

GOVERNMENT OF MAHARASHTRA

ZILLA PARISHAD WASHIM

GRAMPANCHAYAT UKALIPEN

TENDER DUCUMENT

Name of Work: **Estimate For Depining And Desilting Of Village
Water Supply Scheme At.Ukalipen Tq Washim
Dt Washim**

UNDER: WATER SCARACITY PROGRAMME YEAR 2025-26

DISTRICT : WASHIM

**Sarpanch/Sachive Grampanchayat UKALIPEN
Tq. WASHIM Zilla Parishad,Washim**

INSTRUCTIONS TO THE TENDERER

1. Two envelope system shall be followed.
 - A. Contents of Envelope **1 (Technical Bid)**:
 - ✓ Earnest money in the form of Term Deposit Receipt
 - ✓ Copy of Pan Card
 - ✓ GST Registration certificate And PT Till 2026
 - ✓ Certificate of registration in appropriate class with ZP
 - ✓ ITR Certificate latest three years Till 2026.
 - ✓ Declaration by bidder in Statement no. VI
 - ✓ Undertaking & Guarantee in Statement No. V
 - ✓ Filled tender document duly signed by authorised signatory.
 - ✓ Authority letter in favour of person signing the bid & documents
 - ✓ Authority letter with Authorized Signatory Signature with Geo tag Photo
 - ✓ Blank Tender document
 - ✓ All the above mentioned documents shall have to be submitted duly signed by the Authorized signatory.
 - ✓ Similar Type Of Work done in any Government field
 - B. Contents of Envelope **2 (Financial Bid)**: The Contractor should fill the percentage (%) in B-1 form in figures and words. No other document should be submitted in envelope 2.

IMPORTANT NOTE :-

Please note that Submission to attach any of the above documents is likely to invalidate the tender.

Grampanchayat UKALIPEN Tq. WASHIM Zilla Parishad, Washim

DETAILED TENDER NOTICE

Main Portal :- <http://mahatenders.gov.in>.

Sarpanch/Secretary grampanchayat UKALIPEN Tq. WASHIM, Zilla Parishad, Washim. invites online percentage rate tender from contractors registered in Zilla Parishad in appropriate class / category for following Works in District Washim

Sr. No	Name of Work	Tender Cost (Rs.)	Time Limit for completion (Months)	Earnest Money in (Rs.)	Cost of Blank tender form(Rs.)	Class of Registration
1	2	3	4	5	6	7
1	<u>Estimate For Depining And Desilting Of Village Water Supply Scheme At.Ukalipen Tq Washim Dt Washim</u>	279880/-	As Per Estimate	Rs.2799/-	Rs. 200/-	Class VII

1. All the notification regarding this tender notice hereafter will be published online on website <http://mahatenders.gov.in>. Bidding document can be seen and downloaded from the website <http://mahatenders.gov.in>.
2. Bid can be submitted in electronic format on the website <http://mahatenders.gov.in>. from 10.00 hours on 16/05/2026 the deadline for submission bid upto 17.00 hours on Dt.23/05/2026.
3. Bids Must be accompanied with.
4. Bidder must have submitted the tender fee and EMD [1%] should be submitted online.

5. Bid shall be treated as invalid if scanned copies as mentioned in [5] and [6] above are not submitted online along with the bid.
6. Technical bids will be opened online along with the bid.
7. Technical bids will be opened online Dt.25/05/2026 to 10.00 hours on website <http://mahatenders.gov.in>. in the office of Grampanchayat UKALIPEN Zilla parishad washim and financial bid opened also same day and same time if possible
8. Right to reject or cancel any or all the tender without assigning any reason there of what so ever is reserved by the the undersigned.
9. The amount of earnest money will be forfeited in case of successful contractor does not pay the amount of initial security deposit within the time specified as stipulated by the Sarpanch/sachive and complete the contract documents in all other cases earnest money will be refundable.
10. The acceptance of the tender may be intimated to the contractor telegraphically or otherwise and either bt the officer cometetent to accept the tender or higher authorities such as Sarpanch/Sachive and such limitation shall be deemed to be an intimation of acceptance of the tender given by the authority competent to accept the tender.
11. Tender,which do not fulfill all or any of the condition or are incomplete in any respect are liable to summary Rejected .
12. Right to reject any or all tender lies with assigning any reasons is reserved by the undersigned acceptance of the tender lies with the Competent Authority Sarpanch/Sachive UKALIPEN.
13. EXAMINATOION OF DRAWINGS AND SITE CONDITION
The bidder shall in his own interest carefully examine the drawings.condition of contract specification e.t.c He shall also inspect the site and acquaint himself about climate, physical and all other condition prevalling at site nature magnitude special feature practicability of the works all existing and required means of c;ommunications and access to site availability of housing and other facilities, the availability of labour and materials, labour camp sit,stores and godown etc. He shall abtain all necessary information as to the risk. Contingencies and other circumstances which may affect and influence the tender.No claims on any of the above or any other facter will factors will be entertained by the government,should there be any discrepancy or doubt or obscurity the contractor shall submit the same to the Sarpanch/Sachive,works concerned for elucidation as soon as possible.
14. The tender submitted by the contractor shall remain valid for a period of 90 days from the date of opening of financial bid.
15. The contractor [s] whose tender is accepted is required to note that no foreign exchange will be released by the Department.
16. Tender which do not fulfill all or any of the conditions or are incomplete in any respect are liable to summary rejection.
17. **Right to reject any or all tender without assinning reasons there for is reserved.the acceptance of the tender lies with the Sarpanch/Sachive Grampanchayat UKALIPEN ZillaParishadWashim.**
18. The notice inviting tender shall from part of the tender agreement.
19. The successful tendererwill be required to prouidice to the satisfaction of the specified concerned authority a valid and concurrent licence issued in his in his favar under the provision of contract labhour.[Regulation and abolition Act 1970,before stratting the work, failture to do so acceptance of the tender shall be liable to be withdrawn and earnest forfeited.

20. All Necessary Instruction Given By Govt.In Future Should be Binding of contractor to Follow the instruction.Gst No.Certificate Must be Compalsary For the Contractor.
21. Trial run payment After installing Comissening and giving trial run for three month.
22. AS Per Govt Rule GST-1017/81/17 Dt.19/08/2017 and other Govt.resolution about GST is Stricly Follow and all Necessary Ins truction On GST Given By Govt.In Future Should be Binding to contractor to Follow the instructions.
23. Bidder Shall Quots his rate Excluding GST
24. GST shall Be Paid on the amount of bill of the work done as per provaliling guidelines rates of GST during the period of workdone as applicable.
25. The rates Quated by the contractor shal be deemed to be inclusive of the labour welfare and other taxes [other than GST] that the contractor will haveto pay for the performance of his contract . The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law as per MJP Secreatary Belapur navi Mumbai reference letter no.381 Dt.31/12/2018.
26. GST is not included in Schedule-b while uploading the Schemes for E-tender.
27. Before Starting the source well work,trial bore should be taken and water Quality test should be carried out then report must be submit to the concern authority after verifying the report then only the concerned athorithy issuing permission for exexcavation of source well,do not start the work before such a mention activity.
28. The Documents uploaded by the Contractor throuth DSC at time of filling Online Tender ,Contractor are responsible for submitted Necessary documents.

1. INSTRUCTION TO CONTRACTER

1.In case the contractor ,whose offer is found to be lowest is requested to negotiate and reduced the offer, does not respond wittin a period of 7 days the tender accepting authority without issuing any reminder reserves the right such tender.

2.In case the contractor who is informed of acceptance of his tender does not remit the initial security Deposit within a period of 10 days.the tender accepting authority reserve the right forfeit the earnest money deposite without issing any reminder to take further according to the tender provision.

Contracter

**Zilla Parishad, Washim,
DECLARATION OF THE CONTRACTOR**

(To be submitted by contractor on Rs 100 bond paper in pdf format)

Name of work:

Tender Notice No.:

I / We hereby declare that,

1. I / We are interested in the above named work in the tender notice.
2. I / We have submitted a bid for the said work.
3. I / We have made myself / ourselves thoroughly conversant with the local conditions regarding all materials quarries and labour on which I / We have based my / our rates for this tender. The specifications and leads on this work have been carefully studied and understood before submitting this tender.
I / We undertake to use only the best Quality materials approved by Executive Engineer, or his duly authorized assistant during execution of the work and to abide by the decisions.
4. I / We accept all the terms and conditions laid down in the tender document.
5. The rate quoted by me / us are unconditional, I / we understand that conditional tender is liable for rejection.

Signature
(Contractor)

To,
**Tender Inviting Authority
Sarpanch/Sachive
Grampanchayat UKALIPEN Tq. WASHIM,
Zilla Parishad, Washim.**

ZILLA PARISHAD WASHIM

System E – DETAIL TENDER NOTICE NO.(03) FOR 2019-20

Sealed online tenders (e-tender) in B-1 forms (Percentage Rate Tenders) are invited by the Sarpanch/Sachive GP UKALIPEN Zilla Parishad Washim in a manner of the “**Two Envelope system**” online by e-tendering system from the qualified contractors only. The Blank tender forms will be available on online portal <http://mahatenders.gov.in> to the **contractors** .All the documents required for qualification should scanned and uploaded online on portal <http://mahatenders.gov.in> . and should be submitted on or before last date and time of submission.

1. **Name of Work** : **Repairs of Village Water Supply Scheme At ----- Tq.-----
-----Dist.Washim**
2. **Taluka** : -----
3. **District** : **Washim**
4. **Job** :

e-tendering Instructions to Applicants

The details can be viewed and downloaded online directly from the Government of Maharashtra e-tender Portal <https://mahatenders.gov.in>

1. Blank tender booklets are available on the Government of Maharashtra website <https://mahatenders.gov.in> through .The competent authority reserves all rights of rejecting any or all tender without assigning any reason.
5. **Estimated Cost put to Tender:** Rs -----/-
6. **Earnest Money :**
 - a) Rs.-----/- in shape of FDR of Nationalized / Scheduled Bank for minimum six months' validity period from the date prescribed for opening of tender in the name of Executive Engineer Rural Water Supply Division Zilla Parishad Washim , shall have to be deposited and will be included in Envelope No.1. Exemption certificate or any other form towards Earnest Money Deposit will not be acceptable.
 - b) This earnest money amount shall not carry any interest whatsoever The earnest money will be refunded in case of tenderers whose tenders are not accepted, only after completion of all formalities in respect of the accepted tender or in case of expiry of validity of offer, when specially withdrawn by the tenderer. In case of successful tenders, the earnest money will be refunded after completion of contract documents and payment of security deposit.
7. **Security Deposit : Total 4%**
 - a) **2 %** Initial Security Deposit of Rs.-----/- to be in the form of term Deposit receipt in the name of Executive Engineer Rural Water Supply Division Zilla Parishad Washim, or in the shape of Bank Guarantee form or in the shape of FDR or any Scheduled / Nationalize bank in the form Specified, for a minimum period not less than the period specified in the tender for completion of all works including trial run period, extendible upto at least two years after satisfactory commissioning of the work by the successful tenderer. In case the Bank Guarantee is submitted for initial security deposit. It will be the entire responsibility of the contractor for extension of the same till the above period.

b) Rs-----/- to be recovered through each Running Bill at 4 % so as to make up the total security deposit amount of Rs.----- /-.

c) Stamp Duty

Stamp duty at 2% of total security deposit i.e. initial security deposit to be recovered through bills is payable as per relevant Act, on the date of agreement.

d) offer should be inclusive of works contract, turn over tax.

e) Bidder shall have to submit insurance policies as per clause 60 otherwise 1%insurance will be deducted from bill

f) Royalty amount to be paid by the contractor to Washim Sub-Divisional Officer. Bill wise consumption and royalty paid statement should be furnished with each running account bill otherwise it will be deducted from bill.

