covered up or put out of before permanent work is placed thereon. The Contractor shall give due notice to the Engineer's Representative whenever any such work or foundation is or are ready or about to be ready for examination and the Engineer's Representative shall, without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such works of examining such foundations.
- b) Uncovering & Making Openings: The Contractor shall uncover any part or parts of the works or make openings in or throughout the same part or parts to the satisfaction of the Engineer-in-Charge. If any such part or parts have been covered up or put off view after compliance with the requirements of sub-clause (a) of this Clause and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating and making good the same shall be borne by the Employer, but in any other case all costs shall be borne by the Contractor.

26. Removal of improper Works and Material

- a) The Engineer-in-Charge shall during the progress of the works have power to order in writing from time to time
 - i. The removal from the Site, within such time or times as may be specified in the order, of any materials, which in the opinion of the Employer, are not in accordance with the Contract
 - ii. The substitution of proper and suitable materials and
 - iii. The removal and proper re-execution, notwithstanding any previous test thereof or interim payment thereof, any work which in respect of materials or workmanship is not, in the opinion of the Engineer, in accordance with the Contract

27. Default of Contract in compliance: In case of default on the part of the Contractor in carrying out such order, the Employer shall be entitled to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor after giving due notice in writing by the Employer, or may be deducted by the Employer from any money due or which may become due to the Contractor

28. Suspension of Work

- a) The Contractor shall, on the written order of the Engineer, suspend the progress of the Works or any part thereof for such time or times and in such manner as the

Engineer may consider necessary and shall during such suspension properly protect and secure the work, so far as is necessary in the opinion of the Engineer. The extra cost incurred by the Contractor in giving effect to the Engineer's instructions under this clause shall be borne and paid by the Employer unless such suspension is

- i. Otherwise provided for in the Contract, or
- ii. Necessary by reason of some default on the part of the Contractor, or
- iii. Necessary by reason of climatic conditions on the site, or
- iv. necessary for the proper execution of the works or for the safety of the works or any part thereof in so far as such necessity does not arise from any act or default by the Engineer or the Employer or from any of the excepted risks defined in the clause hereof

Provided that the Contractor shall not be entitled to recover any such extra cost unless he gives written notice of his intention to claim to the Engineer within fifteen (15) days of the Engineer-in-Charge's Order. The Engineer shall settle and determine such extra payment and / or extension of time under clause hereof to be made to the Contractor in respect of such claim as shall, in the opinion of the Engineer-in-Charge, be fair and reasonable.

b) Suspension lasting more than 90 days

If the progress of the works or, any part thereof is suspended on the written order of the Engineer and if permission to resume work is not given by the Engineer within a period of ninety days from the date of suspension then, unless such suspension is within paragraph (i), (ii), (iii) or (iv) of sub-clause (a) of this clause the contractor may serve a written notice on the Engineer requiring permission within twenty-eight days from the receipt thereof to proceed with the works, or that part thereof in regard to which progress is suspended and, if such permission is not granted within that time, the Contractor by a further written notice so served may, but is not bound to, elect or treat the suspension where it affects part only of the works as an omission of such part under clause hereof, or, where it affects the whole works, as an abandonment of the Contract by the Employer.

29. Defects during execution and after completion of works

Any defect, shrinkage, settlement or other faults which may appear during execution or within the "Defects Liability Period" stated in the Appendix hereto, or if none stated then within 12 months after the virtual completion of the works, arising in the opinion of the Employer from materials or workmanship not in accordance with the contract, shall upon the directions in writing of the Employer, and within such reasonable time as shall be specified herein, be amended and made good by the Contractor, at his own cost unless the Architect & Engineer-in-Charge in concurrence with the Employer shall decide that he ought to be paid for such amending and making good, and in case of default the Employer may employ and pay other persons to amend and make good such defects, shrinkage, settlements or other faults, and all damages, loss and expenses consequent thereon or incidental thereto shall be made good and borne by the Contractor and such damage, loss and expenses shall be recoverable from him by the

Employer or may be deducted by the Employer upon the Architect's & Engineer-in-Charge's Certificate in writing from any moneys due or that may become due to the contractor, or the Employer may in lieu of such amending and making good by the Contractor deduct from any moneys due to the Contractor a sum to be determined by the Architect and the Engineer-in-Charge in concurrence with the Employer equivalent to the cost of amending such work and in the event of the amount retained by employer being insufficient recover the balance from the Contractor, together with any expenses the Employer may have incurred in connection therewith.

Should any defective work have been done or material supplied by any sub-contractor employed on the works, who has been nominated or approved by the Architect / the Engineer-in-Charge and the Employer jointly as provided in the clause, the Contractor shall be liable to make good in the same manner as if such work or material had been done or supplied by the contractor and been subject to the provisions of this clause and the clause thereof. The Contractor shall remain liable under the provisions of this clause notwithstanding the signing by the Architect or the Engineer-in-Charge or the Employer of any Certificate or the passing of any accounts

30. Insurance

Without limiting his obligations and responsibilities, the contractor shall insure in the name of the Employer against all loss or damage for all works under (a) below and in the joint name of the Employer and the Contractor against any loss or damage for all items under (b) below from whatever, cause arising, including riot and excepted risks and for which he is responsible under the terms of the Contract and in such manner that the Employer is covered for the period stipulated hereof and are also covered during the period of Maintenance for loss or damage arising from a cause, occurring prior to the commencement of the Period of Maintenance, and for any loss or damage occasioned by the Contractor in the course of any operations carried out by him for the Purpose of complying with his obligation under clause hereof:

- a) The Works for the time being executed to the estimated current contract value thereof, or such additional such as may be specified together with the materials for incorporation in the works at their replacement value.
- b) The Constructional Plant and other things brought on to the site by the contractor to the replacement value of such constructional plant and other things.
- c) Such insurance shall be affected with an insurer and in terms approved by the Employer and the Contractor shall, deposit with the Engineer or the Engineer's Representative the policy or policies of insurance and the receipts for payment of the current premiums. All money payable by insurers shall be received by the Employer and disbursed to the Contractor in instalments.

31. Damage to Persons & Property

The Contractor shall indemnify the Employer, PMC and the Architect against all claims in respect of injuries or damage to any person or material or physical damage to any property whatsoever which may arise out of or in consequences of the execution and maintenance of the works and against claims, proceedings, damages, costs, charges and expenses whatsoever in respect of but not limited to, to include payment of Wages Act

1936 (Latest), Minimum Wages Act 1948 (Latest), Employers Liability Act 1938 (Latest), Workmen's Compensation Act 1947 (Latest), Industrial Disputes Act 1947 (Latest), Maternity Benefit Act 1961 (Latest) The Contract Labour (Regulation and Abolition Act, 1970 and any modifications thereof or of any law relating thereof in relation thereto including any compensation or damages for or with respect to

- a) The permanent use of occupation of Land by the works or any-part thereof.
- b) The right of the Employer to execute-the works or any part thereof on, over, under, in or through any land.
- c) In case of any expenses arising from any such injury or damage to persons of employer and architects on site, the compensation shall be made by the contractor of the actual expenses without any delays which may arise out of claim filed and settled by the Insurance Company.

32. Third Party Insurance

- a) Before commencing the execution of the works the Contractor, but without limiting his obligations and responsibilities under clause hereof, shall insure against his liability for any material or physical damage, Loss or injury which may occur to any property, including that of the Employer, or to any person, including any employee of the Employer, by or arising out of the execution of the Works or in the work being carried out by the Employer, by or arising out of the referred to in provision hereof.
- b) Minimum amount of Third Party Insurance

Such insurance shall be affected with an insurer and in terms approved by the Employer, and for at least the amount stated in the Appendix to the Tender. The Contractor shall deposit with the Engineer or the Engineer's Representative the policy or policies of insurance and the receipts for payment of the current premiums.

- c) Provision to indemnify Employer

The terms shall include a provision whereby, in the event of any claim in respect of which the Employer would be entitled to receive indemnity under the policy being brought or made against the Contractor, the insurer will indemnify the Employer against such claims and any costs, charges and expenses in respect thereof.

33. Accident / or Injury to Workmen

- a) The Employer shall not be Liable for or in respect of any damages or compensations payable at Law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub-contractor.

The Contractor shall indemnify and keeps indemnified the Employer against all such damages and compensation and against all claims, proceedings, costs, and charges, whatsoever in respect thereof or relation thereto.

b) Insurance against Accident etc. to Workmen

The Contractor shall insure against such liability with an insurer approved by the Employer and shall continue such insurance during the whole of the time that any persons are employed by him on the works and shall, deposit with the Engineer or the Engineer's Representative such policy of insurance and the receipt of payment of the current premium.

Provided always that, in respect of any persons employed by any sub-Contractor, the Contractor's obligation to insure as aforesaid under this sub clause shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such sub-contractor to deposit with the Engineer of the Engineer's Representative, such policy of insurance and the receipt for the payment of the current premium.

34. Remedy on Contractors Failure to Insure

If the Contractor fails to effect and keep in force the insurance referred to in clauses hereof, or any other insurance which he may be required to effect under the terms of the contract, then and in any such case the Employer may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the Employer as aforesaid from any monies due or which may become due to the Contractor, or recover the same as a debt due from the contractor.

35. Commencement of Works

The Contractor shall commence the works on site within the period named in the Appendix to the Tender after the receipt by him a written order to this effect from the Engineer and shall proceed with the same with due expedition and without delay, except as may be expressly sanctioned or ordered by the Engineer. The time for commencement and completion of work shall be of the essence of the contract.

36. Possession of Site

- a) Save in so far as the Contract may prescribe, the extent of portions of the Site of which the Contractor is to be given possession from time to time and the order in which such portion shall be made available to him and, subject to any requirement in the Contract as to the order in which the Works shall be executed, the Employer will, with the Engineer's written order to commence the works, give to the Contractor possession of so much of the Site as may be required to enable the Contractor to commence and proceed with the execution of the works in accordance with the program referred to in Clause hereof, if any, and otherwise in accordance with such reasonable proposals of the Contractor as he shall, by written notice to the Engineer, make and will, from time to time as the works proceed, give to the Contractor possession of such further portions of the

site as may be required to enable the Contractor to proceed with the execution of the Works with due dispatch in accordance with said program or proposals, as the case may be. If the Contractor suffers delay or incurs cost from failure on the part of the Employer to give possession in accordance with the term& of this Clause, the Engineer shall grant an extension of time for the completion of the works. In case of dispute the Employer may ask the contractor to leave the site and hand over the possession of the site. The contractor shall do so immediately.

37. Time for Completion

Subject to the requirement in the Contract as to completion of any sections of the works before completion of the whole, the whole of the works shall be completed, in accordance with the provisions of clause hereof, within the time stated in the Contract calculated from the last day of the period named in the Appendix to the Tender as that within which the Works are to be commenced, or such extended time as may be allowed under clause hereof.

38. Rate of Progress

If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the works or any section is at any time, in the opinion of the Engineer, too slow to ensure completion by the prescribed time or extended time for completion, the Engineer shall so notify the Contractor in writing and the Contractor shall thereupon take such steps as are necessary and the Engineer may approve to expedite progress so as to complete the Works or such section by the prescribed time or extended time. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the Engineer under this Clause, the contractor shall seek the Engineer's permission to do any work at night or on Sundays, if locally recognized as days of rest, or their locally recognized equivalent, such permission shall not be unreasonably refused.

39. Liquidated Damages for Delay

If the Contractor fails to achieve completion of the works either in whole or part within the time prescribed, then the Contractor shall pay to the Employer the sum stated in the Appendix as liquidated damages for such default for everyday or part of a day which shall elapse between the time prescribed by clause hereof and the date of certified completion of the works. The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies in his hands, due or which may become due to the Contractor. The payment or deduction of such damages shall not relieve the contractor from his obligation to complete the works or from any other of his obligations and Liabilities under the contract.

40. Certification of Completion of Works

- a) When the whole of the Works have been substantially completed and have satisfactorily passed any final test that may be prescribed by the Contract, the Contractor may give a notice to that effect to the Engineer or to the Engineers Representative accompanied by an undertaking to finish any outstanding work during the period of Maintenance. Such notice and undertaking shall be in writing and shall be deemed to be a request by the Contractor for the Engineer to

issue a Certificate of completion in respect of the works. The Engineer shall, within thirty days of the date of delivery of such notice either issue to the Contractor, a Certificate of Completion stating the date on which, in his opinion, the works were substantially completed in accordance with the Contract or give instructions in writing to the Contractor specifying all the work which, in the Engineer's opinion, requires to be done by the Contractor before the issue of such Certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting substantial completion that may appear after such instructions and before completion of the works specified therein. The Contractor shall be entitled to receive such Certificate of Completion within twenty-one days of completion to the satisfaction of the Engineer of the works so specified and making good any defects so notified.

b) **Certification of completion by Stage**

Similarly, in accordance with the procedures set out in Sub-clause (a) of this clause, the Contractor may request and the Engineer shall issue a Certificate of Completion in respect of

- i. Any section of the permanent works in respect of which a separate time for completion is provided in the Contract and
- ii. Any substantial part of the Permanent Works, which has been both, completed to the satisfaction of the Engineer and occupied or used by the Employer.

- c) If any part of the Permanent Works shall have been substantially completed and shall have satisfactorily passed any final test that may be prescribed in the Contract, the Engineer may issue a Certificate of Completion in respect of that part of the Permanent Works before completion of the whole of the works and upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete any outstanding work in that part of the works during the Period of Maintenance.
- d) Provided always that a Certificate of Completion given in respect of any section of part of the Permanent Works before completion of the whole shall not be deemed to certify completion of any ground or surfaces requiring reinstatements, unless Certificate shall expressly so state.

41. Period of Maintenance/ Defect Liability

a) **Period of Maintenance**

The expression "Period of Maintenance" shall mean the period of maintenance named in the Appendix to the Tender, calculated from the date of completion of the Works, certified by the Engineer in accordance with Clause hereof, or, in the event of more than one certificate having been issued by the Engineer under the said Clause, from the respective dates so certified and in relation to the period of Maintenance the expression "the Works" shall be constructed accordingly.

b) **Execution of Work of repair, etc.**

To the intent that the works shall at or as soon as practicable after the expiration of the Period of Maintenance be delivered to the Employer in the condition required by the Contract, fair wear and tear excepted, to the satisfaction of the Engineer, the Contractor shall finish the work, if any, outstanding at the date of completion, as certified under Clause 40 hereof, after such date and shall execute all such work of repair, amendment, reconstruction, rectification and making good defects, imperfections, shrinkages or other faults as may be required of the Contractor in writing by the Engineer during the Period of Maintenance, or within fourteen days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to its expiration.

c) Cost of execution of work of repair etc.

All such work shall be carried out by the Contractor at his own expense if the necessity thereof shall, in the opinion of the Engineer, be due to the use of materials or workmanship not in accordance with the Contract, or due to neglect or failure on the part of the Contractor to comply with any, obligations, expressed or implied, on the Contractor's part under the Contract. If, in the opinion of the Engineer, such necessity shall be due to any other cause, the value of such work shall be ascertained and paid for as if it were additional work.

d) Remedy on Contractor's Failure to carry out work required:

If the Contractor fails to do any such work as aforesaid required by the Engineer, the Employer shall be entitled to employ and pay persons to carry out the same and if such work is work which, in the opinion of the Engineer, the Contractor was liable to do at his own expense under the Contract, then all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by the Employer, or may be deducted by the Employer from any monies due or which may become due to the Contractor.

e) Contractor to search

The Contractor shall, if required by the Engineer in writing, search under the directions of the Engineer for the cause of any defect, imperfection or fault appearing during the progress of the works or in the period of Maintenance. Unless such defect, imperfection or fault shall be one for which the Contractor is liable under the Contract, the cost of the work carried out by the Contractor in searching as aforesaid shall be borne by the Employer. If such defect, imperfection or fault shall be one for which the Contractor is liable as aforesaid, the Cost of the work carried out in searching as aforesaid shall be borne by the Contractor and / he shall in such case repair, rectify and make good such defect, imperfection or fault at his expense in accordance with the provisions of clause hereof.

42. Payment Withheld

The Engineer may withhold or on account of subsequently discovered evidence nullify the whole or a part of any certificate to such extent as may be necessary in the opinion to protect the Employer from loss on account of

- a) Defective work not remedied.
- b) Failure of the Contractor to make payments properly to sub-contractor for materials or labour or to Contractor's employees / workmen or failure to discharge any other obligations under applicable laws.
- c) A reasonable doubt that the Contract cannot be completed in the balance time.
- d) Damage to another Contractor's or sub-contractor's work.
- e) Claims filed or reasonable evidence indicating probable filing of claims.

43. Delay and Extension of Time

If, in the opinion of the Employer, the works be delayed

- a) By force majeure or
- b) By reason of any exceptionally inclement weather or
- c) By reason of proceedings taken or threatened by or dispute with adjoining or neighboring owners or public authorities arising otherwise than through the Contractor's own default or
- d) By the works or delays of other Contractors or Tradesmen engaged or nominated by the Employer or the Architect / the Engineer-in-Charge and not referred to in the Schedule of Quantities and / or specification or
- e) By reason of "Works Instructions" as per Clause or
- f) By reason of civil commotion, local combination of workmen or strike or lockout affecting any of the building traders or
- g) in consequence of the Contractor not having received in due time necessary instructions from the Architect / the Engineer-in-Charge or the Employer for which he shall have specifically applied in writing, the Employer in consultation with the Architect / the Engineer-in-Charge shall make a fair and reasonable extension of time for completion of the Contract Works; in case of such strike or lock-out the Contractor shall, as soon as may be, give written notice thereof to the Architect, the Engineer-in-Charge and the Employer; but, the Contractor shall nevertheless constantly use his endeavors to prevent delay and shall do all that may reasonably be required to the satisfaction of the Architect / the Engineer-in-Charge and the Employer to proceed with the work.