8. Period of Completion

-----/-s from the date of issue of work order .

9. Validity

120 days after actual opening of complete tender.

10. Issue of Blank Tender Forms :

Blank tender forms will be issued on payment of **Rs -----/-** per set. Tender forms will be issued online as per given schedule, Tender fees once paid will not be refunded. Blank tender documents will be issued to those only entities who satisfies the eligibility criteria contractors who do not produce such documents. Similarly, Contractors having adverse reputation will not be issued the tender forms. The bidder shall have to submit the demand draft of the said amount issued by the Nationalised / Scheduled Bank in favour of "the Executive Engineer Rural Water Supply Division Zilla Parishad Washim

However, blank tender document does not mean the entity is eligible for the project. Selection of successful bidder is subject to detailed evaluation of documents submitted in envelope.1 and financial bid submitted in envelope 2

11. Last Date of Submission of Tender Forms

All the tender activities will be carried out on-line only. Contractors has to complete online tender download and Bid preparation stages before submission of tender.

Contractors can only modify his offer during bid preparation time only. Contractors can not change or modify their bids once the bid preparation period is over.

12. Manner of Submission of Tender and its accompaniments :

The tender shall be submitted online ONLY :

A) Envelope No.1 Bid Header Document

The first envelope as Envelope No.1 (T1) and Name of work shall contain The following documents :

- a) Earnest money in the form of Term Deposit Receipt valid for 6 months' period from the prescribed date of opening of Tender.
- b) Certificate of Registration in appropriate class
- c) In case of partnership firms Company registration, partnership Deed, joint venture etc. also

- d) accepted.
- e) Gst Registration certificate.

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- f) Certificate of registration in appropriate class with MJP / ZP
- g) Declaration by bidder in Statement no. VI
- h) Undertaking & Guarantee in Statement No. V
- i) Details of similar kind of works carried out by the bidder in Statement no. I
- j) Proof of payment of tender fees.
- k) Filled tender document duly signed by authorised signatory.
- l) Authority letter in favour of person signing the bid & documents
- m) Blank Tender document
- n) All the above mentioned documents shall have to be submitted duly signed by the Authorized signatory
- o) Copy of Pan Card

All above documents should be enclosed in Envelope No.1. If these documents are not complete, Envelope No.2 will not be opened.

B) Envelope No.2 : (C1)

The second Envelope No.2(C1) and Name of work shall contain only the main tender including the common set of condition/ stipulations issued by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim after the pre-tender conference, duly signed by the Contractor. A tender submitted without this would be considered as invalid.

The tenderer should quote his offer on B-1 form of the tender as percentage of estimated rates at the appropriate place on tender documents, to be submitted only in Envelope No.2. He should not quote his offer anywhere else directly or indirectly in Envelope No.1. The Contractor shall quote for the work as per details given in the main tender and also based on the details of conditions issued / additional stipulations made by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, as informed to him by a letter after pre- tender conference. This tender shall be unconditional.

C) Submission of Tender :

All the tender activities will be carried out on-line only. Contractors have to complete online tender download and Bid preparation stages before submission of tender.

Contractors can only modify their offer during bid preparation time only. Contractors can not change or modify their bids once the bid preparation period is over.

13. Opening of Tenders :

The tenders will be opened online as per given schedule, in the office of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, if possible, in presence of intending bidders or their authorized representatives, who choose to remain present. Following procedure will be adopted for opening of tenders.

Envelope No.1(T1)

First of all, Envelope No.1 of the tender will be opened to verify its contents as per requirements. If the various documents contained in this envelope do not meet the requirements of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim a note will be recorded accordingly by the tender opening authority, and the said tenders Envelope No.2 will not be considered for further action, but the same will be recorded.

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Envelope No.2(C1)

After opening of Envelope No.1, if contents of Envelope No.1 are found to be acceptable to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, then only this Envelope No.2 shall be opened immediately. The tendered rates in Schedule "B" as percentage above / below the estimated cost put to tender shall then be read out.

14. Contractor along with the tender has to give the list of works in hand and list of tenders submitted to Executive Engineer Rural Water Supply Division Zilla Parishad Washim.

15. No Tender with arbitration clause will be considered.

16. Conditional Tender will be summarily rejected.

17. Right to modify the Tender Documents :

The right is reserved to revise or to amend the contract documents prior to the date of bid preparation of tender or the receipt of the tender or the extend the date said above such revisions, amendments or extension if any shall be communicated to all concerned in the form of corrigendum or by notice in the press as may be considered suitable.

19. Acceptance of Tender :

Right to reject any or all tenders without assigning any reasons thereof is reserved by the competent authority Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. whose decision will be final and legally binding on the tenderers.

**Tender Inviting Authority
Sarpanch/Sachive Grampanchayat UKALIPEN
Tq. WASHIM, Zilla Parishad, Washim.**

MAIN TENDER DOCUMENTS

STATEMENT NO. I Bid Header Document

DETAILS OF WORKS OF SIMILAR TYPE AND MAGNITUDE CARRIED OUT BY THE CONTRACTOR

Sr. No.	Name of work	Tendered cost	Time in which completed	Date of completion	Principal features
1	2	3	4	5	6

Contractor

No. of Corrections

Sarpanch/Sachive

STATEMENT NO. II Bid Header Document

DETAILS OF OTHER WORKS TENDERED FOR AND IN HAND ON THE DATE OF SUBMISSION OF THIS TENDER

Sr. No.	Name of work	Place and cost	Tendered cost	Works in hand			Work Tendered for		Remarks
				Cost of remaining work	Anticipate d date of completion	Estimated cost and date	When decision expected	Stipulated period of completion	
1	2	3	4	5	6	7	8	9	10

Contractor

No. of Corrections

Sarpanch/Sachive

STATEMENT NO. III Bid Header Document

DETAILS OF MACHINERY IMMEDIATELY AVAILABLE WITH THE TENDERER FOR THE USE ON THIS WORK

Sr. No.	Name of Equipment	No. of units	Make	Capacity	Age & Condition	Remarks
1	2	3	4	5	6	7

Contractor

No. of Corrections

Sarpanch/Sachive

STATEMENT NO. IV Bid Header Document

DETAILS OF TECHNICAL PERSONNEL WITH THE TENDERER

Sr. No.	Designation	No.	Name	Qualification experience in detail	Professional	Remarks
1	2	3	4	5	6	7

Contractor

No. of Corrections

Sarpanch/Sachive

FORM B-1**Percentage Rate Tender and Contract for Works****DEPARTMENT : ZILLA PARISHAD WASHIM****DIVISION : RURAL WATER SUPPLY DIVISION**
-----**Name of work : Repairs of Village Water Supply Scheme At ----- Tq .-----
Dist.Washim****General Rules Directions for the Guidance of Contractor :**

1. All the works proposed to be executed by contract shall be notified in a form of invitation to tender pasted on a notice board hung up in the office of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim.

This form will state the works to be carried out as well as the date for submitting and opening tenders and the time allowed for carrying out the work also the amount of earnest money to be deposited with the tender and amount of the security deposit to be deposited by the successful tenderer and the percentage, if any, to be deducted from bills, it will also state whether a refund of quarry fees, royalties dues and ground rents will be granted. Copies of the specifications, designs Drawings and estimated rates, scheduled rates and any other documents required In connection with the work shall be signed by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, for the purpose of identification and shall also be open for inspection by the Contractors at the office of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, during office hours.

Where the works are proposed to be executed according to the specifications recommended to a Contractor and approved by a competent authority on behalf of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim such specifications with designs and drawings shall form part of the accepted tender.

2. In the event of the tender being submitted by a firm, it must be signed by each partner there of and in the event of the absence of any partner, it shall be signed on his behalf by a person holding a power of Attorney authorizing him do so.

i) The Contractor shall pay along with the tender the sum of **Rs. --** **-----/-** in shape of FDR of Nationalized / Scheduled Bank for minimum six months' validity period from the date prescribed for opening of tender in the name of Executive Engineer Rural Water Supply Division Zilla Parishad Washim, shall have to be deposited and will be included in Envelope No.1. Exemption certificate or any other form towards Earnest Money Deposit will not be acceptable.

- ii) In the event of his tender being accepted, subject to the provisions of sub-clause (iii) below the said amount of earnest money shall be appropriated towards the amount of security deposit payable by him under conditions of General conditions of Contract.
 - iii) If, after submitting the tender, the contractor withdraws his offer or modifies the same, the same, or if, after the acceptance of his tender, the Contractor neglects to furnish the balance amount of security deposit without prejudice to any other rights and powers of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. hereunder or in law Z.P. shall be entitled to forfeit the full amount of the earnest money deposited by him.
 - iv) In the event of his tender not being accepted, the amount of earnest money deposited by the Contractor shall, unless it is prior thereto forfeited under the provisions of sub-clause (iii) above, be refunded to him on his passing receipt therefor.
3. Receipts for payment made on account of any work, when executed by a firm, should also be signed by all the partners except where the contractors are described in their tender as firm, in which case the receipt shall be signed in the name of the firm by one of the partners, or by some other person having authority to give effectual receipts for the firm.
4. Any person who submits a tender shall fill up the usual printed form stating at what rate below or above the rates specified in schedule B (Memorandum showing item of work to be carried out) he is willing to undertake the work. Only one rate or such percentage on all the estimated rates scheduled rates shall be named. Tenders which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort will be liable or rejection. No printed form of tender shall include a tender for more than one work, but if the contractors who wish to tender for two or more works, they shall have the name and the number of work to which they refer, written outside the envelope.
5. The Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.or his duly authorized assistant shall open tenders in the presence of Chief Executive Officer Zilla Parishad Washim and the Contractors who have submitted their tender or their representatives who may be present at the time and he will enter the amount of the several tenders in a comparative statement in a suitable form. In the event of a tender being accepted, the Contractor shall for the purpose of identification sign copies of the specifications and other documents mentioned in Rule 1 in the event of tender being rejected, the Divisional officer shall authorize to refund the amount of earnest money deposited to the Contractor making the tender, on his giving a receipt for the return of the money.
- 6) The officer competent to dispose of the tender shall have the right of rejecting all or any of the tenders.
- 7) No receipt for any payment alleged to have been made by a contractor in regard to any matter relating to this tender or the contract shall be valid and binding on the board unless it is signed by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim.
- 8) The memorandum of work to be tendered for and the schedule of Materials to be supplied by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. and their rates shall be filled in and completed by the office of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.before the

tender form is issued. If a form issued to an intending tenderer has not been so filled in and completed, he shall request the said office to have this done before he completes and delivers his tender.