44. Termination of Contract by the Employer

The Employer may terminate this contract by giving one month notice.

The Employer may terminate this contract, if the Contractor being an individual or a firm commit any "act of insolvency" or shall be adjudged an insolvent or being an Incorporated Company having an order for compulsory winding up made against it or pass an effective resolution forwarding up voluntarily or subject to the supervision of the Court and of the official Assignee of the Liquidator in such acts of insolvency or

winding up shall be unable within seven days after notice to him requiring him to do so, to show to the reasonable satisfaction of the Architect / Owner with the concurrence of the Employer that he is able to carry out and fulfill the Contract, and to give security therefore, if so required by the Employer.

Or if the Contractor (whether an individual, firm or Incorporated Company) shall suffer execution to be issued.

Or shall suffer any payment under this Contract to be attached by or on behalf of any of the creditors of the Contractors,

Or shall assign or sub-let this Contract without the consent in writing of the Architect / the Engineer-in-Charge and the Employer first obtain,

Or shall change or encumber this Contract or any payments due or which may become due to the Contract thereunder;

Or if the Architect and the Engineer-in-Charge shall certify in writing the Employer that the Contractor

- a) Has abandoned the Contract, or
- b) has failed to commence the works, or has without any lawful excuse under these Conditions suspended the progress of the Works for 14 days after receiving from the Architect / the Engineer-in-Charge written notice to proceed, or
- c) Has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or
- d) has failed to remove materials from the site or to pull down and replace work for seven days after receiving from the Architect and the Engineer-in-Charge, written notice that the said materials or work were condemned and rejected by the Architect and the Engineer-in-Charge under these conditions, or
- e) has neglected or failed persistently to observe and perform all or any of the acts matters or things by this Contract to be observed and performed by the Contractor for seven days after written notice shall have been given to the Contractor requiring the Contractor to observe or perform the same, or
- f) has to the detriment of good workmanship or in defiance of the PMC/ Architect's/ Engineer-in-Charge's and Employer's instructions to the contrary sub-let any part of the Contract, then and in any of the said cases, the Employer in consultation with the Architect / the Engineer-in-Charge may not withstanding any previous waiver after giving seven days' notice in writing to the Contractor, determine the Contract, but without hereby affecting the powers of the Architect / the Engineer-in-Charge or the obligations and liabilities of the contract, the whole of which shall continue in force-as fully as if contract had not been so determined and-as if the works subsequently executed had been executed by or on behalf of the contractor.

- g) The Employer under advice of the Engineer-in-Charge / Architect may enter upon and take possession of the works and all plant, tools, scaffoldings, sheds, machinery, steam and other power generation unit and materials lying upon the premises or the adjoining lands or roads, and use the same as his own property or may employ the same by means of his own persons and workmen in carrying on and completing the works or by employing any other Contractors or other person or persons to complete the works.
- h) The Contractor shall not in any way interrupt or do any act, matter or things to prevent or hinder such other contractor or other person or persons employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or as soon thereafter as convenient the Architect and the Engineer-in-Charge shall give a notice in writing to the Contractor to remove his surplus materials and plant, and should the Contractor fail to do so within a period of fourteen days after receipt thereof by him, the Employer shall sell the same by public auction, and shall give credit to the Contractor for the amount realized. The Architect and the Engineer-in-Charge shall, thereafter, ascertain and certify in writing under their hands (if anything) shall be due or payable to or by the Employer for the value of the said plant and materials so taken possession of by the Employer and the expense or loss which the Employer shall have been put to in procuring the works to be completed, and the amount if owing to the Contractor and the amount which shall be so certified shall thereupon be paid by the Employer, as the case may be, and the certificate of the Architect and the Engineer-in-Charge shall be final and conclusive between the parties.

45. Termination of Contract by the Contractor

The Contractor may terminate this contract if the payment of the amount payable by the Employer under CERTIFICATE of the Architect and the Engineer-in-Charge with interest as provided for hereinafter shall be in arrears and unpaid for forty five days after notice in writing requiring payment of the amount with interest as aforesaid shall have been given by the Contractor to the Employer, or if the Employer interferes with or obstructs the issue of such Certificate or the Employer commits any "act of insolvency", or (being and Incorporated Company) shall have an order made against him or pass an effective resolution for winding up, either compulsorily or subject to the supervision of the Court or Voluntary, or if the official Assignee or the Employer shall repudiate the Contracts or if the official Assignee or the Liquidator, in any such winding up, shall be unable within fifteen days after notice to him requiring him so to do, to show to the reasonable satisfaction of the Contractor that he is able to carry out and fulfill the Contract and to make Contractor, to give security for the same, or if the works be stopped for all payments due, and to become due thereunder and, if required by the three months under the order of the Employer or by any injunction or other order of any Court of Law, then and in any of the said cases the Contractor shall be at liberty to determine the Contract by notice in writing to the Employer and he shall be entitled to recover from the Employer payment for all works executed.

In arriving at the amount of such payment, the net rates contained in the Tender Agreement shall be followed.

46. Certificates and Payments

- a) Unless otherwise provided, payments shall be made at monthly intervals in accordance with the conditions set out

- b) Advances on Constructional Plant and Materials

No advances are to be made by the Employer to the Contractor in respect of Constructional Plant and Materials, the conditions of payment and repayment shall be as set out.

- c) Approval only by Maintenance Certificate

No certificate other than the Maintenance Certificate referred to in clause D hereof shall be deemed to constitute approval of the works.

- d) Maintenance Certificate

The Contract shall not be considered completed until a Maintenance Certificate has been signed by the Engineer-in-Charge and delivered to the Contractor stating that the Works have been completed and maintained to his satisfaction. The Maintenance Certificate shall be given by the Engineer within twenty-eight days after the expiration of the Period of Maintenance, or, if different periods of maintenance shall become applicable to different sections or parts of the works, the expiration of the latest such period, or as soon thereafter as any works ordered during such period, pursuant to clause hereof, shall have been completed to the satisfaction of the Engineer and full effect shall be given to the clause, notwithstanding any previous entry on the works or the taking possession, working or using thereof or any part thereof by' the Employer. Provided always that the issue of the Maintenance Certificate shall be a precondition to payment to the Contractor of the second portion of retention money in accordance with the Appendix.

Cessation of Employer's Liability:

The Employer shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or the execution of the works, unless the Contractor has made a claim in writing in respect thereof before the giving of the Maintenance Certificate under this Clause

47. Valuation at Date of Forfeiture

The Engineer-in-Charge shall, as soon as practicable after any such entry and expulsion by the Employer, fix and determine ex parte, or by or after reference to the parties, or after such investigation or enquiries as he may think fit to make or institute, and shall certify what amount, if any, had at the time of such entry and expulsion been reasonably earned by or would reasonably accrue to the Contractor in respect of work when actually done by him under the Contract and the value of any of the said unused or partially used materials and any Temporary Works

a) **Payment after Forfeiture**

If the Employer enters and expels the Contractor under this clause, he shall not be liable to pay to the Contractor any money on account of the Contract until the expiration of the Period of Maintenance and thereafter until the costs of execution and Maintenance, damages for delay in completion, if any, and all other expenses incurred by the Employer have been ascertained and the amount thereof certified by the Engineer-in-Charge. The Contractor shall then be entitled to receive only such sum or sums, if any, as the Engineer-in-Charge may certify as payable to him upon due completion by him after deducting the said amount. If such amount shall exceed the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the Employer the amount of such excess and it shall be deemed a debt due by the Contractor to the Employer and shall be recoverable accordingly.

48. Urgent Repairs

If by reason of any accident, or failure, or other event occurring to in connection with the Works, or any part thereof, either during the execution of the works, or during the Period of Maintenance, any remedial or other work or repair shall, in the opinion of the Employer or the Engineer's Representative, be urgently necessary for the safety of the Works and the Contractor is unable or unwilling at once to do such work or repair, the Employer may employ and pay other persons to carry out such work or repair as the Engineer or the Engineer's Representative may consider necessary. If the work or repair so done by the Employer is work which, in the opinion of the Engineer, the Contractor was liable to do so at his own expense under the Contract, all expenses properly incurred by the Employer in so doing shall be recoverable from the Contractor by the Employer from any monies due or which may become due to the Contractor. Provided always that the Engineer or the Engineer's Representative, as the case may be, shall, as soon after the occurrence of any emergency as may be reasonably practicable, notify the Contractor in writing

49. Special Risks

The Employer shall repay to the Contractor any increased cost of or incidental to the execution of the Works, other than such as may be attributable to the cost of construction work condemned under the provision of clause hereof, prior to the occurrence of any special risk, which is however attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks, subject however to the provisions in this clause hereinafter contained in regard to outbreak of war, but the Contractor shall as soon as any such increase of cost comes to his knowledge forthwith notify the Engineer thereof in writing.

a) **Special Risks**

The Special risks are war, hostilities, (whether war be declared or not), invasion, act of foreign enemies, the nuclear and pressure waves risk described in clause hereof, or insofar as it relates to the country in which the works are being or are to be executed or maintained, rebellion, revolution, insurrection, military or usurped power, civil war, or unless solely restricted to the employees of the

contractor or of his sub-contractors and arising from the conduct of the works, riot, commotion or disorders.

b) Outbreak of War

If, during the currency of the Contract, there shall be an outbreak of war, whether war is declared or not, in any part of the world which, whether financially or otherwise, materially affects the execution of the works, the Contractor shall, unless and until the Contract is terminated under the provision of this clause, continue to use his best endeavors to complete the execution of the works. Provided always that the Employer shall be entitled at any time after such outbreak of war to terminate the Contract by giving written notice to the Contractor and, upon such notice being given, this contract shall, except as to the rights of the parties under this clause and to the operation of clause hereof, terminate, but without prejudice to the rights of either party in respect of any antecedent breach thereof.

c) Removal of Plant on Termination

If the Contract is determined under the provisions of the last preceding sub-clause, the Contractor shall, with all reasonable dispatch, remove from the site all Constructional Plant, staff, workers; identify those of Sub-Contractors to do so.

50. Payment if Contract is terminated

- a) The amounts payable in respect of any items, so far as the work or service comprised therein has been carried out or performed, and a proper proportion as certified by the Engineer in Charge in Writing of any such items, the work or service which has been partially carried out or performed.
- b) The cost of materials or goods reasonably ordered for the works which shall have been delivered to the Contractor at site or of which the Contractor is legally liable to accept delivery for works being fabricated off site, or propriety goods ordered in both cases where due prior notice has been given to the Engineer, in writing, such materials or goods becoming the property of the Employer upon such payments being made by him.
- c) A sum to be certified by the Architect & Engineer-in-Charge in writing being the amount of any expenditure reasonably incurred by the Contractor towards, site office, site stores, fabrication yard, fencing in the expectation of completing the whole of the works insofar as such expenditure shall not have been covered by the payments in this sub-clause before mentioned.
- d) On any account, if the Contract is terminated by Employer, no liquidated damages shall be payable to the Contractor on account of profit on remaining portion of the contract or loss on account of premature termination. In such a case, the Contractor will be entitled to remove his material/equipment only after settling the account in full and final with Employer.
- e) Provided always that against any payments due from the Employer under this sub-clause, the Employer shall be entitled to be credited with any outstanding balances due from the Contractor for advances in respect of Constructional Plant

and Materials and any other sums recoverable by the Employer from the Contractor under the terms of the Contract.

51. Frustration

a) Payment in the event of Frustration

If a war, or other circumstances outside the control of both parties, arises after the contract is made so that either party is prevented from fulfilling his contractual obligations, or under the law governing the Contract, the parties are released further performance, then the sum payable by the Employer to the Contractor in respect of the work executed shall be the same as that which would have been payable under clause 50 / 52 as the case may be hereof if the Contract had been terminated under the provisions of clause 50 hereof.

52. Procedure for Disputes

In case of Dispute or Difference arising between Employer and the Contractor relating to any matter arising out of this contract, such disputes or differences shall be settled in accordance with the Arbitration and Conciliation Act 1996, The Arbitral tribunal shall consist of 3 Arbitrators one each to be appointed by the Employer and the Contractor. The third arbitrator shall be jointly nominated by the two Arbitrators and he shall be the presiding arbitrator. If there is no agreement about nomination of the third Arbitrator, then the third and presiding Arbitrator shall be appointed by the Indian Council of Arbitrations/ president of Institute of Engineers.

The Arbitration proceedings shall be at Aurangabad and the operative language shall be English.

The decision of the Majority of Arbitrators shall be binding upon both parties. The Cost of Arbitration proceedings shall be shared equally by the parties. The expenses towards preparation and fees of Arbitrator by each party shall be borne by the parties themselves.

If the contract value is Rs 500 Lacs or less, the dispute shall be referred to a sole Arbitrator to be appointed jointly by the parties. If there is no agreement on this, the Sole Arbitrator shall be appointed by the Indian Council of Arbitration/ president, Institute of engineers. Decision of the sole Arbitrator shall be binding on the parties.

Performance of the Contract shall continue during the Arbitration proceedings.

53. Safety Code

a) General

Contractor shall submit a Safety organization structure along with the Safety plan for approval before commencing the job.

Contractor shall adhere to safe construction practice and guard against hazardous and unsafe working conditions and shall comply with Owner safety rules as set forth herein prior to start of construction, Contractor shall be

furnished copies of Owner's Safety Code' for information and guidance. The contractor shall erect, display and maintain signage at different locations of the site, to show safety requirements during work, regulations regarding protective equipment, clothing and the like.

b) Safety Regulations

- i. In respect of all labour, directly or indirectly employed in the work for the performance of Contractor's part of this agreement, the Contractor shall at his own expense arrange for all the safety provisions as per (i) Safety codes of C.P.W.D. & Indian Standards Institution (ii) The Electricity Act, (iii) The Mines Act, and (iv) Regulations, Rules and orders made there under and such other act as applicable
- ii. The Contractor shall observe and abide by all Fire and Safety Regulations of the Owner. Before starting construction work, Contractor shall consult Owner's safety engineer or Engineer-in-charge and provide all required precautionary measures to this effect. The Contractor must make good to the satisfaction of the Owner any loss or damage due to fire to any portion of the work done under this contract or to any of the Owner's existing property.
- iii. The contractor shall obtain necessary licenses and approvals from appropriate authority under labour enactment as required to carry out obligations under this contract including license required under The Contract Labour (Regulation and Abolition Act, 1970)

c) First Aid and Industrial Injuries

- i. Contractor shall maintain first aid facilities for his employees and those of his Sub-contractors. He shall arrange Medical Treatment without any loss of time in the event of an accident or injury.
- ii. All critical injuries shall be reported promptly to Owner. All such injuries shall be thoroughly investigated and a copy of Contractor's report covering - cause, remedy and preventive measures (for each personal injury requiring the attention of a physician) shall be furnished to the Engineer-in-Charge in an approved format.
- iii. The contractor shall have a trained person at the site for administering first aid.
- iv. The Contractor shall have a Safety Inspector for the works

54. Setting Up Of Field Laboratory

The Contractor shall set up a field laboratory at the site at his own expense to carry out the tests as per requirements

All required equipment as per relevant IS test procedure shall be available along with applicable IS codes. In addition to the above, the Contractor shall provide all other necessary equipments to carry out any other field tests required by the Engineer-in-charge.

All the equipments should be calibrated by a third party periodically and certificates should be kept in the laboratory.

The Contractor shall carry out the various mandatory tests as per BIS Specifications and the technical documents that shall be furnished to him during the performance of the work. All the tests, either on the field or outside laboratories concerning the execution of the work and supply of materials for the same shall be carried out by the Contractor at his own cost. Price quoted by the Contractor shall be deemed to include the cost of such tests and inspections.

55. Taxes

- a) The Rates in Bills of Quantities shall be inclusive of transporting, loading, unloading, storage, security & all other charges such as toll, Octroi, local taxes, excise duty, other payments and compensations, if any in connection with the procurement and handling of materials, fabrication and execution of works or any method or process connected with the works or Temporary works. However Service Tax & VAT shall be paid as per actual.
- b) Notwithstanding anything contained elsewhere in the contract, the Owner shall deduct at source, from the payments due to the Contractor, any taxes required to be deducted at source by law. The amounts so deducted shall be deposited by the Owner with the concerned authorities as per law. It is for the Contractor to deal with the concerned authorities directly in respect of any claim or refund relating to the above deductions and the Owner shall not be liable or responsible for any claims or payments or reimbursement in this regard.