- 9) All works shall be measured net by standard measure and according to the rules and customs of the ZP and without reference to any local custom.
- 10) Under no circumstances shall any Contractor be entitled to claim enhanced rates for items in this contract.
- 11) Every registered Contractor should produce along with his tender, Certificate of Registration as approved contractor in the appropriate class renewal of such registration with date of expiry.
- 12) All corrections and additions or pasted slips should be initialed.
- 13) The measurements of work will be taken according to the usual methods in use in the ZP and no proposals to adopt alternative methods will be accepted. The Executive Engineer decision as to what is the usual method in use in the ZP will be final
- 14) A tendering contractor shall furnish a declaration along with a tender showing all works for which he has already entered into contract and the value of the work that remains to be executed in each case on the date of submitting the tender.
- 15) Every contractor shall furnish along with the tender, information regarding the income tax Circle or Ward of the District in which he is assessed to income tax, the reference to the number of the assessment and the assessment year and a valid income tax Clearance Certificate.
- 16) In view of the difficult position regarding the availability of foreign exchange, no foreign exchange would be released by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim for the purchase of plant and machinery required for the execution of the work contracted for (GCM /PWD/ CFM/ 1058/62517 of 26.05.1959)
- 17) The Contractor will have to construct shed for shoring controlled and valuable materials issued to him under Schedules A of the Agreement at work site , having double locking arrangement. The materials will be taken for use in the presence of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim 's person. No materials will be allowed to be removed from the site of works.
- 18) The Contractors shall also give a list of machinery in their possession which they propose to use on the work.
- 19) Every Contractor shall furnish along with the tender a statement showing previous experience and technical staff employed by him.
- 20) Successful tenderer will have to produce to the satisfaction of the accepting authority a valid and current license issued in his favor under the provisions of contract labour (Regulation and Abolition) Act 1973 before starting work failing which acceptance of the tender will be liable for withdrawal and earnest money will be forfeited to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.
- 21) The contractor shall comply with the provisions of Apprentices Act, 1961 and the rules and orders issued there under from time to time. If he fails to do so, his failure will be breach of the contract and the CEO, may in his discretion cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the Act.
- 22) Contractor should give name and designation of minimum Technical Professionals with the contractor for completion of this tendered work in the prescribed form. Any

replacement should be brought to the notice of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.

Tender for works

I/We hereby tender for the execution for the Village Water Supply & Sanitation Committee AJANI Tq.-Washim Dist.-Washim. of the works specified in the underwritten memorandum within the time specified in such memorandum within the time specified in such memorandum at _____%

In figures as well as in words.

(_____)
Percent) (in figure as well as in words) percent below above the estimated rates in schedule B (memorandum showing items of work to be carried out) and in accordance with all respects with the specifications, designs, drawings and instructions in writing referred to in Rule I here of and in Clause 12 of the annexed conditions of the contract and agree that what materials for the work are provided by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. such materials and the rates to be paid for them shall be as provided in schedule-A hereto.

Memorandum

1 a) General Description

a) if several sub-works are included same should be detailed in a separate list.

AJANI Village Water Supply Scheme Tq.WASHIM Dist.Washim

Repairs to Headwork & Providing & Constructing Approach Bund, & Repairs to Pump House ,Raw Water Pumping Machinery, Raw Water Rising Main, Repairs to Conventional Water Treatment Plant, Pure Water Pumping Machinery, Pure Water Rising Main, R.C.C. Elevated Service Reservoir, Repairs to R.C.C. Elevated Service Reservoir, Distribution System, Trial Run & Miscellaneous Works etc. complete.

- b) Estimated cost Rs. -----.
- c) Earnest Money Rs.-----
- d) Security Deposit
 - i) In the form of TDR / FDR Rs.-----
 - ii) To be deducted from from the current bills Rs.-----
- Total Rs.-----**

c) The amount of earnest money to be deposited shall be in accordance, with the provisions of para 206 and 207 of M.P.W. manual

d) This deposit shall be in accordance with paras 213 , 214 of the M.P.W. Manual

- e) Percentage, if any to be deducted : **(4) (four) %** from bills so as to make up the total amount required as security deposit by the time, half the work, s measured by the costs, is done.

e) This percentage where no security deposit is taken will vary from 5% to 10% according to the requirement of the case, where security deposit is taken, see note to clause I of conditions of contract

- f) Time allowed for the work-----/-s from date of written order

f) Give schedule where

to commence

necessary showing dates by which the various items are to be completed

2. I/ we agree that the offer shall remain open for acceptance for a minimum period of 120 days from the date fixed for opening the same and thereafter until it is withdraw by me/us by notice in writing duly addressed to the authority opening the tenders and sent by registered post A.D or otherwise delivered at the office of such authority Bank Challan No. and Date or Deposit at call Receipt No. and in respectofthesumof

*Amount to be specified in words and figures

*Rs. _____ (Rs. _____ only)

representing the earnest money is herewith forwarded. The amount of earnest money shall not bear interest and shall be liable to be forfeited to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. should, I/We fail to (I) abide by the stipulations to keep the offer open for the period mentioned above or (ii)sign and complete the contract documents as required by the Engineer and furnish the Security Deposit specified in item (d) of the memorandum contained in paragraph (i)above within the time limit laid down in clause (i)of the annexed General conditions of the Contract the amount of earnest money may be adjusted towards the security deposit or refunded to me/us if so desired by me/us in writing unless the same or any part there of has been forfeited as aforesaid.

3. I/We have secured exemption from payment of earnest money after executing the necessary bond in favour of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. a true copy of which is enclosed herewith should any occasion for forfeiture of earnest money for this work arise due to failure on my our part to abide by the stipulations to keep the offer open for the period mentioned above or to sign and complete the contact document and furnish the security deposit as specified in item (d) of the memorandum contained in paragraph (1)above within the time limits laid down in clause (1)of the annexed General conditions of contract the amount payable by me/us at the option of the Engineer be recovered out of the amount deposited in lump sum for securing exemption in so far as the same may extend in terms of the said bond and in the event of the deficiency out of any other moneys which are due or payable to me/us by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. under any other contract or transaction of any nature whatsoever or otherwise.

4. Should this tender be accepted i/we agree to abide by and fulfill all the terms and provisions of the conditions of contract annexed here so far as applicable and in default there of to forfeit and pay to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. the sums of money mentioned in the said conditions Receipt No.

_____/dated_____/From the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. of Bank_____at in respect of the sum of Rs._____is herewith forwarded representing the earnest money (a) the full value of which is to be absolutely forfeited to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. should I/We do not deposit in full amount of security deposit specified in the above memorandum in accordance with (d) of clause (1) of the tender for works shall be refunded.

Contractor

Signature of contractor before submission of tender day of 2015

Contractor

No. of Corrections

Sarpanch/Sachive

Address

Witness

Signature of Witness to
Contractor's signature

Address

Occupation

The above tender is hereby accepted by me for and on behalf of Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.

**Tender Inviting Authority
Sarpanch/Sachive Grampanchayat UKALIPEN
Tq. WASHIM, Zilla Parishad, Washim.**

Contractor

No. of Corrections

Sarpanch/Sachive

CONDITIONS OF CONTRACT**Clause-1 : Security Deposit**

The person/ persons whose tender may be accepted (hereinafter called the contractor which expression shall unless excluded by or repugnant to the context include his heirs, executors, administrators, and assigns shall (A) within ten days (which may be extended by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, thinks fit to do so) of the receipt by him of the notification of the acceptance of his tender deposit with the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, in cash of Government securities endorsed to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, (if deposited for more than 1-----/-) of sum sufficient which will make-up the full security deposit specified in the tender or (B) I permit Executive Engineer Rural Water Supply Division Zilla Parishad Washim, , at the time of making any payment to him for work done under the contract to deduct such sum as will amount to 4% of all moneys so payable such deductions to be held by Executive Engineer Rural Water Supply Division Zilla Parishad Washim, by way of security deposit) provided always that in the event of the Contractor depositing a lump sum by way of security deposit as contemplated at (A) above then and in such case, if the sum so deposited shall not amount to 4 % of the total estimated cost of the work, it shall be lawful for Executive Engineer Rural Water Supply Division Zilla Parishad Washim, at the time of making any payment to the contractor for the work done under the contract to make – up the full amount (4%) by deducting sufficient sum from such payment as last aforesaid until the full amount of the security deposit is made up. All compensation or other sums of money payable by the Contractor to Executive Engineer Rural Water Supply Division Zilla Parishad Washim, under terms of this contract may be deducted from or paid by the sale of sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due or may become due by Executive Engineer Rural Water Supply Division Zilla Parishad Washim, to the contractor under any other contract or transaction of any nature on any account whatsoever and in the event of his security deposit being reduced by reason of any such deduction or sale as aforesaid, the Contractor shall within ten days thereafter make good in cash or Government securities endorsed as aforesaid any sum or sums which may have been deducted from or raised by sale of his security deposit or any part there of. The security deposit referred to when paid in cash may at the cost of the depositor, be converted into interest bearing securities provided that the depositor has expressly desired this in writing.

If the amount of the security deposit to be paid in a lump sum with in the period specified at (A) above is not paid the tender/ contract already accepted shall be considered as cancelled and legal steps taken against the Contractor for recovery of the amounts. The amount of security deposit lodged by a Contractor shall be refunded along with the payment of the final bill, if the date upto which the Contractor has agreed to maintain the work in good order is over. If such date is not over only 90 % amount of security deposit shall be refunded along with the payment of the final bill, the amount of security deposit retained by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, shall be released after expiry of period upto which the Contractor has agreed to maintain the work in good order is over. In the event of the Contractor failing or neglecting to complete rectification work within the period upto which the Contractor has agreed to maintain the work in good order and then subject to provisions of Clauses 17 and 20 hereof the amount of security deposit retained by Executive Engineer Rural Water Supply Division Zilla Parishad Washim, shall be adjusted towards the excess cost incurred by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, on rectification work.

Clause-2 : Compensation for Delay

The time allowed for carrying out the work as entered in the tender shall be strictly observed by the Contractor and shall be reckoned from the date on which the order to commence work is given to the Contractor. The work shall throughout the stipulated period of the contract be proceeded with all due diligence (time being deemed to be essence of the contract on the part of the Contractor) and the Contractor shall pay as compensation an amount equal to one percent or such smaller amount as the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, (whose decision in writing shall be final) may decide of the amount of the estimated cost of the whole work as shown by the tenderer for everyday that the work remains un-commenced or unfinished after the proper dates. And further to ensure good progress during execution of the work, the Contractor shall be bound in all cases in which the time allowed for any work exceeds one month to complete.

¼ of the work in ¼ of the time

½ of the work in ½ of the time

¾ of the work in ¾ of the time

Note : The quantity of the work to be done within a particular time to be specified above shall be fixed and inserted in the blank space kept for the purpose by Officer competent to accept the contractors after taking into consideration the circumstances of each case.