56. Contractors Subordinate Staff and Their Conduct

- a) The Contractor on award of the work shall nominate and depute a qualified graduate engineer having sufficient experience in carrying out works of similar nature, as full time resident project manager of the Contractor for the work, to whom instructions for works may be given. The Contractor shall also provide to the satisfaction of the Owner/ Engineer-in-charge, sufficient and qualified staff to supervise the execution of the works, competent sub agents, foremen and leading hands including those specially qualified by previous experience to supervise the types of works comprised in the contract in such manner as shall ensure the best quality and expeditious working. At any time in the opinion of the Engineer-in-charge, any additional, qualified and experienced staff is considered necessary; they shall be employed by the Contractor without additional charge. The Contractor shall ensure to the satisfaction of the Engineer-in-charge that his Sub-contractor's if any, shall provide competent and efficient supervision over the work entrusted to them.
 - i. If any of the Contractor's agents, sub agents, assistants, foremen or any employee in the opinion of Engineer-in-charge be guilty of any misconduct or be incompetent or insufficiently qualified or negligent in the performance of their duties or that in the opinion of the Owner or the Engineer-in-charge, undesirable for administrative or any other reasons,

for such person (s) to be employed on the works, then at the directions of Engineer-in-charge, the Contractor shall at once remove such persons(s) from employment at the works. The person(s) so removed from the works shall not again be employed in connection with the works without the written permission of the Engineer-in-charge. Vacancy so created shall be immediately filled at the expense of the Contractor by a qualified and competent substitute. Shall the Contractor be requested to repatriate any person removed from the works he shall do so and shall bear all costs in connection therewith?

- ii. The Contractor shall be responsible for the proper behavior of all the staff, foremen, workmen and others, and shall exercise proper degree of control over them and in particular without prejudice to the said generality the Contractor shall be bound to prohibit / prevent any employees from trespassing in anyway detrimental or prejudicial to the interest of the community or the properties or occupiers of land or properties in the neighborhood. In the event of such trespassing, the Contractor shall be responsible for all consequent claims or action for damages or injury or any other grounds whatsoever. The decision of the Engineer-in-charge upon any matter arising under this clause shall be final.
- iii. All employees of the Contractor shall be properly identified by badges of a type acceptable to the Owner, and must be worn at all times on the site.
- iv. Along with the tender, the bidder shall submit his schematic organization chart of staff to be employed at the works, along with their qualifications and experience.

b) Sub Letting Of Work

- i. No part of the contract be transferred, assigned or sublet by the Contractor directly or indirectly to any person, firm or corporation whatsoever except as provided for in the succeeding sub clauses without the consent of the Owner.

c) Sub-Contracting Of Works

- i. The Engineer-in-charge may give written consent to the Contractor for the execution of any part of the works/ specialized part of the works at the site, provided the Contractor submits credentials of each individual agency to the Engineer-in-charge for approval. Sub-contracting the work as a whole by the Contractor shall not be permitted. Furthermore, if it is noticed by the Owner that the Contractor has not made payments to one or any agencies working under him, without prejudice to the other conditions herein, the Owner reserves the right to make such payments directly to the concerned agency after due verification.

d) Contractor's Liability Not Limited By Agencies To Contractors

- i. Notwithstanding any subletting with such approval as aforesaid and notwithstanding that the Engineer-in-charge shall have received copies of

any sub contracts, the Contractor shall be and shall remain solely responsible for the quality and proper expeditious execution of the works and the performance of all the conditions of the contract in all respects as if such sub contract or subletting by the Contractor had not taken place, and as if such work had been done directly by the Contractor.

e) Owner May Terminate Sub Contracts Of Contractor

- i. If any Agency of contractor engaged upon the works at the site executes any work which in the opinion of the Engineer-in-charge is not in accordance with the contract, the Owner may by written notice to the contractor, request him to terminate such Agencies. The contractor upon the receipt of such notice shall terminate and dismiss the Agency. The Owner shall have the right to remove such Agency from the site if the Contractor fails to get the Agency immediately vacated.

f) No Relief For Action Under This Clause

- i. Action taken by Owner under the above clauses shall not relieve the Contractor of any of his liabilities under the contract or give rise to any right or compensation, extension of time or otherwise.

g) Contractor's Responsibility With Other Agencies

- i. Without repugnance to any other condition, it shall be the responsibility of the Contractor executing the work of civil construction to work in close cooperation and to co-ordinate in the works with the Piling, mechanical, electrical, air-conditioning, equipment, production machinery and intercommunication with other Contractors and other agencies or their authorized representatives, in providing the necessary grooves, recesses, cuts and openings etc. in wall, slabs, beams, and columns etc. and making good the same to the desired finish as per specification, for the placement of cables, conduits, air-conditioning inlets and outlets, grills and other equipment in the false ceiling and other partitions. The Contractor, before starting up the work shall in consultation, with the electrical, mechanical, equipment, inter communication, air-conditioning contractors and other agencies, prepare and put up a joint scheme, showing the necessary openings, grooves, recesses, cuts, the methods of fixing required for the works of the aforesaid, and the finishes therein, to the Engineer-in-charge and get the approval. The Contractor before finally submitting the scheme to the Engineer-in-charge shall have the written agreement of the other agencies. The Engineer-in-charge, before communicating his approval to the scheme, with any required modification shall get the final agreement of all the agencies, which shall be binding. No claim shall be entertained on account of the above.
- ii. The Contractor shall conform in all respects with the provisions of any statutory regulations, ordinance or bye laws of any local or duly constituted authorities or public bodies which may be applicable from time to time to the works or any temporary works. The Contractor shall keep the Owner indemnified against all penalties and liabilities of every

kind, arising out of non-adherence to such status, ordinances, laws, rules, regulations etc.

h) Other Agencies At Site

The Contractor shall have to execute the work in such place and condition where other agencies shall also be engaged for other works such as electrical and mechanical engineering works or other works etc. No claim shall be entertained due to work being executed in the above circumstances.

i) Serving Of Notices

i. To The Contractor

Any notice may be served on the Contractor or his duly authorized representative at the site or by registered mail directly to the postal address furnished by the Contractor at the time of tender. Proof of issue of such notice shall be conclusive of the Contractor having been duly informed of the contents therein.

ii. To The Owner

Any notice to be given to the Owner under the terms of the contract shall be served by sending the same by Registered mail to or delivering the same at the respective site office of the Owner addressed to the Engineer-in-charge.

57. Patents, Royalties, Liens

a) The Contractor shall indemnify the Owner from and against all claims and proceedings for or on account of infringement upon any patent, design, trade mark or name or other protected rights in respect of constructional plants, machines or materials used for or in connection with the works, temporary works therefore or any part thereof, and from and against all claims demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

b) Liens

i. If at any time there shall be evidence or any lien, claim for which the Owner might have become liable, which is chargeable to the Contractor, and then the Owner may pay and discharge the same and deduct the amount so paid by him, from any amount which may be or become due to the Contractor.

SECTION - 4: SPECIAL CONDITIONS OF CONTRACT

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1. General

The Contractor may please note that Special conditions hereinafter are part of the Contract Documents, which he shall fulfil in all respects. The cost towards these shall be included in BOQ rates. In case of variation the contents in Special conditions of contract shall take precedence over General Conditions of Contract.

2. Drawings

- (a) Tender Drawings issued with the Bid documents give details necessary to understand the work. Good for Construction Drawings shall be released as per project requirements to match the approved construction schedule
- (b) For structural steel fabrication work the Architect/Engineer shall issue the Design Drawings. Based on these the Contractor shall prepare fabrication Drawings as per BIS conventions and get the same approved from The Engineer. His approval shall however not relieve the Contractor of accuracy in details and dimensions. The Fabrication work shall start after such approval.
- (c) The fabrication drawings shall be in AutoCAD format. Contractor shall submit 3 hard copies and Digital files.

3. Addition/ reduction in scope of work

- (a) Any additional work within the site, instructed by The Engineer during the contract period shall be carried out by the Contractor as per BOQ rates. The Employer reserves right to reduce the scope of work in the contract

4. Water

- (a) Water shall be given by PMFFPL at one point at free of cost & all internal distribution arrangement shall be done by the Contractor at his own cost.. Contractor shall arrange to install the piping work and storage tanks, pumping as per requirement at his own cost. **Water for Labour colony shall be arranged by Contractor at his own cost.**

5. Electric power

- (a) Electric power for construction machinery, equipment, lighting at site shall be facilitated by PMFFPL at one point & all internal distribution shall be done by contractor at his own cost. The wiring/cabling/ earthing shall be safe and as per PWD Electrical Inspector's requirements. The installation shall be erected, operated, maintained and monitored on day to day basis by competent electrical supervisor. The contractor shall get a sub-meter installed and make the payments as per the readings.
- (b) DG sets of adequate capacity shall be installed, run and maintained so as to meet work quantum and schedule requirement by the contractor.
- (c) Necessary safety gear, gloves shall be available at site for the operating staff as provided by contractor.

6. Material testing lab at site

- (a) The Contractor shall provide at site and maintain and operate throughout the tenure of contract, Testing equipments for testing in situ, Hydro Pipe pressure test, gauges for thickness measurements etc. However certain percentage of tests as determined by the Engineer shall be carried out in approved Third party laboratory. Test apparatus shall be calibrated in approved laboratory periodically.
- (b) The Testing shall be manned and operated by qualified and experienced technicians.
- (c) All the tests as mentioned in the specifications and BOQ are mandatory & to be carried out as per standard practice, as per intimation or guidance of Engineer In Charge & to be submitted with R.A. Bills. R.A. Bill shall not be accepted without Test reports some of the test are given below.
 - 1. Hydrostatic Pipe Pressure Test.
 - 2. Flow Tests.
 - 3. Booster connection and pump tests.

Other standard tests whatever require for other types of material & workmanship like thickness of painting, Galvanized sections, Ply wood / Particle boards, Welding Etc.

7. Progress reports and photographs

- (a) Contractor shall prepare and submit following to The Engineer.

Daily Progress Report (DPR) giving details of man power, staff, plant and equipment, cement consumption.

Weekly report giving details of major items of work executed, cement and steel consumed.

Monthly progress report giving details of work executed in the month, month wise billing statement, value of work done in the month cement and steel consumed, stock position, review of construction schedule (M S Project), summary of action taken for Quality, planning of work in the next month and 8 photographs of work executed in the month.

The monthly report of the last month shall be submitted in the first week of current month.

8. Environment protection

- (a) Contractor shall take adequate measures to reduce dust, mud, and smoke and noise nuisance to people working at site and in the neighbourhood. Such measures shall inter alia include sheet barricade of adequate height, sprinkling water on aggregate storage, application of modern construction machinery and equipment meeting statutory provisions.

- (b) All the trees at site shall be thoroughly protected by guards as per requirement.

9. Site facilities

- (a) The Contractor shall establish his office, laboratory, stores, steel storage and fabrication yard, cement storage shed in watertight construction and of adequate capacity, drinking water facilities, sanitization facilities, rest room, crèche for his staff and workers. Proper access and internal roads for vehicular traffic in all-weather shall be provided by the contractor. As required lock and key arrangements shall be provided for all valuables.
- (b) Statutory approvals, licenses for above mentioned facilities shall be obtained and maintained by the contractor at his own cost.

10. Royalty

- (a) Royalty applicable on supply of building and quarried materials to site as also on excavation work at site shall be paid by the contractor and the Original copies of documents showing evidence of having paid the same shall be lodged with the Employer

11. Service tax and VAT

- (a) **The Service Tax and VAT, on the contract bills paid by the Employer-** Contractor have to submit the copy of challans. If copy of these Challans are not submitted for continuous two months or previous two consecutive R. A. Bills, then the amount shall be recovered from next R.A. Bill payment including any applicable penalty.

12. Measurement book

- (a) Measurements of work done shall be written jointly by The Engineer or his representative and contractor's Engineer and signed. The Book shall remain in the custody of The Engineer.
- (b) Measurements of work done in a particular month shall be completed before 7th day of the next month.
- (c) Contractor's Bill shall be accompanied by Xerox copies of duly signed measurements.

13. Monthly Running Bill:

Contractor shall prepare and submit monthly running bill covering work done in that particular month. The Engineer shall check, certify and forward to the Employer for further necessary action.

14. Terms of payment :

The Payment Terms of payment will be as below or decided by SPV and Contractor at the time of negotiations.

14.1 Mobilization advance

Mobilization advance of 10% of the contract value will be paid to the contractor against the Bank Guarantee of any Nationalized /Scheduled Commercial Banks notified by RBI (except co-operative/Rural Banks) valid for 15 months from the date of LOI / notice to proceed or up to the total recovery of Mobilization advance whichever is earlier.

10% mobilization advance will be deducted from second Running Bill till completion or in equal instalments.

After recovery of the total mobilization advance, the Bank guarantee received against the mobilization advance will be returned to the contractor.

14.2 Monthly R.A. Bill:

Monthly consolidated single bill should be presented for settlement. The R.A. Bills will be checked by EIC within a period of 15 days & certified by the Consultant within a period of 20 days and payment shall be made within 10 working days from the date of certification by Consultants and necessary deductions like 10 % Mobilisation advance, 5 % Retention money & any other payment made, Income tax as per Terms. All bills shall be submitted in soft copy as well as hard copy. The reconciliation of Cement & Steel to be submitted along with R.A. bill, **as applicable**. All Test reports, J.M.R., Progress report with Photographs also to be submitted along with R.A. Bills , **as applicable**. **Original Royalty Slips also needs to be submitted along with the bills, as applicable. In failure of doing so, the employer will deduct the applicable royalty payment from the RA Bill amount, as applicable.**

The Consultants shall be within his right to adjust and deduct the advances such that full recovery will be made at appropriate stage.

14.3 Retention Money:

5% contract value will be deducted as retention money from each RA bill (it shall be in addition to the Performance Bank Guarantee of 5% of the contract value).

On submission of final bill/Completion of the contract, the retention money will be released against the Bank guarantee of equivalent amount of any Nationalized/Scheduled Commercial Banks notified by RBI (except co-operative/Rural Banks) valid for 12 months defect liability period from the date of final completion of work/handing over of site.

Bank Guarantee will be returned after the expiring of the defect liability period i.e., 12 months from the date of completion of work/handing over of site.

14.4 Final Bill

Only on obtaining final completion certification from the Consultants & Employer, the Contractor shall submit the FINAL BILL which will be settled within a period of two months provided there is no dispute. The completion certificate will be issued only after all the defects pointed out are rectified completely to the satisfaction of the Consultants and the Employer. The reconciliation of all materials to be submitted along with the bill.

15. Quality assurance and Quality control

The Construction Quality Management is necessary to ensure that the Construction Quality meets or exceeds the intents of the technical specifications and drawings set forth in the Contract Documents. This is a system in which The Construction Manager (contractor) and The Engineer in Charge (employer/consultant) perform defined tasks independently to achieve the Objective cited above.

- (a) Quality Control (QC) is regulatory process to be performed by the Construction manager and which includes following:
 - (i) Specific standards are set for Construction performance, deduced or derived from the Technical Specifications/Drawings/Contract Conditions.
 - (ii) Construction methodology and planning and detailed time schedule.
 - (iii) Planning and deployment of appropriate resources like plant/ machinery/ manpower
 - (iv) Systems for workmanship in process supervision, checks and corrections.
 - (v) Testing of Construction Materials and site facilities.
 - (vi) Quantification of work done.
 - (vii) Meetings/workshops for safety and improvement in quality Plan
- (b) The Construction Manager prepares Quality Plan particular to the Project and same is finalized in conjunction with Engineer in Charge. The Quality Plan shall comprise of
 - (i) QC Organization defines qualifications, hierarchy, authority and responsibility.
 - (ii) Construction method statement.
 - (iii) Procedure for material sample approvals.
 - (iv) workmanship checks for work in progress
 - (v) Material tests-standard/frequency/tolerances
 - (vi) Forms
 - (vii) procedure for interaction with Engineer in Charge
 - (viii) Bar Chart
 - (ix) safety manual

- (c) Quality Assurance (QA) includes defining criteria, applying procedures to ensure that QC system is effective. Thus the main functions of the Engineer in Charge are (1) to verify, vet contractor's Quality Plan and the QC system. (2) To monitor the working of QC systems. (3) Taking remedial measures in case of failures and strengthening the system

The Engineer in Charge makes his Quality Plan which comprises of

- (i) QA Policy and goal.
- (ii) QA standards and procedure, procedure for QA/QC interface.
- (iii) Development of QC norms specific to the project.
- (iv) Organization
- (v) Acceptance criteria
- (vi) Site surveillance and checks to control and prevent non conformities.
- (vii) Audit of completed work
- (viii) Maintaining QA records.
- (ix) Periodic internal QA/QC audits and remedial measures as per requirement.
- (x) Periodic joint site visits and meetings with the Construction Manager to sort out quality related matter.

16. Supply of Required Materials Like Pipes, Pumps, Pressure Gauge, Reels, Valves & Etc. for contract work

- (a) The Contractor shall supply above materials at his own cost for contract work.
- (b) Weighing, unloading at site, handling, storage, security and testing of samples in approved laboratory shall be done by the contractor and same shall be included in relevant item rates.

The Contractor shall maintain at all times proper records of material received, consumed and stock of all materials for use by the Contractor in the construction of civil works at the site.

- 17.** The Material reconciliation statement shall be provided to the employer on demand only if needed.

18. Variations in Quantity and Non tender items

- (a) Even if the final quantity of work done differs from the BOQ quantity for the particular single item to any extent and this change causes variation in the Total

Contract Price, there will not be any variation in the approved rates given in the attached BOQ.

- (b) Wherever applicable, the rates of non-tender items shall be deduced from similar items of work in BOQ and if this cannot be done then from DSR of Maharashtra State PWD for the nearest District HQ.
- (c) If above cannot be applied, then the Engineer shall arrive at the rate on the basis of actual cost incurred add 15% towards overheads, profits, transportation, handling, storage etc.