In the event of the Contractor failing to comply with these conditions, he shall be liable to pay as compensation an amount equal to one percent or such smaller amount as Executive Engineer Rural Water Supply Division Zilla Parishad Washim, (whose decision in writing shall be final) may decide of the said estimated cost of the whole work for everyday that the due quantity of work remains incomplete provided always that the total amount of compensation to be paid under the provisions of this Clause shall not exceed 10% of the estimated cost of the work as shown in the tender in the tender, Executive Engineer Rural Water Supply Division Zilla Parishad Washim, should be the final authority in this respect,

Clause-3 : Action when whole of security deposit is forfeited

In any case in which under any clause of this contract the contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit (whether paid) in one sum or deducted by installment) or in the case of abandonment of the work owing to serious illness or death of the Contractor or any other cause , the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, on behalf of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, shall have power to adopt any of the following course, as he may deem best suited to the interest of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .

- a) To rescind the contract (for which rescission notice in writing to the Contractor under the hand of Executive Engineer Rural Water Supply Division Zilla Parishad Washim, shall be conclusive evidence) and in that case the security deposit of the Contractor shall stand forfeited and be absolutely at the disposal of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .

- b) To carry out the work or any part of the work departmentally debiting the contractor with the cost of the work, expenditure incurred on tools, plant and charges on additional supervisory staff including the cost of work charged establishment employed for getting unexecuted part of the work completed and crediting him with the value of the work done departmentally in all respects in the same manner and at the same rates as if it has been carried out by the Contractor under the terms of his contract. The certificate of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, to the cost and other allied expenses so incurred and as to the value of the work so done departmentally shall be final conclusive against the Contractor.
- c) The order that work of the Contractor be measured up and to take such part thereof as shall be unexecuted out of his hands and to give it to another contractor to complete in which case all expenses incurred on advertisement for fixing a new contracting agency, additional supervisory staff including the cost of the work charges establishment and the cost of the work executed by the new contract agency will be debited to other contractors and the value of the work done or executed through the new contractor shall be credited to the Contractor in all respects and in the same manner. And at the same rates as if it had been carried out by the Contractor under the terms of his contract. The Certificate of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, as to all the costs of the work and other expenses incurred as aforesaid for getting the unexecuted work done by the new contractor and as to the value of the work so done shall be final and conclusive against he Contractor.

In case contract shall be rescinded under clause (a) above, the Contractor shall not be entitled to recover or be paid any sum for any work therefore actually performed by him under this contract unless and until the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, shall have certified in writing the performance of such work and the amount payable to him in respect there of and he shall only be entitled to be paid the amount so certified.

In the event of either of the courses referred to in clause (b) or (c) being adopted and the cost of the work executed departmentally or through a new contractor and other allied expenses exceeding the value of such work credited to the contractor the amount of excess shall be deducted for any money due to the Contractor by President/Secretary, Village Water Supply & Sanitation Committee AJANI Tq.- Washim Dist.-Washim. under the contract or otherwise howsoever or from his security deposit or the sale proceeds thereof provided, however, that the Contractor shall have no claim against Executive Engineer Rural Water Supply Division Zilla Parishad Washim, even if the certified value of the work done allied expenses provided always that whichever of the three courses mentioned In clause (a) (b) or (c) is adopted by the Chief Officer. the contractor shall have no claim to compensation for any loss sustained by him by reason of not having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract.

Clause-4 : Action when the progress of any particular portion of the work is unsatisfactory.

If the progress of any particular portion of the work is unsatisfactory the Executive engineer, shall notwithstanding that the general progress of the work is accordance with the conditions mentioned in Clause 2 be entitled to take action under Clause 3

(b) after giving the Contractor 10 days notice in writing. The contractor will have no claim for compensation for any loss sustained by him owing to such action.

Clause-5 : Contactor remains liable to pay compensation if action not taken under Clause 3 & 4.

In any case in which any of the powers conferred upon the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, by Clauses 3 and 4 here of shall have become exercisable and the same shall not have been exercised the non-exercise there of shall not constitute a waiving of any of the conditions hereof and such powers shall not with standing be exercisable in the event of any future case of default by the Contractor for which under any clauses here of he is declared liable to pay compensation amounting to the whole of his security deposit and the liability of the Contractor of past and future compensation shall remain unaffected.

Power to take possession of or require removal or sell contractor's plant.

In the event to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, taking action under sub-Clause (a) or (c) of Clause 3, he may if he so desires, take possession of all or any tools and plant, materials and stores in or upon the work or the site thereof or belonging to the Contractor or procured by him and intended to be used for the execution of the work or any part thereof of paying or allowing for the same in account at the contract rates or in the case of contract rates not being applicable at current market rate to be certified by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, whose giving notice in writing to the Contractor or his clerk of the work, foreman or other authorized agent require him to remove such tools, plant, materials, or stores from the premises within a time to be specified in such notice and in the event of the Contractor failing to comply with any such requisition the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, may remove them the contractor's expense or sell them by auction or private sale on account of the Contractor at his risk in all respects and the certificate of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the Contractor.

Clause-6 : Extension of time

If the contractor shall desire an extension of the time for completion of work on the ground of his having been unavoidably hindered in its execution or on any other grounds he shall apply in writing to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, before the expiration of the period stipulated in the tender or before the expiration of 30 days from the date on which he was hindered as aforesaid or on which the cause for asking for extension occurred, whichever is earlier and the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, in his opinion, or in the opinion of Executive Engineer Rural Water Supply Division Zilla Parishad Washim, / Engineer in charge as the case may be, if there were reasonable grounds for granting an extension, grant such extension as he thinks necessary or proper. The decision of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, in this matter shall be final.

Clause-7 : Final Certificate

On the completion of the work the Contractor shall be furnished with a certificate by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, (hereinafter called the Engineer in charge) of such completion but no such certificate shall be given nor shall the work be considered to be complete until the Contractor shall have removed from the premises on which the work shall have been

executed, all scaffolding surplus materials and rubbish and shall have cleaned of the dirt from all wood-work , doors, windows , walls, floor or other parts of any building in or upon which the work has been executed or of which he may have had possession for the Engineer-in-charge or where the measurements have been taken by his subordinates until they have received approval of the Engineer in charge the said measurements being binding and conclusive against the Contractor. If the Contractor fails to comply with requirements of this clause as to the removal of scaffolding, surplus materials and rubbish and cleaning off dirt on or before the date fixed for the completion of the work, the Engineer-in-charge may at the expenses of the Contractor. Remove such scaffolding, surplus materials and rubbish and dispose off the same as he thinks fit and clean of such dirt as aforesaid and the Contractor shall forthwith pay the amount of all expenses so incurred but shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

Clause-8 : Payment of Intermediate Certificate to be regarded as advance

No payment shall be made for any work, estimated to cost less than Rupees one Thousand till the whole of work shall have been completed. And certificate of completion given. But in the case of works estimated to cost more than Rupees one Thousand, the contractor shall on submitting a monthly bill there for, be entitled to receive proportionate to the part of the work then approved and passed by the Engineer-in-charge whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the Contractor. All such intermediate payments only and not as payments for work actually done and completed, and shall not preclude the Engineer-in charge as to the final settlement and adjustment of the accounts or otherwise, or in any way very of affect the contract. The final bill shall be submitted by the Contractor within one month of the date fixed for the completion of the work otherwise the Engineer in charge's certificate of the measurements and of the total amount payable for the work shall be final binding on all parties.

Clause-9 : Payment at reduced rates on account of items of work not accepted as completed to be at the discretion of the Engineer in charge.

The rate for several items of work estimated to cost more than Rs.2,00/- agreed to shall be valid only when the items concerned are accepted as having been completed fully in accordance with the sanctioned specifications in cases where the items of work are not accepted as so completed the Engineer in charge may make payment on account of such items at such reduced rates as he may consider reasonable in the preparation of final or on account bills.

Clause-10 : Bills to be submitted monthly.

A bill shall be submitted by the Contractor in each month on or before the date fixed by the engineer in charge for all works executed in the previous month and the Engineer in charge shall take or cause to be taken the requisite measurements for the purpose of having the same verified and the claim. So far as it is admissible, shall be adjusted , if possible , within ten days from the presentation of the bill, if the Contractor does not submit the bill within the time fixed as aforesaid, the Engineer in charge may depute a subordinate to measure up the said work in the presence of the Contractor or his duly authorized agent whose counter signature to the measurement list shall be sufficient warrant and the Engineer in charge may prepare a bill from such list which shall be binding on the Contractor in all respects.

Clause-11 : Bills to be on printed forms.

The contractor shall submit all bills on the printed forms to be hands on application at the office of the Engineer in charge. The charges to be made in the bills shall always be entered at the rates specified in the tender or in the case of any extra work ordered in pursuance of these conditions and not mentioned or provided for in the tender at the rates hereinafter provided for such work.

Clause-12 : Stores to be supplied by Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . (if applicable)

If the specification or estimate of the work provides for the use of any special description of materials to be supplied from the stores of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . or if it is required that the Contractor shall use certain stores to be provided by the Engineer-in-charge. (such material and stores and the prices to be charges therefore as hereinafter mentioned being so far as practicable for convenience of the Contractor but not so as in any way to control the meaning or effect of this contract specified in the schedule or memorandum hereto annexed) the Contractor shall be supplied with such materials and stores, as may be required from time to time to be used by him for the purpose of contract only and the values of full quantity of the materials and stores so supplied shall be set off or deducted from any sums then due, or thereafter to become due to the Contractor under the contract or otherwise or from the security deposit, or the proceeds of sale there of if the security deposit is held in Government securities, the same or a sufficient portion there of shall in that case be sold for the purpose. All materials supplied to the Contractor shall remain the absolute property of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. and shall on / or account be removed from the site of the work, and shall at all times be open for inspection by the Engineer-in-charge. Any such materials unused and in perfectly good condition at the time of completion or determination of the contract shall be returned to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . stores if the Engineer-in-charge so requires by a notice in writing given under his hand, but the Contractor shall not be entitled to return any such materials except with such consent and he shall have no claim for compensation on account of any such material supplied him as to aforesaid **but** remaining unused by him or for any wastage or damage thereof.

Clause-12(a)

All stores of control material such as cement, steel etc. to be supplied by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. to the Contractor should be kept by the Contractor under lock and key and will be accessible for inspection by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,or his agent at all times.

Clause-13 : Works to be executed in accordance with specifications drawings orders etc.

The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner, and both as regards materials and every other respect in strict accordance with specifications, as per norms of the board after ascertaining the recuperation test of the percolation well and potability of water, the work of percolation well shall be continued and completed. The further sub-works shall be taken up as under.

1. ESR, GSR

2. Gravity Main, Rising Main, Switch House, installation of pumping Machinery
3. Distribution System.

The contractor shall also conform exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Engineer-in-charge and lodged in his office and the Contractor shall be entitled to receive three sets of contract drawings and working drawings as well as one certified copy of the accepted tender along with the work order free of cost. Further copies of the contract drawings and working drawings if required by him shall be supplied at the rate of Rs10/- per set of contract drawing and Rs.1/- per working drawings except where otherwise specified.

Clause-14 : Alteration in specifications and designs not to invalidate contracts.

The Engineer-in-charge shall have power to make any alterations in or additions to the original specifications, drawings, designs and instructions and may appear to him to be necessary or advisable during the progress of the work and the contractor shall be bound to carry out the work in accordance with any instructions in this connection which may be given to him in writing signed by the Engineer-in-charge and such alteration shall not invalidate the contract and any additional work which the Contractor may be directed to do in the manner above specified as part of the work shall be carried out by the Contractor on the same conditions in all respects on which he agreed to do the main work and at the same rates as are specified in the tender for the main work.