$L + M + 15\%$

L= Cost of Labour

M= Cost of Materials

- (d) For working out (18(c)above) the Contractor shall submit detailed analysis and supporting documents deemed necessary by the Engineer in advance and get the approval from the Engineer/ Employer before executing the work.

19. Completion period, completion certificate and taking over.

- (a) The Contractor shall complete the contract works in all respects within the Completion period as per Appendix.
- (b) On completion of contract work, the contractor shall give a written Intimation to the Engineer to this effect. Joint Inspection by Employer, The Engineer, and contractor shall be done within 10 days of intimation and the punch list or defect list shall be prepared and signed. The defects shall be rectified within 14 days, again the rectifications work will be verified jointly. After all the defects are rectified to the satisfaction of Employer/the Engineer, Acceptance report will be signed jointly and the Employer shall take over the work within 7 days of signing the Acceptance report.

20. Defect liability

- (a) The Defect liability period shall be as per Appendix. The contractor shall be responsible to make good at his own expenses every defect which may develop during this period and which in the opinion of The Engineer is due to defective materials / defective workmanship/erroneous construction method.
- (b) The Employer shall intimate the defects in writing to the contractor and the contractor shall rectify the same within 7 days of such intimation. Failing this, the Employer shall be within his right to get such defects rectified from other sources and recover the cost from the retention amount.

21. Liquidated damages

- (a) The liquidated damages to be recovered from the contractor for delay in completing the work shall be as per Appendix.
- (b) This clause shall be applicable delay in Mile Stones if so stated in the Appendix.

22. Performance Bank Guarantee

- (a) Performance Security shall be provided by the contractor of an 5 % of Contract Value plus additional security for unbalanced Bids in accordance with Clause No. 21 of Appendix (section 5) to the Employer not later than the date given in the Letter of Acceptance. The amount, time period of keeping in force and banker shall be as specified in the Appendix. The performance security shall be by way of Bank Guarantee.
- (b) The format for the Bank guarantee shall be as per Tender Documents.

23. Labour and compliances with labour regulations

- (a) The contractor shall deploy adequate force of skilled and unskilled workers, foremen, supervisors of requisite skills to ensure quality construction as per schedule.
- (b) During the currency of contract, the contractor, his sub-contractors shall abide all existing or deemed statutory Labour Enactments, Rules, and Regulations as applicable.
- (c) The Contractor shall keep the Employer, The Engineer indemnified in case any action is taken by competent authority due to contravention of any Act/rules/regulations including amendments if any.

24. Spaces for quarters

- (a) The Employer shall provide Open Space at site for contractor's workers residential quarters. Contractor shall barricade such area, maintain sanitation and hygiene and completely vacate and hand over to the Employer within 15 days of termination of contract.
- (b) All Statutory permits shall be arranged by the Contractor at his cost. He shall keep the Employer indemnified from any penalties, legal sanctions that may be imposed by the Authorities in this matter.

25 Safety at site.

- (a) The Contractor shall maintain high quality safety standards to control and arrest accidents, injuries, occurrences of fire and resultant damages. The compliances in this regards have been listed and discussed herein after. The Contractor may make his assessment and add more items as may become necessary and prepare Contractor's Safety Plan for site operations. Such Plan shall be reviewed in conjunctions with the Engineer and modified to achieve higher standards
- (b) Contractor's Construction Manager shall set up Vigilance cum Safety Committee to implement and monitor the Safety Plan. The constitution of the committee shall be as follows :

Chairman	Construction Manager.
Coordinator	Safety officer/Engineer
Members-minimum 6.	Site engineers/supervisor/Foreman Two from each Work group.
Associate	The Engineer/ his representative.

The members shall be different work groups such as Machinery & Mechanical, Electrical Supervisor, Fabrication, carpentry, concreting, and earthwork etc. The members shall reach the employees in the group and make them aware of the safety measures and rules etc.

The first Workshop and briefing shall be held at the commencement of work. Subsequently the members shall continue periodic briefings to each group.

The Committee meetings may be held bi monthly to review and take suitable action

- (c) For creating greater awareness, appropriate safety posters and signages shall be put up neatly at prominent places. These should be visible.
- (d) The internal circulation roads, storages, site office, fabrication yards, material stacking, construction water lines, cable routes shall be made as per proper plan for smooth movements.
- (e) Following protective equipment/items shall be provided :
 - Safety shoes, helmets for all employees/workers at site.
 - Safety belts, canvass shoes while working on roofing.
 - Safety goggles, leather gloves, face screen by welders, fitters, gas cutters, and khalasis.
 - Shock resistant shoes, hand gloves, for wiremen, electricians.
 - Asbestos fibre gloves/rubber gloves while handling chemicals.
 - Protective heavy quality nylon net to be provided on the underside where work is on at an elevation.
 - Fire extinguishers and sand buckets.
 - 3m high sheet metal barricade to protect the neighbourhood from dust and noise.
- (f) Preliminary requirement of staff and Machinery/plant/equipment:
 - Vehicle drivers, crane drivers/operators, Electricians/wiremen, shall have well Experience, expertise and valid license from RTO/Electrical Inspector
 - Welders/fitters, mechanics should have good work knowledge and ITI licenses
 - Winches, cranes, pulley blocks, wire ropes shall have a valid test report and worthiness certificate of a chartered engineer
 - Approved capacity for load shall be clearly exhibited on cranes
 - transit mixers, trucks, vehicles shall have valid permits
 - At any time minimum 2 trained First Aid workers shall be available. They must be trained for artificial respiration, dressing the wounds, handling the causality in correct way
- (g) Standing instructions for safety :
 - Alcohol and tobacco is prohibited

- Children/minors not allowed entering site
 - Earth work, fabrication areas to be barricaded
 - Movement of vehicles/Poclain/jcb etc to be controlled by a foreman
 - Transportation of heavy articles at site to be closely controlled to protect workers / nearby objects
 - The main switch boards shall have double earthing. All earth moving equipment to have effective earthing
 - Circuit breakers shall be used
 - Only armoured cable/ heavy rubber insulated cables of minimum 660 V grade shall be used
 - Adequate lighting arrangements to be made
 - All electrical installation shall be protected from rains/leaking water etc.
 - Cranes/earth moving equipment shall have audio-visual signalling during operation
 - Sturdy staging, platforms with railing shall be provided for work at elevation
 - First Aid boxes and one stretcher to be available throughout the day and night
 - Telephone and address of the nearest Hospital to be displayed in site office
 - Vehicle to be available for evacuating causality
- (h) In case of accident arrangements shall be done very fast for evacuation, first aid, and admittance to a Hospital
- (i) Proper records shall be maintained as required by the Factory Inspector

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			<p>Mobilization advance, 5 % Retention money & any other payment made, TDS as per Terms. All bills shall be submitted in soft copy as well as hard copy. The reconciliation of Cement & Steel to be submitted along with R.A. bill. All Test reports, J.M.R., Progress report with Photographs to be submitted along with R.A. Bills. R. A. Bill is not accepted without Test Reports.</p> <p>The Consultants shall be within his right to adjust and deduct the advances such that full recovery will be made at appropriate stage.</p>
5.	Final Bill-Clause 14.4 of Special Conditions of Contract	:	Final Bill shall be complete in all respects including duly signed final measurements, material reconciliation statements, authentication of non tender items by quantity and by rates agreed upon. Payment against final bill will be made as set out in Special Conditions of Contract-Clause14, after deducting full mobilization advance, 5% retention, other dues/TDS and recoveries.
6.	Time for Completion & Mile Stone : Clause19 of Special Conditions of contract	:	6 Months from date of LOA.
7.	Liquidated Damage-Clause 21 of Special conditions of contract	:	In the event of delay in completion of work, the contractor shall pay liquidated damages at the rate of 0.5% of contract price per week of delay subject to a maximum of 5% of contract price.
8.	Penalty	:	Rs.1,000/- per incident of unsafe act / non compliance of Legal / Statutory requirements as may be pointed out by the Consultants / Employer. Such fault shall also include acts that are specifically prohibited under various provisions / clauses provided as part of this tender document.
9.	Reconciliation of Material	:	<p>The Contractor shall maintain at all times proper records of material received, consumed and stock of all materials for use in the construction of civil works at the site.</p> <p>The Contractor shall also provide a proper</p>

			reconciliation of the material consumed, duly verified by the Consultants / Employer, and along with the RA bills submitted from time to time and also Final reconciliation Statement with final Bill.
10.	Contract Rates.	:	The Contract rates as per BOQ shall remain firm throughout the currency of the contract. No escalation or price adjustment shall be done due to any reason.
11.	Certified Payments-Clause 14 of Special Conditions of Contract	:	All payments made against the certificate issued by the Architect and Employer shall be deemed as advance payments. Payments made will not be construed as the items are complete and without any defects. Only on receiving completion certificate & settlement of final bill, the work shall be considered as complete and payment made against the final bill be considered as full payment against the work.
12.	Mobilization Time – Clause 14 of Special conditions.	:	The Contractor shall mobilize to the satisfaction of the Engineer and start construction work at site within a period of Ten Days from the date of LOI.
13.	Labour - Clause 23 Special Conditions	:	The Contractor shall comply with the provision of all relevant Acts of Central or State Govt. including Payment of Wages Act 1936, Minimum Wages Act 1948, Employer's Liability Act 1938, Workmen's Compensation Act 1923, Industrial Dispute Act 1947, Maternity Benefit Act 1961, Mines Act 1952, Employees State Insurance Act 1948, Contract Labour (Regulations & Abolishment) Act 1970 or PF Act 1952 any modification thereof or any other law relating thereto and rules made there under from time to time. No child labour should be employed at site.
14.	Insurance	:	<p>The Insurance Policies to be taken and kept in force by the contractor throughout the construction and defect liability period: These policies will be in joint names of contractor and Employer</p> <p>Theft/pilferage insurance for steel, cement at site and in contractor's custody. Contractor's Plant and equipment at site.</p> <p>Personal injury or death insurance-third party liability up to Rs. 10.00 lacs (Rupees Ten Lacs) per</p>

			<p>occurrence and covering 10 occurrences during the Contract.</p> <p>Personal injury or death Insurance for Contractor's staff, employees.</p> <p>Motor vehicle insurance including third party.</p>
15.	Notice to Local Bodies	:	<p>The Contractor shall comply with and give notices required by any Government authority, instrument, rule or order made under any Act of Parliament, State laws or any regulation or bye-laws of any local authority relating to the works.</p>
16.	Indemnification	:	<p>The contractor shall indemnify and keep the Employer indemnified against any liability in respect of :</p> <p>(i) Any fee or charges payable under any Act of Parliament, State Laws or any Govt. instrument, rule or order and any regulation or bye-laws of any local authority in respect of the works.</p> <p>(ii) Any loss or damage caused to any building road or fence of the company or any other party in the working area due to negligence of the contractor.</p>
17.	Licenses and local approvals	:	<p>The contractor shall obtain at his cost Govt/Quasi Govt/Municipal licenses/permits required for labour, site facilities, construction work</p>
18.	Mobilization advance Clause 14 of Special conditions of contract		<p>Mobilization advance of 10% of the contract value will be paid to the contractor against the Bank Guarantee of any Nationalized /Scheduled Commercial Banks notified by RBI (except co-operative/Rural Banks) valid for 12 months from the date of LOA / notice to proceed or up to the total recovery of Mobilization advance whichever is earlier.</p> <p>Equal amount of mobilization advance will be deducted from each Running Bill. After recovery of the total mobilization advance, the Bank guarantee received against the mobilization advance will be returned to the contractor.</p>

19.	Supply of Materials and reconciliation.Clause no 16 of special conditions of contract Basic rates :	<p>The Contractor shall supply Required Pipes, Pumps, Pressure Gauges, Valves, Clamps, Hose reel and Box, Hooters & Alarms, hydrants, poles& necessary materials pertaining to work as per design, drawings and Complying with the Technical Specs. Along with the final measurements and Bill, reconciliation statement shall be prepared by the contractor which shall be checked by the engineer. Standard unit weight per rmt shall be considered for measurement wherever required.</p> <p>Should Be finalized At the Time Of Contract.</p> <p>All Materials to be procured should be approved by FSAI, BIS, UL Listed, FM Approved and should be Confirming to NBC (Latest Revision) India. Contractor has to submit quotations & submit to PMFPPL / PMC in 15 days advance for their approval. Procurement shall be start after approval only.</p>
20.	Site office & conference facilities-Clause 9 Special Conditions.	Contractor to provide lockable and properly ventilated site office of about appropriate size with toilet facility, pantry, electric supply for lighting and computers, fans etc... with conference facility, at his own cost.
21	Additional Performance Security for unbalanced Bids	If the Bid of the Successful Bidder is seriously unbalanced in relation to the Consultants 's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analysis of any of all items of the Bill of Quantities to demonstrate the internal consistency of those prices with the construction. The employer may decide to seek additional performance bank guarantees for the bids.
22	Co-ordination with PEB Vendor & other Vendor	Coordination may be required with other vendors.

PAITHAN MEGA FOOD PARK PVT. LTD.

AT PAITHAN (MH)

BOOK No. 2

Bill of Quantities (BoQ)

BID NO. PMFPPL – FHSS – 01 - 2016



Paithan Mega Food Park Pvt. Ltd.

Nath House, Nath Road, Aurangabad-431005, Maharashtra

Project Management Consultants (PMC)



Abhyuday Techno Economic Consultants Pvt. Ltd.
211-212, Patel Avenue, Near Gurudwara
S.G. Highway, Thaltej, Ahmedabad – 380054, Gujarat

A/E Consultants



SEM MAC Consultants Private Limited
'Conjeevaram House', 2nd Floor, 6-1-276,
Padmarao Nagar, Secunderabad – 500 025.

PROJECT: PAITHAN MEGA FOOD PARK AT PAITHAN, AURANGABAD								
BILL OF QUANTITY FOR FIRE HYDRANT SYSTEM (Revised 14.03.2016)								
						LABOR CHARGES		
SL.NO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
A	FIRE HYDRANT SYSTEM			RS	RS		RS	RS
A.1	<u>ELECTRICAL DRIVEN PUMP</u>							
	Supply, erection, testing & commissioning of Electrical Motor Driven Pump of horizontal centrifugal split case type, capable to deliver 340 cum/hr at 120 m head. The pump shall be coupled to TEFC motor of suitable HP with suitable speed and complete set shall mounted on common base frame. The quoted rate shall includes providing & installing of pump, motor, piping, valves, etc.	Nos.	1.00					
A.2	<u>DIESEL ENGINE DRIVEN PUMP</u>							
	Supply, installation, testing & commissioning of Diesel Engine Driven common stand by pump, horizontal centrifugal split case type, capable to deliver 340 cum/hr at 120 m head. The pump shall coupled to suitable HP of Diesel engine radiator water cooled type with suitable speed and complete set shall be mounted on common base frame. Batteries & battery leads with stand, Fuel tank with stand & gauge glass, Fuel piping with valves. The	Nos.	1.00					
A.3	<u>JOCKEY PUMP</u>							
	Supply, erection, testing & commissioning of Electrical Motor Driven Jockey Pump of horizontal centrifugal end suction type capable to deliver 10.8 cum / hr at 120 m head. The pump shall be coupled to TEFC motor of suitable HP with suitable speed and complete set shall mounted on common base frame. The quoted rate shall includes	Nos.	1.00					
A.4	<u>PUMP CONTROL CENTRE</u>							
	Fabricating & Supply, installing, testing and commissioning of compartmentalized common control panel for Electrical motor driven pumps and Diesel engine driven pumps.- colour RAL 7035, free standing and top entry. Please refer the panel specs for more details.(Current density shall be 0.8 amp / sqmm), Front access only. The	Nos.	1.00					
A.4.1	<u>INCOMING</u>							
A.4.1.a	1 no. 500A TPN MCCB (45 KA).- with rotary handle outside.							

SL.NO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
	g) Hooter for audio alarm (Industrial type) - 1 No.							

SL.NO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
	h) All the components shall be housed in a common cubical made of 16 swg. M.S. sheet with required stiffeners (if required). The panel shall be powder coated of approved colour both inside & out side. The panel shall have both bottom & top cable entry provision.	Sets	1.00					
	Disel Engine spares	LS	1.00					
A.5	<u>1100 V GRADE POWER / CONTROL CABLES</u>							
	Supplying, laying, testing & commissioning of PVC insulated PVC sheathed, steel armoured, aluminium / copper conductor, 1100v grade power cables. The cables shall be laid in cable tray The minimum size of the cables shall as mentioned below.							
a	3 C x 240 Sqmm. Aluminium Cable for Electrical Main Pump	Rmt	40.00					
b	4 C x 16 Sqmm. Aluminium Cable for Jockey Pump	Rmt	40.00					
c	12 C x 2.5 Sqmm. Copper Cable for Diesel Engine	Rmt	40.00					
d	2 C x 2.5 Sqmm. Copper Cable for Instrumentation	Rmt	60.00					
A.6	<u>CABLE TRAY</u>							
	Supplying and fixing of perforated G. I.sheet cable tray with necessary angle iron suspension supports, anchor fasteners etc. complete. Maximum height of suspension shall not exceed 500 mm. Size of the tray is 40mm x 200mm x 40mm and 2mm thick.	Rmt	80.00					
A.7	G.I. Earthing strips of 40mm x 6mm thick, strip shall be run on floor / ceiling / walls, from the equipment to the nearest Earth pit with necessary accessories as required. (Earth pit shall be executed by other agencies).	Rmt	60.00					
A.8	G.I. Earthing strips of 25mm x 6mm thick, strip shall be run on floor / ceiling / walls, from the equipment to the nearest Earth pit with necessary accessories as required. (Earth pit shall be executed by other agencies).	Rmt	60.00					
A.9	Pressure Gauge with accessories and 25dia Isolation valve	Nos.	4.00					
A.10	Pressure Switches with accessories and 25 dia Isolation valve, Range (0-16 kg/cm2)	Nos.	4.00					
A.11	<u>ABOVE GROUND PIPING</u>							
	Supplying, Installing, Testing and Commissioning of heavy grade M.S Pipes (ERW-Class C) confirming to IS:3589 & IS:1239 part-I, with malleable specials confirming to IS:1239 part-II, such as Tees, elbows, check nut, unions, flanges, nipples etc. Including treading, cutting, welding and supports for the pipes traveling above ground and painting the exposed M.S. pipes with one coat of Etching primer with two coats of synthetic enamel paint of approved colour/shade. The quoted rate shall also include for chasing / chipping walls, making bore holes in walls / floor and making them good with filler material and finished in cement mortar etc. complete.							
a	300mm nominal dia	Rmt	12.00					0
b	250mm nominal dia	Rmt	12.00					0
c	200mm nominal dia	Rmt	12.00					0
d	150mm nominal dia	Rmt	6.00					0

SL.NO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
e	100mm nominal dia	Rmt	12.00					0
f	80mm nominal dia	Rmt	6.00					0
g	65mm nominal dia	Rmt	6.00					0
h	25mm nominal dia	Rmt	36.00					0
i	20 mm nominal dia	Rmt	12.00					0
i	15 mm nominal dia	Rmt	6.00					0
								0
A.12	<u>EXHAUST PIPE</u>							0
	Supplying, Commissioning of Exhaust pipe for Diesel engine of 150 mm dia with mineral wool insulation & aluminum sheet cladding.	Rmt.	24.00					0
A.13	<u>NON-RETURN VALVE</u>							
	Supplying, Installing, Testing and Commissioning of C.I. Non-return valves as per IS:5312, swing check type with required flanges, nuts, bolts and gaskets etc. complete.							
a	200 mm nominal dia	Nos.	2.00					0
b	150 mm nominal dia	Nos.	1.00					0
c	80 mm nominal dia	Nos.	1.00					0
								0
A.14	<u>BUTTERFLY VALVE</u>							0
	Supply, Installing, Testing and Commissioning of butterfly valves (PN 20) with vertical/horizontal gear unit with hand wheel, companion flanges, nuts, gaskets, bolts, etc. complete as required.							0
a	200mm nominal dia	Nos.	2.00					0
b	150 mm nominal dia	Nos.	R.O					
c	100 mm nominal dia	Nos.	1.00					0
d	80 mm nominal dia	Nos.	1.00					0
								0
A.15	<u>GATE VALVE</u>							0
	Supplying, Installing and Commissioning sluice valve with ,suitable flanges, nuts, bolts, gaskets etc. complete.							0
a	250 mm nominal dia	Nos.	4.00					0
b	200 mm nominal dia	Nos.	R.O					
c	150 mm nominal dia	Nos.	R.O					
d	100 mm nominal dia	Nos.	1.00					0
								0
A.16	<u>Y-STRAINER</u>							0
	Supplying, Installing and Commissioning C. I. Flanged "Y" type Strainer with SS mesh,suitable flanges, nuts, bolts, gaskets etc. complete.							0
a	250mm dia.	Nos.	2.00					0
b	200mm dia.	Nos.	R.O					
c	150mm dia.	Nos.	R.O					
d	100mm dia.	Nos.	1.00					0
								0
A.17	<u>AIR VESSEL TANK</u>							0
	Supplying, Commissioning of 300 mm dia Air Vessel Tank with 1000 mm long (MS tank).	Nos.	1.00					0
								0

SL.NO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
A.18	Supplying, Fabricating structural steel supports such as MS channels, angles, flats, rods as required at site with anchor fasteners, clamps, threaded rods, nuts, bolts, washers etc. complete with painting.	Kgs.	2500.00					0

SL.NO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
	Sub Total A (Rs.)				-			0
B	HYDRANT SYSTEM							
B.1	<u>UNDER GROUND PIPING</u>							
	Supplying, Installing, Testing and Commissioning of Heavy grade M.S. Pipes confirming to IS: 3589 & IS :1239 part - I with malleable specials confirming to IS:1239 part - II, such as Tees, elbows, check nuts, unions, flanges, nipples etc. Including threading, cutting, welding, for the pipes traveling under ground etc, as per drawings.							
a	250mm nominal dia	Rmt	5628.00					0
b	200mm nominal dia	Rmt	R.O					
c	150mm nominal dia	Rmt	690.00					0
d	100mm nominal dia	Rmt	R.O					
e	80mm nominal dia	Rmt	126.00					0
B.2	<u>ABOVE GROUND PIPING</u>							
	Supplying, Installing, Testing and Commissioning of heavy grade M.S Pipes (ERW-Class C) confirming to IS:3589 & IS:1239 part-I, with malleable specials confirming to IS:1239 part-II, such as Tees, elbows, check nut, unions, flanges, nipples etc. Including treading, cutting, welding and supports for the pipes traveling above ground and painting the exposed M.S. pipes with one coat of Etching primer with two coats of synthetic enamel paint of approved colour/shade. as per drawings.							
a	250mm nominal dia	Rmt	48.00					0
b	200mm nominal dia	Rmt	R.O					
c	150mm nominal dia	Rmt	24.00					0
d	100mm nominal dia	Rmt	R.O					
e	80mm nominal dia	Rmt	126.00					0
								0
B.3	<u>WRAPPING AND COATING</u>							0
	Supplying and Wrapping the anti corrosive material for buried pipes with coating of Primer and wrapping with 4 mm thick polymer corrosion resistant tape as per IS : 10221 with 15 mm overlap as per specifications.(The piping qty. included in Item no. 1 above.) -	Rmt	1000.00					0
								0
B.4	<u>SINGLE HEADED YARD HYDRANT</u>							0
	Supplying, Installing, Testing and Commissioning of Yard Hydrant comprising of Single Headed gun metal hydrant valve, 2 Nos. 15 mts. Long, 63 mm dia. RRL hoses with couplings,1 No. gun metal Branch pipe with nozzle in M.S. cabinet with powder coated finish of 750mm x 600mm x 250mm in size and mounted on structural support.(Stand post shall measure under piping item).Quoted rate shall include fixing of structural support by concrete mixture on a PCC 1:4;8 bed of 100 mm thcik and as per detail drawing.	Nos.	103.00					0

SLNO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
B.5	<u>DOUBLE HEADED YARD HYDRANT</u>							0
	Supplying, Installing, Testing and Commissioning of Yard Hydrant comprising of Double Headed gun metal hydrant valve, 4 Nos. 15 mts. Long, 63 mm dia. RRL hoses with couplings, 1 No. gun metal Branch pipe with nozzle in M.S. cabinet with powder coated finish of 750mm x 600mm x 250mm in size and mounted on structural support.(Stand post shall measure under piping item).Quoted rate shall include fixing of structural support by concrete mixture on a PCC 1:4:8 bed of 100 mm thick and as per detail drawing.	Nos.	R.O					0
								0
B.6	<u>4-WAY FIRE BRIGADE INLET</u>							0
	Supplying, Installing and Commissioning of 4-Fire Brigade Inlet connection of 4 way with 4 nos. 63 mm dia. built - in Gun metal Non- return valves instantaneous coupling type arranged on 150 mm dia. Pipe manifold and connected to wet riser main. Qouted rate shall be included with C.I. Butterfly valve, C.I. Non-return valve and M.S. cabinet of suitable size with mounting supports etc. complete.	Set	1.00					0
								0
B.7	<u>BUTTERFLY VALVE</u>							
	Supply, Installing, Testing and Commissioning of butterfly valves (PN 20) with vertical/horizontal gear unit with hand wheel, companion flanges, nuts, gaskets, bolts, etc. complete as required.							
a	250mm nominal dia	Nos.	26.00					0
b	150mm nominal dia	Nos.	2.00					0
c	100mm nominal dia	Nos.	R.O					
d	80mm nominal dia	Nos.	R.O					
								0
B.12	<u>BALL VALVE</u>							
	Supplying, Installing and Commissioning approved make 25mm dia ball valve.							
a	50mm nominal dia	Nos.	2.00					0
b	25mm nominal dia	Nos.	2.00					0
B.13	<u>AIR RELEASE VALVE</u>							0
	Supplying, Installing and Commissioning approved make 20mm dia. With automatic air release valve with unions etc. complete.	Nos.	2.00					0
	Sub Total B (Rs.)				-			0

SL.NO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
C	CIVIL WORKS							
C.1	<u>Providing ISMC 100 Supports for Fire Hydrant lines at 4.0 metrs gap.</u>							
	Pipe Support by ISMC - 100 mm width X 5 mm THK. - Supoplying , Fabrication and welding at site or Anchor fastening on Walls.	Kg	12 500.00					
C.2	<u>VALVE CHAMBER</u>							
	Construct valve chamber 1.2 Mtrs x 1.2 Mtrs x 1.5 Mtrs in first class brick (table moulded) masonry in CM 1:6 on PCC bed to 100mm thick plastering with CM 1:4 internal and providing 6/8 thick chequered plate with stiffness lifting arrangement angle iron edge angle frame work etc. complete with providing anticorrosive paint on both side for steel works. Cover should be in two halves fixed to frame work by means of hinges size of cover 1200 x 1200 mm.	Nos	RO					

SL.NO.	DESCRIPTION	UNITS	QTY	RATE (Rs.)	AMOUNT (Rs.)		Rate	Amount.
C.3	<u>Civil Work,</u>							
	Providing RCC Supportst for pipe at standard distance of 3 Meters above ground wherever necessary and providing clamps to secure the hydranr line	NO	RO					0
	Note: Quantities mentioned are approximate only and are likely to get increased or decreased based on actual requirements while execution of the jobs.							
	Sub Total C (Rs.)							
	Total Cost of Fire Hydrant System (A+B+C) Material & Labour (Rs.)							
	TAXES							
	Grand Total Supply & Erection (Including TAXES)							

AMOUNT (Rs.)

PAITHAN MEGA FOOD PARK PVT. LTD.

AT PAITHAN (MH)

BOOK NO. 3

**TENDER DRAWINGS FOR
FIRE HYDRANTS AND SAFETY SYSTEMS**

BID NO. PMFPPL – FHSS – 01 - 2016



Paithan Mega Food Park Pvt. Ltd.

Nath House, Nath Road, Aurangabad-431005, Maharashtra

Project Management Consultants (PMC)

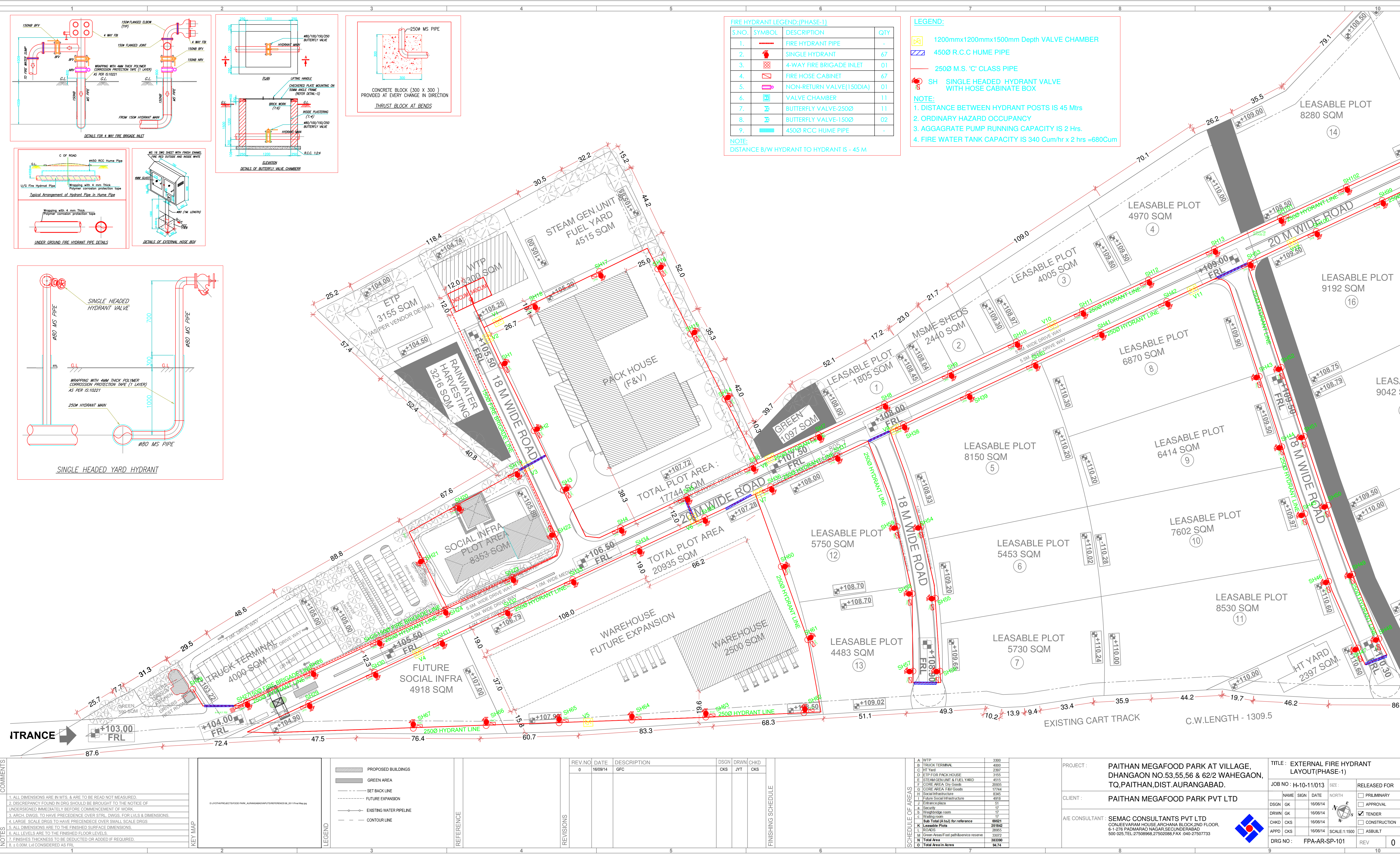


Abhyuday Techno Economic Consultants Pvt. Ltd.
211-212, Patel Avenue, Near Gurudwara
S.G. Highway, Thaltej, Ahmedabad – 380054, Gujarat

A/E Consultants



SEMAG Consultants Private Limited
'Conjeevaram House' , 2nd Floor, 6-1-276,
Padmarao Nagar, Secunderabad – 500 025.