Rates for work not entered in Estimate or Schedules of rates of the district.

If the additional and altered work includes any class of work for which no rate is specified in this contract then such class of work shall be carried out at the rates entered in the schedule of Rates of the Division or at rates mutually agreed upon between the Engineer-in-charge and the Contractor, whichever are lower. If the additional or altered work for which no rate is entered in the schedule of Rate of the Division is ordered to be carried out before the rates are agreed upon then the Contractor shall within seven days of the date of receipt by him of the order to carry out the work, inform the Engineer-in-charge of the rate which is his intention to charge for such class of work and if the Engineer-in-charge does not agree to this rate, he shall be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider advisable provided always that if the Contractor shall commence work or incur any expenditure in regard thereto before the rates shall have been determined as lastly herein before mentioned, then in such case he shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of the determination of the rate as aforesaid according to such rate or rates as shall be fixed by the Engineer in charge. In the event of a dispute, the decision of the Executive Engineer of the Zilla Parishad will be final.

Extension of time in consequence of additions or alterations

Where, however, the work is to be executed according to the designs, drawings and specifications recommended by the Contractor and accepted by the Competent Authority, the alterations above referred to shall be within the scope of such designs, drawings, and specifications appended to the tenders.

The time limit for the completion of the work shall be extended in the proportion that the increase in its cost occasioned by alterations or additions bear to the cost of the original contract work and the certificate of the Engineer-in-charge as to such proportion shall be conclusive.

Clause-15 : No claim to compensation on account of loss due to delay in supply of material by Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .

1. If at any time after the execution of the contract documents the Engineer- in charge shall for reason whatsoever (other than default on part of the Contractor for which the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . is entitled to rescind the contract) desire that the whole or any part of the work specified in the tender should be suspended for any period or that the whole or part of the work should not be carried out at all he shall give to the Contractor a notice in writing of such desire and upon the receipt of such notice the Contractor shall forthwith suspend or stop the work wholly or in part as required, after having due regard to the appropriate stage at which the work should be stopped or suspended so as not to cause any damage or injury to the work or any part of it could be or could have been safely stopped or suspended shall be final and conclusive against the Contractor. The contractor shall have no claim to any payment or compensation whatsoever by reason of or in pursuance of any notice as aforesaid on account of any suspension, stoppage or curtailment except to the except specified hereinafter
2. where the total suspension of work ordered as aforesaid continued for a continuous period exceeding 90 days the contractor shall be at liberty to withdraw from the contractual obligations under the contract so far as it pertains to the unexecuted part of the work by giving a 10 days prior notice in writing to the Engineer within 30 days of the expiry of the said period of 90 days of such intention and requiring the Engineer to record the final measurements of the work already done and to pay final bill. Upon giving such notice the Contractor shall be deemed to have been discharged from his obligation to complete the remaining unexecuted work under his contract. On receipt of such notice the Engineer shall proceed to complete the measurement and make such payment as may be finally due to the Contractor within a period of 90 days from the receipt of such notice in respect of the work already done by the Contractor . such payment shall not in any manner prejudice the right of the Contractor to any further compensation under the remaining provisions of this clause
3. where the Engineer required the Contractor to suspend the work for a period in excess of 30 days at any time or 60 days in the aggregate, the contractor shall be entitled to apply to the Engineer within 30 days of the resumption of work after such suspension for payment of compensation to the extent of peculiar loss suffered by him in respect of working machinery rendered idle on the site or on the account of his having had to pay the salary of wages of labour engaged by him during the said period of suspension, provided always that the Contractor shall not be entitled to any claim in respect of any such working machinery or such suspension or in respect of any suspension whatsoever occasioned by unsatisfactory work or other default on his part. The decision of the Engineer in this regard shall be final and conclusive against the Contractor.
4. In the event of
 - i) Any total stoppage of work on notice from the Engineer under sub-Clause (1) in that behalf.
 - ii) Withdrawal by the Contractor from the Contractual obligation to complete the remaining un-executed work under sub-clause (2) on account of continued suspension of work for a period exceeding 90 days

- iii) Curtailment in the quantity of item or items originally tendered on account of any alteration, omission or substitutions in the specifications drawings, designs or instructions under clause 15 (1) where such curtailment exceeds 25% in quantity and the value of the quantity curtailed beyond 25% at the rates for the item specified in tender is more than Rs. 5,000/-

It shall be open to the Contractor within 90 days from the service of (i) the notice of stoppage of work or (ii) the notice of withdrawal from the contractual obligations under the contract on account of the continued suspension of work or (iii) notice under Clause 15 (1) resulting in such curtailment to produce to the Engineer satisfactory documentary evidence that he had purchased or agreed to purchase material for use in the contract work before receipt by him of the notice of stoppage, suspension or curtailment and require the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .to take over on payment such material at the rates determined by the Engineer, provided, however, that such rates shall in no case exceed the rates at which the same was acquired by the Contractor. The President/Secretary", Village Water Supply & Sanitation Committee AJANI Tq.- Washim Dist.-Washim. shall thereafter take over the material so offered provide the quantities offered are not in excess of the requirements of the unexecuted work as specified in the accepted tender and are of quantity and specifications approved by the Engineer.

Clause-15(A) : No claim to compensation on account of loss due to delay in supply of material by Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .

The contractor shall not be entitled to claim any compensation from Executive Engineer Rural Water Supply Division Zilla Parishad Washim, .for the loss suffered by him on account of delay by President/Secretary"Village Water Supply & Sanitation Committee AJANI Tq.-Washim Dist.-Washim.in the supply of materials entered in Schedule "A" where such delay is caused by.

- a) Difficulties relating to the supply of railway wagons.
- b) Force majeure
- c) Act of God.
- d) Act of enemies of the State or any other reasonable cause beyond the control of Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .

In the case of such delay in the supply of materials, Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . shall grant such extension of time for the completion of the work shall appear to the Executive Engineer to be reasonable in accordance with the circumstances of the case. The decision of the Executive Engineer as to the extension of time shall be accepted as final by the Contractor.

Clause-16 : Time limit for unforeseen claims.

Under no circumstances whatsoever shall the Contractor be entitled to any compensation from Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . on any account unless the Contractor shall have submitted claim in writing to the Engineer-in-charge within one month of the case of such claim accruing.

Clause-17 : Action of compensation payable in case of bad work.

If at any time the security deposit or any part of there of is refunded to the Contractor it shall appear to the Engineer-in-charge or his subordinate-in-charge of the work that any work has been executed with unsound imperfect or unskilled work man ship or with materials of inferior quality, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for, or are otherwise not in accordance with the contract, it shall be lawful for the Engineer-in-charge to intimate this fact in writing to the contractor and then notwithstanding the fact that the work, materials or articles complained of may have been inadvertently passed, certified and paid for, the Contractor shall be bound fort with to rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or if so required shall remove the materials or articles to specified and provided other proper and suitable materials or articles at his own charge and cost and in the event of his failing to do so within a period to be specified by the Engineer-in-charge in the written intimation aforesaid, the contractor shall be liable to pay compensation at the rate of one percent on the amount of the estimate for every day not exceeding 10 days during which the failure so continuous and in the event of any such failure the Engineer-in-charge may rectify or remove and re-execute the work or remove, and replace the materials or articles complained of as the case may be at the risk and expense in all respects of the Contractor, Should the Engineer-in-charge consider that any such inferior work or materials as prescribed above may be accepted or made use of, it shall be within his discretion to accept the same at such reduced rates as he may fix therefore.

Clause-18 : Work to be open to inspection / Contractor or responsible agent to be present.

All works under or in course of execution or executed in pursuance of the contract shall at all times be open to inspection and supervision of the Engineer-in-charge and his subordinates and the Contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer-in-charge and his subordinates to visit the works shall have been given to the Contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing present for that purpose. Orders given to the Contractor's duly authorized agent shall be considered to have the same force and effect as if they had been given to the Contractor himself.

Clause-19 : Notice to be given before work is covered.

The Contractor shall give not less than five days notice in writing to the Engineer-in-charge or his subordinate-in-charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions there of taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up or place beyond the reach of measurement any work without the consent in writing of the Engineer-in-charge or his subordinate-in-charge of the work, and if any work shall be covered up or placed beyond the reach of measurement without such notice having been given or consent obtained the same shall be uncovered at the Contractor's expenses, and in default there of no payment or allowance shall be made for such work or for the materials with which the same was executed.

Clause-20 : Contractor liable for damage done and for imperfections

If during the period as listed below, from the date of completion as certified by the Engineer-in-charge pursuant to Clause-7 of the contract or for the period as mentioned below after commissioning the work whichever is earlier in the opinion of the Executive Engineerthe said work is defective in any manner whatsoever the

Contractor shall forth with on receipt of notice in that be half from the Executive Engineer, duly commence execution and completely carry out at his cost in every respect all the work that may be necessary for rectifying and setting right the defects specified therein including dismantling and reconstruction of unsafe portion strictly in accordance with and in the manner prescribed and under the supervision of the Executive Engineer. In the event of the Contractor failing or neglecting to commence execution of the said rectification work within the period prescribed there for in the said notice and / or to complete the same as aforesaid as required by the same notice, the Executive Engineer may get the same executed and carried out departmentally or by any other agency at the risk, on account and at the cost of the Contractor. The contractor shall forth with on demand pay to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . the amount of such costs, charges and expensed sustained or incurred by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . of which the certificate of the Executive Engineer shall be final and binding on the Contractor. Such costs, charges and expenses shall be deemed to be arrears of land revenue and in the event of the Contractor failing or neglecting to pay the same on demand as aforesaid without prejudice to any other rights and remedies of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . the same may be recovered from the Contractor as arrears of land revenue. The Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . shall also be entitled to deduct the same from any amount which may then be payable or which may thereafter become payable by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.to the Contractor either in respect of the said work whatsoever or from the amount of security deposit retained by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. During defect liability period, the work of daily maintenance and general repairs and expenses thereon would be out of scope of the tender, However, if any defects in the sub work or in the material are found, the same will be rectified by the Contractor at his cost and will binding on him, failing to which legal action would be taken as per tender clauses, ten percent amount will be withheld from security deposit depending upon the nature of work, till the defect liability period is cover.

Annexure A

I) Head Works

- | | | |
|----|---|-------------|
| a) | River head works including those at storage dams, infiltration galleries, trench galleries, bank pitching, intake works, connecting pipes, approach bridges, etc. | Five Years. |
| b) | Anicuts or weirs, earthen/masonry dams and ancillary works | Five years |
| c) | Nalla / canal head works inclusive of infiltration wells, connecting pipes, Production and percolation wells etc. | Three years |
| d) | Tube wells, bore wells etc. | Three years |
| e) | Repairs to the works at (a) to (d) above | One year |

II) Pumping Machinery

- a) Pumping machinery and other allied mechanical electrical installation (excluding those provided in the treatment plant contract), surge arrestors, water hammer control devices, chlorinators (excluding those provided in the treatment plant contract) One Year
- b) Repairs to the works at (a) above Six months.
- III) Treatment Plant**
- a) Water treatment plant and sewage treatment plant based on Contractors design Five Year
- b) Water treatment plant and sewage treatment plant based on departmental Designs. Three years
- c) Repairs to the treatment plants at (a) And (b) above. Two years.
- IV) ESR/GSR/BPT, Sump and Pump House etc.**
- a) Based on Contractors own design. Five Years
- b) Based on Department design. Three years
- c) Special requires to ESR.GSR.BPT Two years
- d) Ordinary repairs to ESR/GSR/BPT Sump and Pump House, etc. One Year
- V) Pipe Lines**
- a) Pumping Mains, Gravity Mains Leading mains including intercepting Outfall sewer in case of sewerage schemes Two years
- b) Distribution system, laterals, branch sewers of sewerage system etc. One year
- c) Repairs to pipe lines under the works at (a) and (b) above Two years

The instructions contained in the Government of Maharashtra (Public works Department) Resolution dated 14th June, 1989 shall henceforth be applicable to all the works for which defect liability periods have been specified as above.