REV. NO.	DATE	DESCRIPTION	DSGN	DRWN	CHKD
0	16/09/14	GFC	CKS	JYT	CKS

REVISIONS	DATE	DESCRIPTION
0	16/09/14	GFC

FINISHING SCHEDULE	DATE	DESCRIPTION
0	16/09/14	GFC

LEGEND
PROPOSED BUILDINGS
GREEN AREA
SET BACK LINE
FUTURE EXPANSION
EXISTING WATER PIPELINE
CONTOUR LINE

REFERENCE
1
2
3
4
5
6
7
8
9
10

REV. NO.	DATE

PROJECT	PAITHAN MEGAFOOD PARK AT VILLAGE, DHANGAON NO.53,55,56 & 62/2 WAHEGAON, TQ,PAITHAN,DIST.AURANGABAD.
CLIENT	PAITHAN MEGAFOOD PARK PVT LTD
A/E CONSULTANT	SEMAC CONSULTANTS PVT LTD CONJEEVARAM HOUSE ARCHANA BLOCK 2ND FLOOR, 6-1-276 PADMARAO NAGAR,SECUNDERABAD, 500 025, TEL.27508968,27502086,FAX. 240-27507733

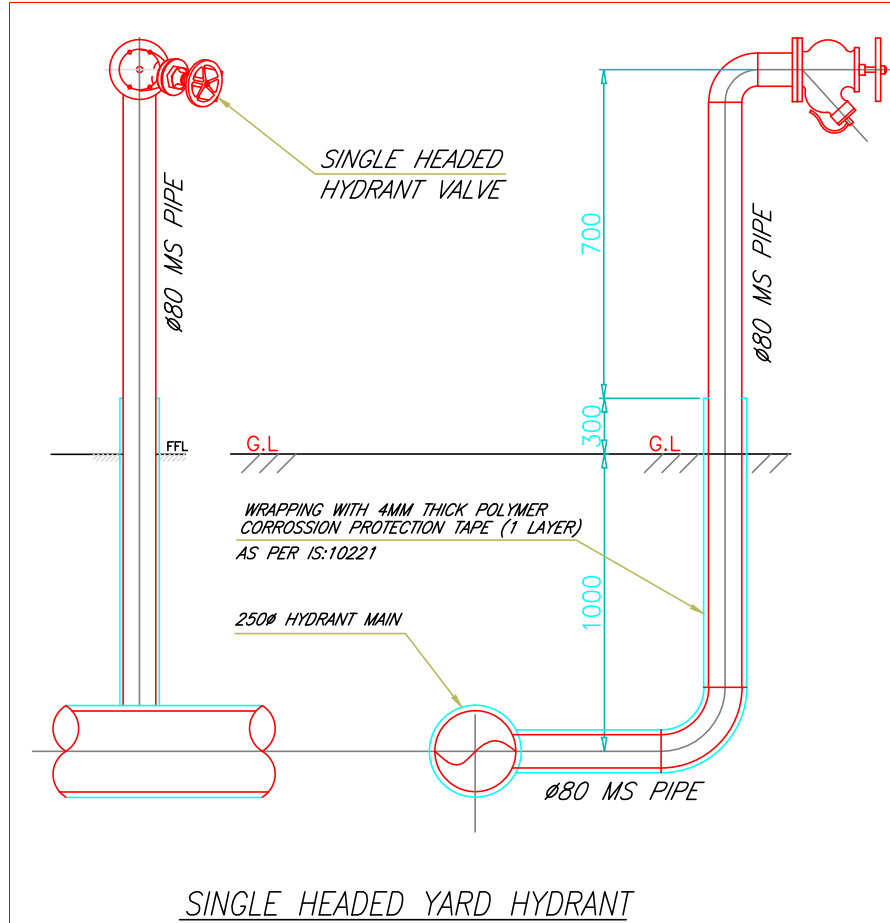
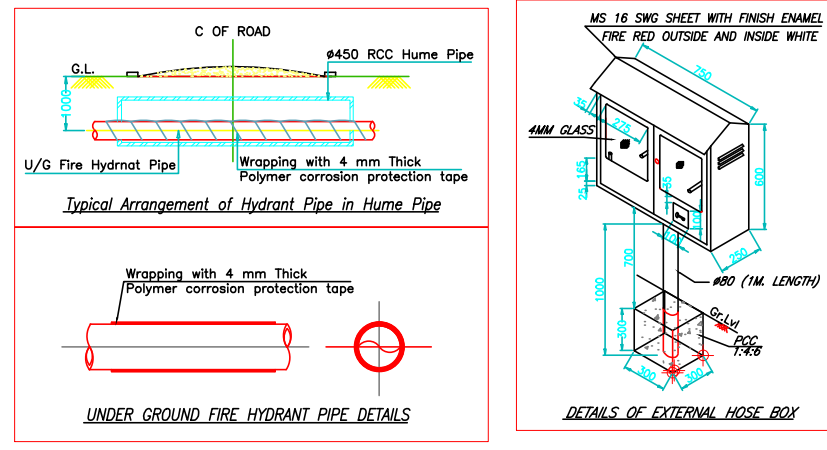
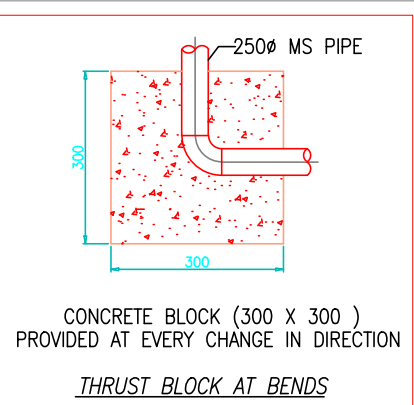
TITLE	EXTERNAL FIRE HYDRANT LAYOUT(PHASE-1)
JOB NO	H-10-11/013
DATE	16/06/14
SCALE	1:1500
DRG NO	FPA-AR-SP-101
REV	0










REVISIONS	DATE	DESCRIPTION
0	16/06/14	16/06/14

LEGEND
1200mmx1200mmx1500mm Depth VALVE CHAMBER
4500 R.C.C HUME PIPE
2500 M.S. 'C' CLASS PIPE
SH SINGLE HEADED HYDRANT VALVE WITH HOSE CABINET BOX





LEGEND
1. DISTANCE BETWEEN HYDRANT POSTS IS 45 Mtrs
2. ORDINARY HAZARD OCCUPANCY
3. AGGAGRATE PUMP RUNNING CAPACITY IS 2 Hrs.
4. FIRE WATER TANK CAPACITY IS 340 Cum/hr x 2 hrs =680Cum

LEGEND
1. DISTANCE BETWEEN HYDRANT POSTS IS 45 Mtrs
2. ORDINARY HAZARD OCCUPANCY
3. AGGAGRATE PUMP RUNNING CAPACITY IS 2 Hrs.
4. FIRE WATER TANK CAPACITY IS 340 Cum/hr x 2 hrs =680Cum



THE HYDRANT LEGEND:(PHASE-2)			
S.NO.	SYMBOL	DESCRIPTION	QTY
1.		FIRE HYDRANT PIPE	-
2.		SINGLE HYDRANT	47
3.		4-WAY FIRE BRIGADE INLET	01
4.		FIRE HOSE CABINET	47
5.		NON-RETURN VALVE(150DIA)	01
6.		VALVE CHAMBER	09
7.		BUTTERFLY VALVE-2500	09
8.		BUTTERFLY VALVE-150Ø	02
9.		450Ø RCC HUME PIPE	-

NOTE:
DISTANCE B/W HYDRANT TO HYDRANT IS - 45 M

- | | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------|
| <u>LEGEND:</u> | |
|  | 1200mmx1200mmx1500mm Depth VALVE CHAMBER |
|  | 450Ø R.C.C HOPE PIPE |
|  | 250Ø M.S. 'C' CLASS PIPE |
|  | SH SINGLE HEADED HYDRANT VALVE WITH HOSE CABINATE BOX |
| <u>NOTE:</u> | |
| 1. DISTANCE BETWEEN HYDRANT POSTS IS 45 Mtrs | |
| 2. ORDINARY HAZARD OCCUPANCY | |
| 3. AGGAGRATE PUMP RUNNING CAPACITY IS 2 Hrs. | |
| 4. FIRE WATER TANK CAPACITY IS 340 Cum/hr x 2 hrs =680Cum | |




B	WTP	3300
B	TRUCK TERMINAL	4000
C	Camp Yard	2357
E	ETP FOR PACK HOUSE	3199
E	STEAM GENER UNIT & FUEL YARD	4515
F	CORE AREA Dry Goods	2063
G	CORE AREA F&B	17744
H	Social Infrastructure	55
I	Future Social Infrastructure	4918
J	Entrance plaza	83
a	Security	17
b	Weightbridge room	17
c	Waiting room	17
K	Sub Total (A to J) for reference	69624
K	Leasable Plots	281942
L	ROADS	28955
M	Green Areas/Foot path/service reserve	33072
N	Total Area	383390
N	Total Area in Acres	94.74

PROJECT : PAITHAN MEGAFOOD PARK AT VILLAGE,
DHANGAON NO.53,55,56 & 62/2 WAHEGAON,
TQ,PAITHAN,DIST.AURANGABAD.

CLIENT : PAITHAN MEGAFOOD PARK PVT LTD

ENGINEERING CONSULTANT : SEMAC CONSULTANTS PVT LTD
CONJEEVARAM HOUSE, ARCHANA BLOCK, 2ND FLOOR,
6-1-276 PADMARAO NAGAR, SECUNDERABAD
500 025, TEL: 27508968, 27502088, FAX : 040-27507733

TITLE: EXTERNAL FIRE HYDRANT
LAYOUT(PHASE-2)

JOB NO : H-10-11/013			SIZE :	RELEASED FOR	
	NAME	SIGN	DATE	NORTH	<input type="checkbox"/> PRELIMINARY
DSGN	CKS		16/06/14		<input type="checkbox"/> APPROVAL
DRWN	JYT		16/06/14		<input checked="" type="checkbox"/> TENDER
CHKD	CKS		16/06/14		<input type="checkbox"/> CONSTRUCTION
APPD	CKS		16/06/14		<input type="checkbox"/> ASBUILT
DRG NO :			FPA-ME-SP-501		REV 0

**PAITHAN MEGA FOOD PARK PVT. LTD.
AT PAITHAN (MH)**

BOOK NO. 4

TECHNICAL SPECIFICATION

BID NO. PMFPPL – FHSS – 01 – 2016



Paithan Mega Food Park Pvt. Ltd.

Nath House, Nath Road, Aurangabad-431005, Maharashtra

Project Management Consultants (PMC)



Abhyuday Techno Economic Consultants Pvt. Ltd.

211-212, Patel Avenue, Near Gurudwara

S.G. Highway, Thaltej, Ahmedabad – 380054, Gujarat

A/E Consultants



SEM MAC Consultants Private Limited

'Conjeevaram House' , 2nd Floor, 6-1-276,

Padmarao Nagar, Secunderabad – 500 025.

INDEX

TECHNICAL SPECIFICATIONS FOR FIRE HYDRANT SYSTEM

1. Scope of work
2. Regulations and standards
3. Fire pumps
4. Piping
5. Testing
6. Commissioning
7. Specification for 415 volts fire pump panel
8. Specification for starters
9. Specification for switch boards

TECHNICAL SPECIFICATIONS FOR SPRINKLER SYSTEM

1. Sprinkler heads
2. Pipe work
3. Installation control valve
4. Functional test
5. Fire N.O.C Approval
6. Hardware

TECHNICAL SPECIFICATION FOR FIRE HYDRANT SYSTEM**SCOPE OF WORK:**

Following are the different items of work, which have to be supplied, erected, tested and commissioned. The system to conform requirements as per local statutory bodies.

Automatic Fire Hydrant System consisting of Electrical Pump (Main pump) & Jockey Pump, M.S. Piping with fittings, Valves, Yard Hydrants, Hose Cabinets and Hose Reels etc. In general the work to be performed under this contract shall comprise of the following

All incidental jobs connected with Industrial piping work such as excavation in trenches and back filling, cutting chases in concrete and brick work and making good cutting/drilling holes through walls, floors and grouting for fixing of supports etc. complete.

Co-operation with other crafts in putting the installation place. Any work done without regard or consultation with other trades shall be removed by the Contractor without additional cost to the Owner, to permit the proper installation of all other works as desired by the Architects.

Repair all damages done to the premises as a result of this installation and remove of all debris left by those engaged for this installation to the satisfaction of the Owner.

Cleaning of all the completed piping work, testing painting the vessels, tanks, equipments and piping with a coat of primer, two coats of approved enamel paint as per specifications/code requirements and identification of different utility pipe lines by colour band, markers for indicating direction of flow, stenciling etc., and showing the satisfactory performance of all the fittings at the time of handing over to the Owner.

It is the responsibility of the contractor to take care of all the fixtures fitted until the time of handing over to the Owners.

DRAWINGS:

The drawings enclosed herewith are for the general guidance to the tenderers. The Contractor shall upon the award of the work, furnish detailed drawing necessary to carry out the work at site within 7 days or as directed by client or turnkey contractor. These shall be submitted for approval to the Architect/Consultants. The work shall be commenced only after the approval of drawing by the Architects/ Consultants/ Owners.

DRAWING / INFORMATION REQUIRED FROM SUCCESSFUL TENDERER WITHIN 7 DAYS AFTER AWARD OF WORK:

1. Pump GA & Cross sectional drawings. (General Arrangements)
2. Performance curve for the pumps.
3. Control logic diagram for pump to start.
4. Schedule for valves and piping material.
5. Drawing, literature and technical particulars of all bought out items.
6. Necessary civil scope drawing for the system
7. Bar chart showing engineering, manufacturing and dispatch of each equipment and erection services.

INSPECTION AND APPROVAL:

The contractor shall arrange all necessary inspection by the Local authority. He shall also arrange for the entire test, obtain and deliver to the Owner any approval required as per the local by-laws. It is the sole responsibility of the contractor to prepare & submit the drawings. (As Built)

PAINTING:

All piping, equipment, cabinets furnished under this specification shall be properly painted with one coat of zinc chromate primer and two coats of synthetic enamel paint after Installation and shall meet the requirements as outlined in Fire Protection Manual. Paint used for this work will be lead free quality. The cost of painting deems to be inclusive in the respective items.

GUARANTEE:

The contractor shall guarantee the material and workmanship of the entire system is of first class quality and shall correspond to standard Engineering Practice. All the equipments/apparatus shall be guaranteed to yield the specified rating and design capacities, speeds. Any defective equipment/material/workmanship found short of the specified quality shall be rejected contractor shall make good the rejected items at his own cost. Guarantee certificate of equipment from suppliers/manufacturers shall be handed over to the Owner.

DEFECTS & LIABILITY:

All the equipment/ material and the system shall be guaranteed against defective material and workmanship for a period of 12 months from the date of commissioning and handing over the Owners along with all relevant documentation. The contractor shall repair/ rectify or replace all the defective materials, components free of cost. In addition, normal maintenance shall be carried out periodically during the defect liability period including replacement of spares, as required.

INSTRUCTION MANUAL/COMPLETION DRAWINGS/TRAINING:

The contractor shall furnish detailed instruction and operation manual in quadruplicate. The contractor shall also furnish detailed completion drawings as soft copy and hard copy on tracing sheet drawn to an approved scale. The drawings shall be inclusive of control schematic, if any. The contractor shall train the Employer's personnel in the operation and maintenance of the system for one month.

TESTING:

The contractor shall arrange to test the entire system as per the procedure enumerated under particular specifications, after the erection is completed. The tests shall be carried out to the satisfaction of Project Managers/Owners. The results of the tests shall be submitted to the Project Managers / Owner in triplicate. If the results of the tests are not found to be satisfactory by the Project Managers/Engineer-in-charge, necessary rectifications shall be

done until the test results are found to be satisfactory. The installation shall be deemed to be completed only after the successful completion of the tests.

TECHNICAL DATA:

The tenderers shall furnish data of their equipments as per the Performa under 'Technical Data'. The tenders without technical data are liable to be rejected.

REGULATIONS AND STANDARDS:

The installation shall conform in all respects to the following broad list of standards in general and in particular the materials used shall bear prevailing ISI marking:

- | | |
|---------------|-------------------------------------------------------------------------------------------------------|
| IS: 901-1975 | : Specification for coupling, double male and double female, Instantaneous pattern for fire fighting. |
| IS: 902-1974 | : Specifications for suction hose coupling for fighting purposes. |
| MSS SP 67 | : Butterfly Valves. |
| API 609 | : Butterfly valves, lug type and wafer type. |
| IS: 1239 | : Mild steel tube, tubular and other wrought steel fittings. |
| IS: 8423-1977 | : Controlled per collating hose for fire fighting. |
| IS: 5290-1983 | : Landing valves. |
| IS: 3844-1966 | : Code of practice for installation for internal fire hydrants in multi Storey buildings. |
| | |
| IS: 2871-1983 | : Branch pipe, universal for firefighting purposes. |
| IS: 884-1969 | : First Aid hose reel for fire fighting. |
| IS: 5132-1968 | : Hose reel tubing for fire protection system. |
| BS: 5155 | : Cast iron and carbon steel butterfly valves for general purpose |
| IS: 8090-1992 | : Specification for coupling branch pipe, nozzle used in hose reel tubing for fire fighting. |
| IS: 3582-1984 | : Specification for basket strainer for fire fighting purpose. |
| IS: 908-1975 | : Specification for fire hydrant, stand post type. |

DATA:

- a) Type : Automatic Fire Hydrant system.
- b) No. of Fire Pumps : Jockey Pump, One Electrical Motor Driven Pumps (Main Pump), Diesel Engine Driven Pump (Standby)
- c) Static Water Storage : Based on the type of building, water is stored in two Compartments i.e 680 cum in two tanks. The water is Stored in an above ground storage tank, i.e the suction is Positive suction to all the pumps. Through the 250 dia Puddle flange from storage tank suction is taken to pump. The suction to pump is controlled by sluice valve.

STORAGE CAPACITY OF FIRE WATER TANKS @ GROUND LVL = 680 cum**FIRE PUMPS:****Pumping Sets:**

Pumping sets shall be single or multistage horizontal centrifugal multistage single-outlet pumps with cast iron body and bronze dynamically balanced impeller connecting shaft shall Be stainless steel.

- a) Pumps shall be connected to the drive by means of a flexible coupling.
- b) Pumps shall be provided with approved type of mechanical seals pressure gauge with Isolation cock on the delivery side.
- c) Pumps selected should work under 150% rated flow delivered against 65% of the rated Head. So as to meet local statutory requirements/Client's requirements.

ELECTRICAL MOTOR DRIVEN PUMP:

Fire pump shall be electrically driven centrifugal pump of capacity are mentioned below against 7 bar. The pump shall be automatic in operation and driven by a totally enclosed

fan cooled Induction electric motor of suitable HP with suitable speed. The construction details of the pumps shall be as follows:-

340 cum/hr @ 120 m head

- a) Pump : Horizontal type Split casing.
- b) Casing : Cast Iron.
- c) Impeller : Double inlet enclosed type – bronze.
- d) Shaft : Stainless Steel.
- e) Bearings : Heavy duty ball bearings.
- f) Flanges : Faced and drilled as per BSS-10 table or IS.
- g) Drive : Direct drive with flexible coupling.
- h) Gland : Horizontal split for each inserter and removal.
- i) Motor : Total enclosed fan cooled inducting motor suitable for operation of 430 Volts, 3 Phase, 50 Hz, A.C. supply.
- j) Starting : Automatic starting device with arrangement, contactor, pressure switch etc., and suitable hooter.
- k) Installation : Pump and motor set shall be mounted on a common base plate and installed on a suitable concrete foundation and curing the same. Suitable anti-vibration springs shall also be installed to minimize the vibration. The pump set shall, however be factory aligned. The bed plate levels shall be properly fixed at site before the foundation bolts are grouted.

- l) Pump Accessories : Pump set shall be provided with the following accessories:
 - a) Coupling guard.
 - b) Air vent for pump casing.
 - c) Suction and delivery pressure gauges.
 - d) Base plate, foundation bolts.

DIESEL ENGINE DRIVEN PUMP:

- a) Diesel Engine shall be 4 (Four) cylinder type with individual head assemblies. The

- Engine shall be water cooled and shall include radiator, water pump and connecting piping, strainer, isolating and pressure reducing valves, by-pass line complete in all respects.
- b) Engine shall be direct injection type with low noise and exhaust omission levels.
 - c) The speed of the engine shall match the pump speed for direct drive.
 - d) The engine shall be self starting type and shall be provided with 12 Volts heavy duty batteries, dynamo, starter, cut-out, starter, cutout battery leads complete in all respects. two additional spare batteries shall be provided.
 - e) The system shall be provided with an automatic fully connected battery recharger of type and capacity required for the system.
 - f) System should be designed such a way that both batteries are connected and are individually able to provide automatic pump starting. The battery circuits should be arranged to alternately attempt starting on one circuit first, then the other one battery could be charged by an alternator on the engine with the other one charged by an independent means.
 - g) The engine shall be provided with an oil bath air cleaner.
 - h) Engine shall be suitable for running on high speed diesel oil.
 - i) The system shall be provided with a control panel with push button starting arrangement and wired to operate the engine on a differential pressure gauge.
 - j) The entire system shall be mounted on a common structural base plate with ant vibration Mounting and flexible connections on the suction and delivery piping.
 - k) Providing one fully mounted and supported day oil tank fabricated from 5mmthick MS sheet of capacity (size 1 Mtr x 1 Mtr x 0.7 Mtrs) 500 ltrs with inlet, outlet with valves, gauge glass, manhole cover. The cost of MS frame work for staging to be included.

- l) Provide one exhaust pipe of MS 3 mm thick with suitable muffler to discharge the engine Gasses to outside open air as per site conditions duly painted. Exhaust pipe to be fully Insulated and GI sheet cladded from engine outlet including muffler and exhaust pipe Which is located outside the building (i.e. complete length of exhaust piping).
- m) Provide all accessories fittings and fixtures necessary and required for a complete operating engine set.
- n) Pressure switches/sensing devices to be mounted on its own independent discharge header for all the three pumps to achieve automatic operation.

JOCKEY PUMP:

Pump shall be electrically driven centrifugal pump of capacity 180 lpm at 120 meters head. the pump shall be automatic in operation and driven by dip proof squirrel cage electric motor of suitable HP with suitable speed with a degree of protection not less than IP 55.

BASE PLATE:

Pumps and motors shall be mounted on a common structural base plate with anti vibration mounting pads.

AIR VESSEL TANK:

Air Vessel Tank made out of 4mm MS Sheet 300mm dia x 1000mm long with dished ends in 5mm thick sheet with provision necessary for inlet, outlet safety valve, Air release valve, isolation valve duly painted inside with two coats of anti-corrosive paint of approved synthetic enamel paint.

PIPING:

Underground piping shall be of M.S 'C' class. The piping shall be laid not less than one meter below the ground level, suitable masonry supports, and concrete anchor blocks of suitable design shall be provided at every change in direction of pipeline both horizontal and vertical and near every pipe joints where soil conditions are unsatisfactory.

Above ground piping shall be mild steel tubes of heavy grade unless otherwise specified and shall conform to IS: 1239 Part-I. Mild steel pipes shall be provided with welded joints only unless flanges are warranted. All fittings shall be heavy grade wrought or mild steel conforming to ASTM A234 Gr. WPB Sch. 40 (IS: 1239 Part II). The flanges shall be drilled as per relevant Indian Standards.

Flanges shall be faced and shall have insertion of neoprene rubber insertion of Gasket. The joints shall be capable of withstanding a pressure of 1.5 times of working pressure. All the above ground piping shall be supported by angle iron brackets on walls or suspended by hangers from ceiling or concrete pedestals at some places. Piping over ground shall be painted with two coats of approved enamel over a coat of zinc chromate primer after the installation and testing.

ANTICORROSIVE TREATMENT FOR UNDER GROUND PIPING:

M.S pipe laid outdoor in trenches/buried in earth shall be wrapped with “Pypkote” make 4mm thick membrane consisting of seven layers of polyethylene polymerized bitumen and polyester mat laid over a suitable primer of fibre and solvent based rubber modified bituminous primer of density 0.9 gms/cm applied at the rate of approx 200 -250 gam/sq.m. Material to be laid strictly as per manufacturer's specification.

Pipes passing through masonry walls, foundation, beams shall be taken through embedded pipe sleeve of same material. The pipe sleeve size to be at least 1 1/2 times the diameter of the crossing pipeline. The pipeline running below floor shall be given anticorrosive treatment same as for underground piping.

BUTTERFLY VALVE:

Butterfly valves shall be vertical/horizontal gear unit with hand wheel; the valve body shall be cast iron. The valves shall be suitable for a working pressure of 16 kg/cm².

NON-RETURN VALVE:

Non-return valve shall be of cast iron with gun metal seat, non-return valves shall be of swing check type as per IS: 5312. The valves shall be suitable for a test pressure of 21 kg/cm².

Y-STRAINER:

A Y-Strainer to be placed in the suction pipe for all pumps. The strainer should be capable of withstanding the suction pressure.

GATE VALVE:

A Gate valves to be placed for each Hose Reel cabinet to control the flow in hose Reel. The valve shall be capable of withstanding the working pressure of the system.

PRESSURE SWITCH:

A pressure switch shall be connected on delivery line of fire pump, at a preset pressure level so designed to automatically start the fire pump or Jockey pump as the case may be when the pressure in the system falls or raises below or above the preset level. There shall be 4 pressure switches one with upper and lower limit for Jockey pump, and another only for lower pressure limit for main pump. Stopping of main pump should only by manual push button which should be prominently indicated on the pump panel. Similar lower pressure switch should also be incorporated in the diesel pump to make the start automatically at preset drop in pressure.

PRESSURE GAUGE:

One number pressure gauge to be placed at every delivery pipe of pump. The calibrated reading should be readable and units to be mentioned. The pressure reading to be slightly below the lower limit and above the upper limit of pressure standards. Pressure gauges used for the test shall be accurate and shall preferably have been re calibrated before the test.

AIR RELEASE VALVE:

A Gun Metal air release valve to be placed at all wet riser, so that the air bubbles formed as a result of leakages can be overcome. The valve shall be useful at the time of commissioning and maintenance.

HYDRANT VALVE(LANDING VALVE):

Landing valves shall be of Gun Metal construction and of 63mm dia oblique female instantaneous pattern with caps and chains. Landing valves shall conform to IS: 5290 in all respects. Double headed landing valves shall have separate control valves. Landing valves shall be of gun metal and fitted with instantaneous coupling conforming to IS: 901. The coupling shall be fitted with an internal plug secured by a chain. Landing valves shall be installed on hydrant risers at a height of 1.0 Mtrs from the floor level. The landing valves shall be connected to the wet riser stand pipes by means of a suitable tee, the cost of which is deemed to be included in the unit rate for piping.

HOSE PIPE:

All hose shall be of 63 mm diameter made of RRL as per IS: 636, Type-II

BRANCH PIPING AND NOZZLE:

Branch pipes shall be of gun metal to fit into the instantaneous coupling. Nozzle shall be of spray or fog type of diameter of not less than 16 mm and not more than 25mm. Branch pipe and nozzle shall be of instantaneous pattern.

HOSE CABINET:

Hose cabinet shall be glass (4 mm thick) fronted with double hinged door and lock. The cabinet shall be made of 16 SWG M.S sheet and spray painted to scarlet red color with word fire. The hose cabinet shall be of suitable size to accommodate the following:

Single Headed

63 mm RRL hose pipe 2 lengths of 15 Mtrs each for external hydrant and 2 lengths of 7.5 meter for internal hydrant.

- b) Branch pipe with nozzles (one set).
- c) Two keys with break glass recess for locks.

Double Headed

63 mm RRL hose pipe 2 lengths of 15 Mtrs each for external hydrant

- b) Branch pipe with nozzles (two set).
- c) Two keys with break glass recess for locks.

FIRE BRIGADE INLET:

Fire brigade inlet connection to the tank shall be comprised of four instantaneous pattern 63 mm dia. make inlets with caps and chains complete with non-return valves housed in a 16 Gauge MS cabinet with 4mm thick glass fronted door. The cabinet shall be 1000 x 300 mm x 400 mm size for recess mounting.

HOSE REEL CABINET:

A 19mm dia rubber hose of 36m length is placed near each landing valves inside the main plant. The hose reel is inbuilt with the nozzle. A 25 mm dia inlet pipe with threaded end is tapped from wet riser controlled by GM gate valve.

DOWN COMER PIPE WORK:

The suction line for each pump shall be independent.

No Sluice/BFV valve shall be provided in suction line, where the pump is located above the water level in the sump foot valve and strainer shall however be provided.

Sluice/BFV valve shall be provided in suction line, where the pump is located below the water level in the sump, strainer at the suction end shall be provided.

Sluice valve shall be kept in open position and the scope of work includes provision of necessary leather strap and pad lock as so as to prevent unauthorized closing of valve.

The installation work includes provision of all clamps, support anchors etc.

Spacing between vertical supports shall not exceed 1.5m. Clamps shall be provided on either side of the tee joints for internet hydrants. Necessary anchors/trust pads shall be provided as approved at locations of bends, tees etc, as required within the scope of work..

The open end of the piping shall be temporarily closed for testing.

Test shall be conducted on each pump set after completion of the installation with respect of delivery head, flow and B.H.P. The test shall be carried out by the contractor at his own cost except for water and electricity which shall be provided by the Employer free.

All leaks and defects in different joints noticed during the testing and before commissioning shall be rectified to the satisfaction of engineer-in-charge.

Testing of fitting equipments shall be carried out either at site or at works in the presence of a representative of the Department. Test certificate shall also be furnished by the Contractor.

The automatic operation of the systems, for the various functional requirements and alarm as laid down in his specification shall be satisfactorily carried out in the presence of the Engineer-in-charge.

Approval by local bodies.

It shall be the responsibility of the contractor to obtain the approval of drawings & to get the installation inspected & passed by the concerned agencies, as may be necessary as per local bylaws, any fee payable to the local bodies for such activities shall be borne by the employer on production of receipts for money paid.

TESTING:

After laying and jointing, the piping shall be pressure tested by hydrostatic method. The piping shall be slowly filled with water in order to expel all the air. The piping shall then be allowed to stand full of water for 24 hours. Any leakage at flanges or elsewhere shall be rectified. The pressure shall then be applied by means of a test pump (either hand or

electric motor operated). The test pressure shall not be less than 1.5 times of the working pressure of the system.

Capacity of pumps shall be checked with respect to the contractor's piping and equipment layout. Tests shall be conducted to determine the delivery head, flow end bhp of pumps after installation. All the test results shall correspond to the performance curves. All the leaks and defects in joints revealed during the testing shall be rectified to the satisfaction of the Owner/Architect /Consultant.

The system shall also be tested for its desired performance and function by opening hydrant valves on each floor separately and four landing valves simultaneously. The flow of water at the top most hydrants shall be checked when three landing valves below are open. The cutting in and cutting out pressure setting of starting device shall also be checked for its correct operation.

The test results shall be recorded and countersigned by Owner's representatives and submitted in triplicate for approval by the Owner.

COMMISSIONING:

After testing the system at a 1.5 times of the working pressure of the system shall be commissioned for operation for the purpose of fire fighting. Same procedure is to be illustrated to be safety officer of client.

SPECIFICATION FOR 415 VOLTS FIRE PUMP PANEL:**SCOPE OF WORK:**

This specification is intended to cover the design, manufacture, assembly, testing at manufacturer's works, properly packed for transportation, supply and delivery, testing and commissioning complete in all respects with all components, fittings and accessories for efficient and trouble-free operation as specified hereinafter for the proposed project.

GENERAL INFORMATION:

1. The equipments shall be designed, manufactured and equipped with accessories in accordance with this specification and the applicable codes standards indicated below. Materials and components not specifically stated in this specification but which are necessary for satisfactory and trouble free operation and maintenance of the equipment shall be supplied.
2. The design and workmanship shall be in accordance with the best engineering practices to ensure satisfactory performance and service life as specified here.
3. Switch boards shall be suitable for an ambient temperature of 45 degrees C.

CODES AND STANDARDS:

The equipment covered by this specification shall unless otherwise stated be designed, constructed and tested in accordance with the requirements of the Indian Electricity Act and Rules and latest revision of the following standards.

IS: 375	:	Arrangement of bus bars, main connection and auxiliary wiring.
IS: 722	:	AC Electricity Meters.
IS: 1248	:	Direct acting electrical indicating instruments.
IS: 1822	:	Motor starters AC for voltages not exceeding
IS: 8544	:	1000 V Direct-on-line AC starters.

IS: 2147	:	Degrees of protection provided by enclosures for low voltage switchgear and control gear.
IS: 2419	:	Dimensions of panel mounted electrical indicating and recording instruments.
IS: 2705	:	Current Transformers.
IS: 2959	:	Contactors for voltages not exceeding 1000 V AC or 1200 V DC.
IS: 3231	:	Electrical relays for power system protection.
IS: 4064	:	Air-break switches, air-break disconnectors, air break switch disconnectors and fuse combination units for voltages not exceeding 1000 V AC or 1200 V DC.
IS: 3842	:	Application guide for electrical relays for AC System.
IS: 4237	:	General requirements for switchgear and control gear for voltages not exceeding 1000 volts.
IS: 4483	:	Preferred panel cutout dimensions for electrical relays.
IS: 5124	:	Induction motor starters, AC (voltage not exceeding 1000 V) installation and maintenance of code of practice.
IS: 5987	:	Selection of switches (voltage not exceeding 1000 V).
IS: 6875	:	Control switches for voltages up to and including 1000 V AC and 1200 DC.
IS: 8588	:	Code of practice for thermostatic bimetals Part-I general requirements and method of tests.
IS: 8623	:	Factory built assemblies of switchgear and control gear for Voltages up to and including 1000 V AC and 1200 V DC.
IS: 8828	:	Miniature air-break circuit breakers for voltages not exceeding 1000 Volts.

DESIGN REQUIREMENT:

- a) The switchboards shall be designed for 400/440 V, 3 phase 4 wire, 50 c/s supply.
- b) Switchboards shall be suitable for direct-on-line starting of all motors.
- c) Control power supply of the Switchboards shall be 415 Volts, single phase, 50 Hz AC

supply tapped for the respective module itself.

- d) The switchboards manufacturers shall apply all derating factors necessary to all components of the switchboards to comply with the conditions detailed in this specification.

CONSTRUCTIONAL FEATURES:

The switchboard shall be:

- a) Off the totally metal enclosed, indoor, floor mounted, free standing cubicle fixed type MCB / MCCB/ **ELCB / RCB** fuse switch units with compartmentalized design.
- b) Be made up of the requisite vertical sections, which when coupled together shall form continuous dead front switchboards.
- c) Provide dust and damp protection, the degree of protection being no less than IP 54 to IS 2147.
- d) Be readily extensible on both sides by addition of vertical sections after removal of the end covers.
- e) Switchboards shall have access to the feeders, bus bars, cable termination, cable alley etc. from front only.

Each vertical section shall comprise:

- (a) A front framed structure rolled/folded sheet steel channel section, of minimum 3 mm thickness, rigidly bolted, together. This structure shall house the components contributing to the major weight of the equipment, such as circuit breaker cassettes, fuses switch units, main horizontal busbars, vertical risers and other front mounted accessories.
- (b) The structure shall be mounted on a rigid base frame of folded sheet steel of minimum 3mm thickness and at least 75mm height. The design shall ensure that the weight of the components is adequately supported without deformation or loss of alignment

- (c) Each compartment shall be provided with a hinged door interlocked with switch/breaker housed inside the compartments so that door cannot be opened unless the switch breaker is in 'OFF' position.
- (d) The design shall ensure generous availability of space of ease of installation and maintenance of cabling and adequate safety for working in one vertical section without coming into accidental contact with live parts in and adjacent section.
- (e) A cover plate at the top of the vertical section, provided with a ventilation hood where necessary. Any aperture for ventilation shall be covered with a perforated sheet having less than 1 mm diameter perforations to prevent entry of vermin.
- (f) Front and rear doors shall be fitted with dust tight neoprene gaskets with easy operating type fasteners designed to ensure proper compression of the gaskets. When covers are provided in place of doors, generous overlap shall be assured between sheet steel surfaces with closely spaced fasteners to preclude the entry of dust. The doors shall have concealed hinges. Removable screwed covers shall be provided on the rear of the cubicles.

The height of the panel should not be more than 2200 mm. The working height shall be limited to a maximum height of 1800 mm. The total depth of the panel should be adequate to cater for proper cabling space.

Covers and partitions shall be of minimum 16 Gauge sheet steel, whereas doors shall be minimum 14 gauge sheet steel. All sheet steel work forming the exterior of switchboards shall be smoothly finished, leveled and free from flaws.