The contractor shall stand guarantee for successful working of all components of work under contract for various periods as shown in this clause to wards defect liability. This defect liability. Period during which time any defects and shortcomings noticed due to faulty design and defective mechanical and electrical equipments or defective construction will have to be made good to the entire satisfaction of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . / Local Body without claiming any extra cost. During defect liability period the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . will bear the cost of chemicals and energy. 10 % security deposit of the respective sub-work will be released after end of defect liability period specified for that sub-work.

Clause-21 : Contractor to supply plant, ladders, scaffolding etc. And is liable for damages arising from non-provision of lights, fencing etc.

The Contractor shall supply at his own cost all material (except such special materials, if any as may accordance with contract be supplied from the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . stores) plant, tools, appliances, implements, ladders, cordages, tackles, scaffolding and temporary works requisite or proper for the proper execution of the work, in the original, altered or substituted from and whether included in the specification or other documents forming part of the contract or referred to in the these conditions or not and which may be necessary for the purpose of satisfying or complying with the requirement of the Engineer-in-charge as to any matter as to which under these conditions he is entitled to be satisfied or which he is entitled to require together with the carriage there for to and from the work. The Contractor shall also supply without charge the requisite number of persons with the means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or the materials failing this the same may be provided by the Engineer in charge at the expenses of the contractor and expenses may be deducted from any money due to the Contractor under the contract or from his security deposit or the proceeds of sale there of or a sufficient portion there of. The contractor shall provide all necessary fencing and lights required to protect the public from accident and shall also be bound to bear the expenses of deference of every suit action or other legal proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit action of proceedings to any such person or which may with consent of the contractor be paid for compromising any claim by any such person. List of machinery in Contractor's possession and which the proposes to use on the work should be submitted along with the tender.

Clause-21(A)

The Contractor shall suitable scaffolds and working platforms, gangways and stairways and shall comply with the following regulations in connection there with.

- a) Suitable scaffolds shall be provided for workmen for all works that cannot be safely done from ladder or other means.
- b) A scaffold shall not be constructed, taken down or substantially altered expect.
 - i) Under the Supervision of a competent and responsible person and
 - ii) As far as possible be competent workers possessing adequate experience in this kind of work.
- c) All scaffolds and appliances connected there with and ladders shall :
 - i) be of sound material
 - ii) be of adequate strength having regard to the loads and strains to which they will be subjected and.
 - iii) Be maintained in proper condition
- d) Scaffolds shall be so constructed that no part there of can be displaced in consequence of normal use.

- e) Scaffolds shall not over loaded and so far as practicable the load in consequence of normal use.
- f) Before installing lifting gear on scaffolds special precautions shall be taken to ensure the strength and stability of the scaffolds.
- g) Scaffolds shall be periodically inspected by a competent persons.
- h) Before allowing a scaffolds to be used by his workmen the contractor shall, whether the scaffold has been erected by his work men or not, take steps to ensure that it complies fully with the regulations herein specified.
- i) Working platform, gangway, stairways shall :
 - i) be so constructed that no part there of can sag unduly or unequally
 - ii) be so constructed and maintained, having regard to the prevailing conditions as to reduce as far as practicable risk of persons tripping or slipping and.
 - iii) be kept free from any unnecessary obstruction.
- j) In the case of working platform , gangways. Working places and stairways at a height exceeding 3 meters (to be specified)
 - i) every working platform gangway shall be closely boarded unless other adequate measures are taken to ensure safety
 - ii) every working platform, gangway shall have adequate width and
 - iii) Every working platform, gangway, working place and stairway shall be suitably fenced.
- k) Every opening in the floor of a building or in a working platform shall except for the time and to the extent required to allow the excess of persons or the transport or shifting of material be provide with suitable means to prevent the fall of persons or material.
- l) When person are employed on a roof where there is a danger of falling from a height exceeding 3 meters (to be specified) suitable precautions shall be taken to prevent the fall of persons or materials
- m) Suitable precautions shall be taken to prevent persons being struck by articles which might fall from scaffolds or other working places. Safe means of access shall be provided to all working platforms and other working places.
- (n) Safe means of access shall be provided to all working platforms and other working places
- (o) The contractor will have to make payments to labourers as per minimum wages Act.

Clause-21 (B) :

The contractor shall comply with the following regulations as regards the Hoisting Appliances to be used by him.

- (a) Hoisting machines and tackles, including their attachments, anchorages and supports shall.

- (i) be of good mechanical construction, sound material and adequate strength and free from patent defect, and.
- (ii) Be kept in good repair and in good working order.
- (b) Every rope used in hoisting or lowering materials or as a means of suspension shall be suitable quality and adequate strength and free from patent defect.
- (c) Hoisting machines and tackles shall be examined and adequately tested after erection on the site and before use and be reexamined in position at intervals to be prescribed by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .
- (d) Every chain, ring, hook, shackle, swivel and pulley block used in hoisting or lowering materials or as a means of suspension shall be periodically examined.
- (e) Every crane driver or hoisting appliance operator shall be properly qualified.
- (f) No person who is below the age of 18 years shall be in control of any hoisting machine, including any scaffold which gives signals to the operator.
- (g) In case of every hoisting machine and every chain, ring, hook shackle, swivel and pulley block used in hoisting or lowering or a means of suspension, the safe working load shall be ascertained by adequate means.
- (h) Every hoisting machine and all gear referred to in proceeding. Regulation shall be plainly marked with the safe working load.
- (i) In case of hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated.
- (j) No part of any hoisting machine or any gear referred to in regulation (g) above shall be loaded beyond the safe working load except for the purpose of testing.
- (k) Motors, gearing transmissions, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards.
- (l) Hoisting appliances shall be provided with such means as will reduce to minimum and the risk of the accidental decent of load.
- (m) Adequate precaution shall be taken to reduce to a minimum the risk of any part of suspended load becoming accidentally displayed.

Clause-22 : Measure for prevention of fire.

The contractor shall not set fire to any standing jungle, trees, brushwood or grass without a written permission from the Executive Engineer. When such permission is given and also in all cases when destroying, cut or dug up trees, brushwood, grass, etc. by fire, the Contractor shall taken necessary measures to prevent such fire spreading to or otherwise damaging surrounding property.

The Contractor shall make his own arrangements for drinking water for the labour employed by him.

Clause-23 : Liability of contractor for any damage done in or outside work area.

Compensation for all damages done intentionally or unintentionally by Contractor's labour whether in or beyond the limits of the Executive Engineer Rural Water Supply

Division Zilla Parishad Washim,. . property including any damage caused by the spreading of fire mentioned Clause 22 shall be estimated by the Engineer-in-charge or such other officer as he may appoint and the estimate of the Engineer-In-charge subject to the decision of the Executive Engineer on appeal shall be final and the Contractor shall be bound to pay the amount of assessed compensation on demand failing which the same will be recovered from the Contractor as damage in the manner prescribed in Clause or deducted by the Engineer-in-charge from any sums that may be due or become due from Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . to Contractor under this contract or otherwise.

The Contractor shall bear the expenses of defending any action or other legal proceedings that may be brought by any person for injury sustained by him owing to neglect of precautions to prevent the spread of fire and he shall pay any damages and cost that may be awarded by the court in consequence.

Clause-24 : Employment & female labour

The employment of female labourers on work in neighborhood of soldiers barracks should be avoided as far as possible.

Clause-25 : Work on Sunday

No work shall be done on Sunday without the sanction in writing of the Engineer-in-charge.

Clause-26 : Work not to be sublet

The contract shall not be assigned or sublet without the written approval of the Engineer-in-charge, and if the Contractor shall assign or sublet his contract or attempt to do so

Contract may be rescinded and security deposit forfeited for subletting it without approval or for bribing a public Officer or if Contractor becomes insolvent

or become insolvent or commence any proceedings to get himself adjudicated and insolvent or make any composition with his creditor or attempt so to do or if bribe, gratuity, gift, loan, perquisite, reward of advantage, pecuniary or otherwise shall either directly or indirectly be given, promised or offered by the Contractor or any of his servants or agents to any public officer or person in the employment of Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . in any way relating to his office or employment of if any such officer or person shall become in any way directly or indirectly interested in the contract the Engineer-in-charge may there upon by notice in writing rescind the contract, and the security deposit of the Contractor shall thereupon stand forfeited and be absolutely at the disposal of Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . and the same consequence shall ensure as if the contract had been rescinded under Clause 3 here of and in addition the Contractor shall not be entitled to recover or be paid for any work there of actually performed under the contractor.

Clause-27 : Sum payable by way of compensation to be considered as reasonable compensation without reference to actual loss.

All sums payable by a Contractor by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.without reference to actual loss or damage sustained and whether any damage has or has not been sustained.

Clause-28 : Changes in the constitution of the firm to be notified.

In the case of tender by partners, any change in the constitution of a firm shall be forthwith notified by the Contractor to the Engineer-in-charge for his information.

Clause-29 : Direction and control of the Superintending Engineer.

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Superintending Engineer of the Circle for the being. Who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried out.

Clause 30.1

Except where otherwise specified in the contract and subject to the powers delegated to him by Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. under the code rules then in force the decision of the Superintending Engineer of Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. for the time being shall be final conclusive and binding on all parties of the contract, upon all questions relating to the meaning of the specifications, designs, drawings and instruction here in be for mentioned and as to the quality of workmanship, or materials used on the work or as to any other question, claim, right , matter or thing whatsoever, in any way arising out of or relating to the contract designs, drawings, specifications, estimates, instructions, orders. Or these conditions, or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment there of.

Clause 30.2

The contractor may within thirty days of receipt by him of any order passed by the Engineer-in-charge of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.as a aforesaid appeal against it to the Superintending Engineer, concerned with the contract work or project provided that.

- (a) the accepted value of the contract exceeds Rs. 10 lakhs (Rupees Ten lakhs)
- (b) Amount of claim is not less than 1.00 lakh (Rupees One Lakh)

Clause 30.3

If the Contractor is not satisfied with the order passed by the Engineer as aforesaid the Contractor, may within thirty days of receipt by him of any such order, appeal against it to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . , who, if convinced that prima-facie the Contractor's claim rejected by Engineer is not frivolous and that there is some substance in the claim of the Contractor as would merit a detailed examination and decision by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . shall put up to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . for suitable decision.

Clause-31 : Deleted

Clause-32 : Lumpsums in estimate.

When the estimate on which a tender is made includes lumpsums in respect of parts of the work, the Contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for each item, or if the part of the work in question is not in the opinion of the Engineer-in-charge capable of measurement, the Engineer-in-charge

may at his discretion pay the lumpsum amount entered in the estimate and the certificate in writing of the Engineer-in-charge shall be final and conclusive against the Contractor with regard to any sum or sums payable to him under the provision of this clause.

Clause-33 : Action where no specifications.

In the case of any class of work for which there is no such specification as is mentioned in Rule 1 of Form B-1 such work shall be carried out in accordance with the Divisional specifications, and in the event of there being no Divisional specification, the work shall be carried out in all respect in accordance with all instructions and requirements of the Engineer-in-charge.

Clause-34 : Definition of work.

The expression "Works" where used in these conditions, shall unless there be something in the subject or context repugnant to such construction, be construed to mean the work or works contracted to be executed under or in virtue of the contract, whether temporary or permanent and whether original altered, substituted or additional.

Clause-35 : Deleted

Clause-36 : Refund of quarry fees and royalties

All quarry fees, royalties and ground rent for stacking materials, if any, should be paid by Contractor.

Clause-37 : Compensation under Workmen's Compensation Act.

The Contractor shall be responsible for and shall pay any compensation to his workmen payable under the Workmen's Compensation Act, 1923 (VII of 1923) (hereinafter called the said Act) for injuries caused to the workmen. If such compensation is payable paid by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . as principal under sub-section (1) of Section 12 of the said Act on behalf of the Contractor, it shall be recoverable by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . from the Contractor under sub section (2) of the said section, Such compensation shall be recovered in the manner laid down in Clause 1 above.

Clause 37 (A)

The Contractor shall be responsible for and shall pay the expense of providing medical aid to any workman who may suffer a bodily injury as a result of an accident. If such expenses are incurred by Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . the same shall be recoverable from the Contractor for with and be deducted without prejudice to any other remedy of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . from any amount due or that may become due to the Contractor.

Clause 37 (B)

The Contractor shall provide all necessary personal safety equipment and first aid apparatus available for the use of the persons employed on the site and shall maintain the same in condition suitable for immediate use at any time and shall comply with the following regulations in connection therewith.

- (a) The workers shall be required to use the equipment so provided by the Contractor and the contractor shall take adequate steps to ensure proper use of the equipment by those concerned.
- (b) When work is carried on in proximity to any place where there is a risk of drawing, in all necessary equipment shall be provided and kept ready for use and all necessary steps shall be taken for the prompt rescue of any persons, in danger.
- (c) Adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work.

Clause 37 (C)

The Contractor shall duly comply with the provision of "The Apprentices Act, 1961 (III of 1961) the rules made there under and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so he shall be subjected to all the liabilities and penalties provided by said Act and Said Rules.

Clause-38 : Claim for quantity of work entered in the tender or estimate.

1. Quantities shown in the tender are approximate and no claim shall be entertained for quantities of work executed being either more or less than those entered in the tender or estimate.
2. Quantities in respect of the several items shown in the tender are approximate and no revision in the tendered rate shall be permitted in respect of any of the items so long as subject to any special provision contained in the specifications prescribing a different percentage of permissible variation in the quantity of the item does not exceed the tender quantity by more than 25 % and so long as the value of the excess quantity beyond this limit at the rate of the item specified in the tender, is not more than Rs. 50,00/-
3. The Contractor shall, if ordered in writing by the Engineer so to do, also carry out any quantities in excess of the limit mentioned above in sub clause (1) here of on the same conditions and in accordance with the specification in tender and the rates (i) divided from the rates entered in current Schedule of Rates and in the absence of such rates (ii) at the rates prevailing in the market.

The said rates being increased or decreased as the case may be by the percentage which the total tendered amount bears to the estimated cost of the works as put to tender based upon the Schedule of Rates applicable to the year in which the tenders, to be filled were invited (for the purpose of operation of this clause, this cost shall be taken as. **Rs ----- /-**

4. The clause is not applicable to extra items, Claims arising out of reduction in the tendered quantity of any item beyond 25% will be governed by the provision of Clause 15 only when the amount of such reduction beyond 25 % at the item specified in the tender is more than Rs. 5,000/- . this reduction is exclusively the reduction in Clause Nos. 2,1,4 of work and site conditions.
5. There in no change in the rate if the excess is less than or equal to 25 % Also there is no change in the rate if the quantity of work done is more than 25 % of the tendered quantity. But the value of the excess work at the tendered rates does not exceed Rs.5,000/-
6. The quantities to be aid at the tendered rates shall include.
 - (a) tendered quantity plus

- (b) 25% excess of tendered quantity or the excess quantity of the value of Rs.5,000/- at tendered rate whichever is more.
7. a) Unless authorised by the Executive Engineer in charge in writing the contractor should not execute the excess quantity beyond the quantities specified in the tender.
- b) Even after writing instruction if the Executive engineer, whenever the excess quantity beyond those specified in the tender are executed. The payment in excess of the quantities specified in the tender will be made by the Executive Engineer only after getting approval from the appropriate authority.
- c) Till the approval from appropriate authority is received the President/Secretary", Village Water Supply & Sanitation Committee can make payment to the extent of 50% of the value of work (for quantities beyond quantities payable at tender rates) subject to the condition that the proposal for approval of payment of excess quantities is at least submitted by him to the competent authority. Before making such payments such payments released by the President/Secretary", Village Water Supply & Sanitation Committee to the contractor. Excess quantities shall be treated as advance payment against the total payment. Due after approval from the competent authority.

Clause-39 : Employment of female labour etc.

The Contractor shall employ any female, convict or other labour of a particular kind or class if ordered in writing to do so by the Engineer in charge

Clause-40 : Claim for compensation for delay in starting the work.

No compensation shall be allowed for any delay caused in the starting of the work on account of acquisition of land or in the case of clearance works, on account of any delay in accordance to sanction of estimates.

Clause-41 : Claim for compensation for delay in execution of the work.

No compensation shall be allowed for any delay in the execution of the work on account of water standing in borrow pits or compartments the rates are inclusive for hard or cracked soil, excavation in mud, sub soil, water standing in borrow pits and no claim for an extra rate shall be entertained unless otherwise expressly specified.

Clause-42 : Entering upon or commencing any portion of work.

The contractor shall not enter upon or commence any portion of work except with written authority and instructions of the Engineer-in-charge or of his subordinate in charge of the work, Failing such authority the Contractor shall have no claim to ask for measurements of or payment for work.

Clause-43 : Minimum age of persons employed and the payment of fair wages.

- (i) No Contractor shall employ any person who is under the age of 18 years.
- (ii) The Engineer-in-charge or his agent is authorized to remove from the work, any person or animal found working which does not satisfy these conditions and so responsibility shall be accepted by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, for any delay caused in the completion of the work by such removal.
- (iii) The Contractor shall pay and reasonable wages to the workmen employed by him in the contract undertaken by him. In the event of the dispute arising between the Contractor and his workmen on the grounds that the wages paid are not fair and reasonable, the dispute shall be referred without delay to the Executive Engineer who shall decide the same. The decision of the Executive

Engineers shall be conclusive and binding on the Contractor but such decision shall not in any way affect the conditions in the contract regarding the payment to be made by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . . at the sanctioned tender rates.

- (iv) Contractor shall provide drinking water facilities to the works similar amenities shall be provided to the workers engaged on large work in urban areas.
- (v) Contractor to take precautions against accident which take place an account of labour using loose garments while working near machinery.

Clause-44 : Method of payment.

Payment to Contractor shall be made by cheque drawn on any treasury within the division convenient to them,

Clause-45 : Acceptance of conditions compulsory before tendering for work.

Any Contractor who does not accept these conditions shall not be allowed to tender for work.

Clause-46 : Employment of scarcity labour

If Government declares a site of scarcity of famine to exist in any village situated with 16 kms of the work, the Contractor shall employ upon such part of the work, as are suitable for unskilled labour, any person certified to him by the Executive Engineer, or by any person to whom Executive Engineer may have delegated this duty in writing to be in need of relief and shall be bound to pay to such person wages not below the minimum wages which Government may have fixed in this behalf, any disputes which may arise in connection with the implementation of this clause shall be decided by the Executive Engineer whose decision shall be final and binding on the Contractor.

Clause-47 :

The price quoted by the Contractor shall not in any case exceed the control price, if any, fixed by Government or reasonable price which is permissible for him to charge a private purchaser for the same class and description, the control price or the price permissible under the provision of Hoarding and Profiteering Preventing Ordinance, 1948 as amended from time to time. If the price quoted exceeds the controlled price of the price permissible under Hoarding and profiteering Prevention Ordinance, the Contractor will specifically mention this fact in his tender along with the reasons for quoting such higher prices, the purchases at his discretion will in such case excess the right of revising the price at any stage so as to conform with the controlled price as permissible under the Hoarding and Profiteering Prevention Ordinance. This discretion will be exercised without prejudice to any other action that may be taken against the Contractor.

Clause-48 :

The rates to be quoted by the contractor must be inclusive of Sales Tax. No extra payment on this account will be made to the Contractor.

Clause-49 :

In the case of materials that may remain surplus with the Contractor from those issued the date of ascertainment of the materials being surplus will be taken as the date of sale for the purpose of sales tax and the Sales tax will be recovered on such sale.

Clause-50 :

The Contractor shall employ at least 80 percent of the total number of unskilled labour to be employed by him on the said work from out of the persons ordinarily residing in the district in which site of the said work is located. Provided, however, that if the required number of unskilled labour from that district is not available the contractor shall in the first instance employ such number of persons as is available and thereafter may with the previous permission in writing of the Executive Engineer in charge of the said work obtain the rest of the requirement of unskilled labour from outside of district.

Clause-51 : Wages to be paid to the skilled and unskilled labourers engaged by the Contractor.

The contractor shall pay the labours skilled and unskilled according to the wages prescribed by Minimum Wages Act applicable to the area in which the work of the Contractor is located. The contractor shall comply with the provisions of the Apprentices Act, 1961 and the Rules and order issued there under from time to time. If he fails to do so his failure will be a breach of the contract and the Superintending Engineer may in his discretion cancel the contract. The Contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the Act. the Contractor shall pay the labourers skilled and unskilled according to wages prescribed by Minimum Wages Act applicable to the area in which the work lies.

Clause-52 :

All amounts whatsoever which the Contractor is liable to pay to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . in connection with the execution of the work including the amount payable in respect of (I) materials and or stores supplied issued hereunder by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . to the Contractor (ii) hire charges in respect of heavy plant machinery and equipment given on hire by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . to the Contractor for execution by him of the work and or for which advances will be given by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, .to the contractor shall be deemed to be arrears of land revenue and the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, .may without prejudice to any other rights and remedies of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . recover the same from the Contractor as arrears of land revenue.

Clause-53 :

The successful tenderers will be required to produce to the satisfaction of the specified concerned authority valid and consequent license issued in favour of the Contractor under the provisions of the Contract Labour (Regulation and Abolition) Act 1970 before starting the work. On failure to do so, the acceptance of the tender should be liable to be withdraw and also the earnest money.