All switches, push buttons etc. shall be operable from the front and shall be flush/semi flush mounted.

The apparatus and circuits shall be so arranged as to facilitate their operation and maintenance and at the same time to ensure the necessary degree of safety.

Apparatus forming part of the switchboards shall have the minimum clearances as per relevant IS clearances shall be maintained during normal service conditions.

Creepage distances shall comply to those specified in relevant standards.

All insulating material shall be of DMC/FRP/SMC to withstand the effects of high humidity, high temperature, tropical ambient service conditions, etc.

Foundation bolts and nuts for each panel shall be supplied along with the respective switchboard

The lifting eyes for each shipping section and danger notice plates shall be provided for each switchboard.

Functional units such as circuit breakers and fuse switches shall be arranged in multi-tier formation.

Metallic/insulated barriers shall be provided within vertical sections and between adjacent sections to ensure prevention of accidental contact with:

Main bus bars and vertical risers during operation, inspection or maintenance of functional Units and front mounted accessories.

Cable terminations of one functional unit, when working of those of adjacent unit/units.

All covers providing access to live power equipment/circuits shall be provided with tool operated fasteners to prevent unauthorized access.

Provision shall be made for permanently earthing the frames and other metal parts of the switchgear by the independent connections.

METAL TREATMENT AND FINISH:

a) All steel work used in the construction of the switchboards should have undergone a rigorous metal treatment process.

All surfaces to be painted including interior and exterior of panels, and other metal parts shall be chemically treated to remove all rust, scale, grease and other adhering foreign matters using seven tank process. All parts shall be coated with two coats of highly corrosion resistant primer followed by two coats of synthetic enamel paint (post office red) of approved color and approved manufacturer. Matt finish of the painting is required.

The complete treatment, painting, drying with compressed air and stoving operations shall be done in dry and dust free atmosphere.

Should finished paint chip off or crinkle during transit/handling/installation, the contractor shall arrange for repainting the equipment at site at his own cost.

BUS BARS:

The bus bars shall be air insulated and made of high conductivity, high strength COPPER alloy complying with the requirements of grade E91E of IS.5082 and suitable for 415 Volts, 4 wire 50 Hz systems.

The bus bars and connections shall be suitably supported/braced with no hygroscopic DMC/FRP/SMC supports.

High tensile bolts and spring washers shall be provided at all bus bars joints.

The busbars shall be liberally sized and shall have uniform cross section throughout, and shall be capable of carrying the rated current at 415 V continuously. The bus bars shall be designed to withstand a temperature rise of 45 degree C above the ambient. A current density of 1.3Amps/Sqmm shall not be exceeded for aluminum bus bars.

All bus connections, joints and taps shall be short and as straight as possible, and applied with contact grease in the mating surface.

The main horizontal bus bars shall be run through the entire length of the panel and shall be accessible for maintenance from the front as well as rear. Bus bar chamber shall have separately screwed covers. All bus bars, links, etc. shall be provided with insulating cover

to prevent accidental contacts. The neutral bus bars shall have a continuous rating of at least 50% of the phase bus bars.

Bus bars shall be encased in color coded heat shrunk PVC sleeves (snug fit type). An earth bus of size not less than 50 x 6 mm shall run through the length of switch boards at top or bottom as required.

MCCB – MOULDED CASE CIRCUIT BREAKER:

Moulded case circuit breaker shall confirm to IS 2516, IS 13947 – 1/IEC 947 – 1 (Part 1 & 2/Section 1) 1977 for general rules. It shall be suitable for horizontal & vertical mounting & line load inversibility. MCCB shall be suitable for three phase 415V, 50 Hz.

The MCCB cover & case shall be made of high strength heat resistant & flame retardant thermostat setting insulating material. The operating handle shall be quick make, quick break, trip free type. The operating handle shall have suitable ON, OFF, Tripped indicators & in order to ensure suitability for isolation complying with IS 13947 – 2 / IEC 947 – 2.

MCCB's shall be provided with auxiliary switch with 2 no. 2NC auxiliary contacts & alarm switches.

MCCB shall be provided with interlocking devices for interlocking the doors of the switchboard.

- a) Handle interlock to prevent unnecessary manipulations of the breaker.
- b) Door interlock to prevent door being opened when the breaker is ON position. It should, however be possible to override the interlock mechanism to operate the MCCB with the door open intentionally.

MCCB shall be suitable for breaking capacity of 50 kA for 1 Sec.

INDICATING LAMPS:

LED type indicating lamps shall be provided wherever called for in the control schematic diagrams. The lamps assembly shall be complete with bulbs, holders and lenses.

MCB

All control and power fuses shall be link with MCB's and they shall be provided with visible indication to show that they have operated.

CURRENT TRANSFORMERS:

Current transformers shall comply with the requirements of IS 2705. They shall have ratios, outputs and accuracies as specified/required.

Current transformers wherever required and called for in the single line diagram and/or required shall be furnished.

The CTs shall be bar primary in epoxy-encapsulated type, rated for 415 V. The CTs shall be designed to withstand the thermal and mechanical stresses resulting from the maximum short circuit current.

The vendor shall ensure that the VA output of the CTs is adequate for the relays, meters and loads connecting them.

The CTs shall be provided with Class A/Class B insulation and proper polarity markings in a suitable manner.

INDICATING METERS:

All indicating instruments shall be of flush mounting industrial pattern, conforming to the relevant standard.

The instruments shall have non-reflecting bezels, clearly divided and indelibly marked scales and shall be provided witherto-adjusting devices in the front.

Integrating instruments shall be of flush mounting switchboard pattern complying with the requirements of IS 722.

Meters shall be provided with circular 90-degree scale with square casing of specified size.

MT instruments shall have $\pm 1\%$ accuracy on full scale. Each meter shall be magnetically screened.

CABLE TERMINATIONS:

Cable entries and terminals shall be provided in the switchboard to suit the number; type and size of the aluminum conductor power cables and copper conductor control cable specified in the detailed specifications.

Provision shall be made for top or bottom entry of cables as required. Generous size of cabling chambers shall be provided, with the position of cable gland and terminals such that cables can be easily and safely terminated. Removable undrilled plates shall be furnished for fitting the cable glands.

Sufficient space shall be provided to avoid sharp bending and for easy connection.

Multi way terminal blocks complete with screws, nuts, washers and marking strips shall be furnished for terminating the internal wiring and outgoing cables.

Power and control terminals shall be washer head screw type or stud type complete with crimping type connectors. Screw type terminals with screws directly impinging of conductors are not acceptable.

Each control terminal shall be capable for connection of 2 Nos. 2.5 mm standard copper wire at each ends.

Not more than two wires shall be connected to any terminal. If necessary a number of terminals shall be jumpered together to provide wiring points.

At least 20% spare terminals shall be provided in each module.

Terminal block for current transformer secondary lead wires shall be provided with shorting and earthing facility.

Barriers or shrouds shall be provided to permit safe workings at the terminals of one circuit without accidentally touching that of another live circuit.

Cable risers shall be adequately supported to withstand the effects of rated short circuit currents without damage and without causing secondary faults.

CONTROL WIRING:

The wiring shall be completed in all respects so as to ensure proper functioning of control, protection and interlocking scheme.

All wiring shall be completed upto terminal blocks on the side of each unit module.

All control wiring shall be carried out with 1100/660 V grade single core PVC cable conforming to IS 694/IS 8130 having stranded copper conductors switchboard wires of minimum 2.5 Sqmm.

Wiring shall be neatly bunched, adequately supported and properly routed to allow for easy access and maintenance. Wires shall not be spliced or tapped between terminal point.

Wires shall be identified by numbered ferrules at each end. The ferrules shall be of the ring and of non-deteriorating material. They shall be firmly located on each wire so as to prevent free movement, and shall be interlocking type.

All control circuit fuses shall be mounted in front of the panel and shall be easily accessible.

All spare contacts of relays and switches shall be wired upto the terminal blocks.

Each of the DC Circuit shall be provided with two fuses one in the positive and the other in the negative for 2 wires DC ungrounded system of specified voltage.

GROUND BUS:

An aluminum ground bus rated to carry maximum fault current shall be furnished along the entire length of each switchboard. Each stationary unit shall be connected directly to this ground bus by two separate and distinct connections in accordance with Indian Electricity Rules.

Grounding terminals on the ground bus shall be provided. Connectors shall be provided at either end of each PMCC for connection to station ground mat.

TERMINAL BLOCKS:

Terminal blocks shall be 660 Volts grade of stud type. Insulating barriers shall be provided between adjacent terminals.

Suitable provision shall be made to terminate control/power connections in the respective module.

Terminal blocks shall have a minimum current rating of 10 Amps and shall be shrouded. Provisions shall be made for label inscriptions. The wire terminations to the blocks shall be of screw type suitable for crimp type socket.

NAME PLATE:

The panel as well as feeders compartments shall be provided with nameplate of anodized aluminum, with white engraving of black background. They shall be properly secured with self-tapping screws at the top of the cubicles. The panel/feeder descriptions shall be as indicated in the drawings/employers. The size of the nameplates shall be proportionate to the respective equipments.

Also individual panel number and danger plate shall be furnished at back of panel

DRAWINGS AND MANUALS:

The following drawings shall be supplied for each switchboard.

General arrangement drawing for each type of board showing constructional features and space required in the front of with drawl of breaker, power and control cable entry points, location of various devices, terminal blocks, etc. GA drawings shall be submitted along with offer & with soft copies.

Foundation plan and anchor hold details including dead load and impact load.

Drawing and data sheet for each component.

Electrical wiring diagram.

Terminal block arrangement drawing for outgoing feeders.

Operation, maintenance and installation manuals, (one set to Architects).

Technical catalogues/leaflets of CTs, meters, lamps, etc. shall be submitted along with offer.

The approval of the drawing does not absolve the contractor from his obligation of ensuring proper and correctness of functioning/operation of the system.

TESTS:

Routine and Type Test:

- a) Type test certificates and results as per relevant Standards (Specifications) for all
The equipment offered under the scope of this specification shall be furnished.

All routine tests on all major components shall be made as per relevant specification.

- a) Inspection of Switch boards including inspection of wiring and electrical operational
Test wherever necessary.

b) Dielectric Test:

Insulation of the main circuits that is the insulation resistance of each pole to the earth and that between the poles shall be measured. Insulation resistance to earth of all secondary wiring should be tested with 1000 V meggar. Insulation test shall be carried out both before and after high voltage test.

Each switchboard will be completely assembled, wired, adjusted and tested for operation under stipulated conditions to ensure correctness of wiring and proper functioning of all equipments.

All current carrying parts and wiring shall be subjected to a high potential test.

HIGH VOLTAGE TEST:

A high voltage test with 2.5 K.V. for one minute shall be applied between the pole and earth. Test shall be carried out on each pole in turn with the remaining poles earthed. All units racked in position and the switches closed. Original test certificate shall be submitted along with panel.

Owner reserves the right to get the routine tests witnessed by his representatives, if so desired by the Owner. The contractor shall give at least 14 days advance notice for the above to the Owner.

The switchboards shall be sent to site by road transport packed in wooden crates. The packing should be of high quality to avoid any damage to the equipments during transit. They shall be wrapped with polythene sheets before being placed in crates to prevent damage to the finish.

SPECIFICATION FOR STARTERS:

Contractors shall be air breaker and the electromagnetic type rated for uninterrupted duty as defined in IS: 2959 and IS: 1822 unless otherwise specified.

The main contacts shall be of silver or silver alloy. The insulation class for the coils shall be class 'E'.

Contractors shall be provided with minimum 4 Nos. of auxiliary contacts. Out of which 2 Nos. will be normally closed and 2 Nos. normally opened.

A typical module wiring has to be approved by Architects. The exact wiring to be made for each motor shall be intimated to the Contractor.

To provide facility for inclusion of interlocks, the control circuit has been developed with a number of breaks bridged up with jumpers. In actual wiring, these are to be provided on the terminal board bridging up with jumpers. This arrangement is considered essential to avoid jointing and tapping of wires for inclusion of interlocks.

The short time rating of the contractors shall be properly coordinated with the operating time of fuse preceding it.

The protective relays shall be flush mounted type and shall be in draw out type cases with built in test facilities and having provision for CT shorting when the relays are drawn out. The relays shall be provided with externally reset operation indicators.

Wherever shown, auxiliary relays, contractors shall be furnished for interlocking and indication purposes.

All push buttons shall be heavy-duty type suitable for flush mounting on sheet steel cubicle doors. The push buttons shall have one 'NO' and one 'NC' contact. The continuous current breaking capacity of the contacts shall be adequate for the duty involved. The contacts shall be rated for 10A at 240 V, 1 phase, 50 c/s. Push buttons shall be suitable colours according to their functioning.

SPECIFICATION FOR SWITCH BOARDS:**STORING:**

The panels shall be stored under a shelter and in a well-ventilated and dry place. Suitable polythene covers shall be provided for necessary protection against moisture.

ERECTION:

Switchboards shall be installed on suitable foundation. Foundation shall be as per the dimensions supplied by the panel manufacturer. The foundation shall be flat and level. Suitable grouting holes shall be provided in the foundation. Suitable MS base channel shall be embedded in foundation on which the panel can be directly installed. The switch boards shall be properly aligned bolted to the foundation by atleast four bolts. Cables shall be terminated on the bottom plate or top plate as the case may be, by using brass Siemens type double compression glands. The individual cables shall then be led through the panel to the required feeder compartments for necessary terminations. The cables shall be clamped to the supporting arrangement. The switchboard earth bus shall be connected to the local earth grid.

PRECOMMISSION TESTS:

Panels shall be commissioned after the successful completion of the following tests. The tests shall be carried in the presence of Architect's representative.

All main and auxiliary bus bar connections shall be checked and tightened.

All wiring terminations and bus bar joints shall be checked and tightened.

Wiring shall be checked to ensure that it is according to the drawing.

All wiring shall be tested for insulation resistance by a 1000 Voltage meggar.

Phase rotation tests shall be conducted.

All relays and protective devices shall be tested for correctness of settings and operation.

FUNCTIONAL TESTS:

Upon the completion of the installation, the contractor shall conduct functional tests with simulated fire conditions in the space to be decided by the owners. The contractor shall supply all materials, labour, and personnel, required for the functional tests. Rate of BOQ shall be deemed to include cost of the above.

Piping shall be of socket type up to and including 40 mm dia. Welding joints will be allowed for pipes of 50mm or larger diameters.

Sprinklers should have range pipes 25 mm dia of 150 mm length forming part of the fitting.

Balance piping from Branch / sub header will be measured part of piping works.

FIRE NOC APPROVAL:

The contractor shall arrange all necessary inspection by the Local fire authority. It is the sole responsibility of the contractor to prepare & submit the Fire Fighting System drawings and getting the approval from the local fire authority, and submit the originals to the Owner/ Client when the entire job/ Said work is handed over to the Client/ Representative.

HARDWARE:

The erection rate shall include supply, fabrication, and installation of necessary M.S. channels for erection of switchboards.

LIST OF APPROVED MAKES:

Bidders shall consider any of the following makes while quoting against this enquiry. It will not be possible to change the makes after finalization of order.

Equipment**Makes**

Fire pumps

Kirloskar / Mattherplatt / CRI

Motors

Kirloskar / Crompton / Siemens

Diesel engine

Kirloskar / / Mattherplatt

Pressure switch	Indfoss / Switzer
Pressure gauge	H Guru / Warree / Fiebig
MS Pipes/Fittings	Jindal / Tata
MS Forged Fittings	VS / JK / Bharat Forge
Non Return Valves	Upadhya / Kirloskar / Sant / Lehry
Gun metal valves	Sant / Leader/ Kirloskar / Lehry
Ball valves	Leader / Zoloto / Lehry / Sant
Butterfly valves	Audco / BDK
Gate valves	H.Sarkar / Upadyaya / Kirloskar
Air release valve	Zoloto / Newage / Elmes
Wrapping & Coating tape	IWL / Rustech
Paint	Asian / Berger / Nippon
Hydrant valves & accessories	Newage / Winco
Hose pipes	New age / CRC
Y-Strainer	H.Sarker / Lehry / Sant / Venus
Fire Brigade inlet	Newage / Winco
Universal Clamps	Hi-tech / Intellotech
Anchor Fastner	Hi-tech / Hilti / Intellotech
Power / Control cables	Polycab / Finolex
Switch fuse unit	L&T / Siemens
Load break switch	L&T / Siemens
HRC fuses & base	English Electric
Contactors / Relays	L&T / Siemens
Meters	AE / Meco / IMP
Indicating lamps(LED)	Siemens / Tecnic / BCH
Current transformers	Siemens / AE / Kalpa / Kappa / Indcoil
Selector switch	L&T / Siemens
Push button station	L&T / Siemens
Panel assembler	Pragathi / Elins / Dynam
Capacitor	Siemens / Universal / MPP

Terminal blocks	Elmex / Connect well
Motor starter	L&T / Siemens
MCCB	L&T / Siemens
Cable Lug	Dowels / SMI
Cable Glands	Dowels / SMI
Battery Charger	Chham Electrical / Servidyne / satnife / AE
Battery	Amco / BDK / Intervale
Bus bar supports	Power mat / Equivalent
PVC / FRLS Copper wire	Finolex / Poly cab
Cable tray 2mm	Profab / Storac / Indiana