The contractor shall duly comply with al the provisions of the Contract Labour (Regulation and Abolition) Act 1970 (37 of 1970) and the Maharashtra Contract Labour (Regulation and Abolition) Rules, 1971 as amended from time to time and all other relevant states and statutory provisions concerning payment of wags particularly to workmen employed by the Contractor and working on the site of the work. In particulars the Contractor shall pay wages to each worker employed by him on the site of work at the rates prescribed under Maharashtra Contract Labour (Regulation ad Abolition) Rules 1971 if the Contractor fails or neglects to pay wages at the said rates or makes short payment and the Executive Engineer Rural Water

Supply Division Zilla Parishad Washim,.makes such payment of wages in full or part thereof less paid by the Contractor, as the case may be, the amount so paid by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. to such workers shall be deemed to be arrears of land revenue and the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.shall be entitled to recover the same as such from the Contractor or deduct the same from the amount payable any the President/Secrtery”,Village Water Supply & Saniation Committee AJANI Tq.- Washim Dist.-Washim to the Contractor hereunder or from any other amounts payable to him by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.

Clause-54 :

Where the workers are required to work near machines and are liable to accidents they should not be allowed to wear loose clothes like dhoti, Jhaba etc.

Clause-55 :

The Contractor shall comply with the provisions of the Apprentices Act, 1961 and the Rules and Orders issued there under from time to time if he fails to do so, his failure will be a breach of the contract and the Superintending Engineer may in his discretion cancel the contract. The Contractor shall pay the labourers skilled and unskilled according to wages prescribed by Minimum Wages Act applicable to the area in which the work lies.

Clause-56 :

- A) The antimalarial and other health measure shall be as directed by the joint Director (Malaria and Filarial) of Health Services, Pune.
- B) Contractor shall see that mosquitogenic conditions are not created so as to keep vector populations to the minimum level.
- C) Contractor shall carry out anti malaria measures in area as per guidelines prescribed under National Malaria Eradication Programme and as directed by the joint Director (M & F) of Health Services, Pune.
- D) In case of default in carrying out prescribed antimalarial measure resulting increasing in malaria incidence Contractor shall be liable to pay to, Executive Engineer Rural Water Supply Division Zilla Parishad Washim, the amount spent by Executive Engineer Rural Water Supply Division Zilla Parishad Washim, on antimalarial measures to control the situation in addition to fine.

E) RELATION WITH PUBLIC AUTHORITIES:

The Contractor shall make sufficient arrangement for draining away the sullage water as well as water coming from the bathing and washing places and shall dispose of this water in such a way as not to cause any nuisance. He shall also keep premises clean by employing sufficient number of sweepers. The Contractor shall comply with all rules regulation, by laws and direction given time to time by any local or public authority in connection with this work and shall pay fees or charges which are liable on him without any extra cost to, Executive Engineer Rural Water Supply Division Zilla Parishad Washim. . .

Clause 57 : Applicable Law –

The Law which applies to the contract is the laws of Union of India with the jurisdiction of Court of Washim. Price escalation and arbitration is excluded in this contract.

Clause-58 :

MVAT @ 2% will be deducted from the contractor who have registered for MVAT and 4% will be deducted from the contractor who have not registered for MVAT.

Clause-59 :

In case of contradiction regarding the provisions of any items following order of provisions will be following:

- i) Provisions in Schedule "B"
- ii) Detailed Specifications in volume III
- iii) Drawings
- iv) PWD handbook
- v) CPHEEO Manual
- VI) ISI

Clause-60 :

Contractors shall take out necessary insurance policy policies so as, to provide adequate insurance cover for execution of the awarded contract work from the Director of Insurance Maharashtra State, Mumbai-51 only. Its postal address for correspondence is "264, 1st floor, MHADA, Opp. Kalanagar, Bandra (E), Mumbai 51"(Tel.26590690, 26590746, 26591782, 26590403 Fax 022-265902461)

Insurance policy / policies taken out from any other company will not be accepted. However, if the contractor desire to effect insurance with local office of any insurance company, the same should be under the co insurance cum servicing arrangements approved by the director of insurance. The policy taken out by the contractors is not on co insurance basis (G.I.F 60% and Insurance company 40%) the same will not be accepted and the amount of premium calculated by the director of insurance will be recovered directly from the amount payable to the contractors for the executed contract work which may be noted.

Clause 61

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ADDITIONAL CONDITIONS OF CONTRACT

In view expeditious execution of works under Brihat Arakhada following additional conditions are applicable. These conditions supercede the provisions of from B-1 to the extent of contradictions.

1) Liquidated Damages :

- a) If the proportionate work as shown in clause 2 conditions of contract is not achieved for any of the sub-work, liquidated damages shall be paid by the contractor to the employer or Engineer at the rate shown against each sub-work of that supply scheme in the table below. In case of failure by the contractor for payment of such amount of liquidated

damages, employer/ Engineer shall have right to recover the amount of the same form any payment due to contractor from the Employer/ Engineer.

- b) All the work under contract including trial run for 1-----/s shall be completed within a period of 18 months from the date of issue of work order, failing which the contractor shall pay liquidated damages to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim.at the rate as shown in milestone details per calendar day for each day that the completion date is later than the intended completion period. If liquidated damages as per

(a) above are in force, the total liquidated damages per day will be extended to this limit.

- c) The total amount of liquidated damages to be paid under the provision of this clause shall not exceed 10% of cost put to tender.

The period of completion of various sub-works to be refered as per the clause no 2.

- 2) The bills for the work done shall be prepared by the contractor himself and they should be submitted to the competent authority for payment.

For works of which cost put to tender is more than 3.5 crores, the payment of R.A. Bills shall be regulated as under.

- i) The bill shall be submitted by the contractor in each month on or before the date fixed by the Engineer-in-charge for all executed work in the previous month.
- ii) An advance payment 75% of the value of this running account bill is payable within 3 days after submission of the same.
- iii) The balance due shall be paid after scrutiny and due acceptance of the bill within a fortnight.
- iv) In the scrutiny of bills submitted by the contractor, if it is found that they are of exaggerated/inflated amount due to wrong measurements or wrong mathematical computations/calculations, the contractor shall have to pay penalty of sum of Rs. 1.00 Lac & Rs. 2.00 Lac at the first & second such instance respectively. In case of further repetition of such incorrect bills, the facility of such advance payment shall stand withdrawn. Subsequent bill will be paid only after detailed scrutiny of measurements and acceptance of bills thereafter.
- v) The concession for giving advance payment is applicable only for those tenders having accepted cost upto Rs. 5.00 crores.

- 4) a) In respect of those tenders whose offers are less than 10 % below the cost put to tender, it is binding on the contractor to pay additional security deposit as mentioned below.

- i) Offer upto 10 % below - Initial 2 % cost put to tender + 2% from R.A. Bills i.e. no. additional Security deposit.

- ii) Offer from 10 % more than - Initial 4 % of cost put to tender below to 15 % below + 2 % from R.A. Bill

- iii) Offer more than 15% below - Initial 6 % of cost put to tender + 2 % from R. A. Bill

- b) In respect of those tender whose offers are more than cost put to tender , it is binding on contractor to pay 4 % security deposit on cost of accepted tender i.e. initial 2 % + 2 % from R. A. Bills

- c) The earnest money and the security deposit shall be payable on the cost put of capacity more than as well as less than 5.00 Lac liters, offers shall be as per contractors design only for all service master balancing reservoirs.
- 6) In the event any dispute the decision of the Member Secretary (Tech) is final. Even if the contractor goes in the court of law, the process of withdrawing of work from the contractor and allotting the same to the another contractor will continue uninterruptedly to avoid delay in execution of work.
- 7) In case Executive Engineer Rural Water Supply Division Zilla Parishad Washim.decides to appoint a Construction, Supervision and Management Consultant (C.S.M.C.) for Supervising/Monitoring work under this contract, the Civil / Mechanical/ Electrical contractor shall be liable to execute the work under the supervision of C.S.M.C. all decisions regarding the work in such cases shall be taken by the C.S.M.C. on behalf of Executive Engineer Rural Water Supply Division Zilla Parishad Washim.,and will be binding on the contractor.

In such cases; the contractor will have to sign the agreement between the Executive Engineer Rural Water Supply Division Zilla Parishad Washim in token of acceptance of C.S.M.C. as the sole supervisor of the works under the agreement.

- 8) (a) If the tender for the scheme or for a group of individual or R.W.S. Schemes consisting of work regarding construction of some ESR's having capacity upto 5 lacs liters and also some reservoir having capacity more than 5 lacs liters the offer shall be only on contractors design for all reservoir included in the tenders.
- (b) If the capacity of all the reservoirs in the tender are less than 5.00 lacs liters the contractors who have already successfully constructed, tested as per provisions of IS 3370and commissioned minimum 3 Nos of ESRs shall only be allowed to quote for alternative offers for the work on own design basis. The main offer however, shall be based on Departmental design only, which shall be considered as bases for selection. An offer where the contractor quotes for some reservoirs on own design and some reservoirs on Departmental design, shall be considered as Non-Responsive.
- 9) Following named schemes which are part of his tender are yet to be sanctioned by the Govt. Works of these schemes will be started if any only after they are sanctioned by Govt. the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . reserves the right to delete if not approved any of these schemes without accepting any extra claim from contractor on this account.
 - i) _____
 - ii) _____
 - iii) _____
- 10) The contractor should not purchase and supply any material from M/s. Navin sales Corporation, Jaipur and M/S. Construction Engineers and Builders, Osmanabad / Hyderabad. If the contractor purchases any material from these manufactures, the same will not be allowed to be used the works.
- 11) The CI / DI / MS / PVC / GI pipes ,CI / DI / GI specials and all types of valves required to be used on the work shall be got inspected by third party. At present the third party agents approved by the Maharashtra Jeevan Pradhikaran are RITES/ SGS/ Superintendence and hence the third party inspection shall be carried out through any of these agencies only. Any change in the above names of agencies will be communicated to the contractor and the third party inspection shall have to be carried out. Even after awarding the tender, through any one of the changed agencies

- 12) a) the item of excavation of pipe line trenches is provided on weighted age rage basis by adopting various percentages of different type of stratas with the rate enumerated in C.S.R. When the quantity increases and Clause-38 becomes applicable the weighted average rate will be worked out from the strata wise rates of the applicable C.S.R. by keeping the same proportion of different stratas which was adopted for working of that rate put to tender.
- b) The weighted excavation rate put to tender is for all lifts and occasionally the depth may increase beyond 1.5 m for pipes upto 500 mm dia and for that nothing extra is payable. For pipes above 500 mm dia the increased quality attracting Clause-38 falling in the lift of 1.50 m to 3.00 m shall receive additional payment towards additional lift after working out weighted average rate on above lines for lift 0 to 1.5 m in short the principal followed at the time of finding weighted average rate will be followed for the new weighted average rate with applicable C.S.R.
- 13) Third party inspection through the agency approved by MJP is compulsory for following electrical and mechanical equipments.
- | | | |
|---|---|--|
| a) Submersible Pumps | - | 20 HP & above. |
| b)V.T. Pumps (Oil / Water lubricated) | - | 30 HP & above. |
| c)Centrifugal coupled pump stets | - | 50 HP & above. |
| d)Centrifugal mono block pump | - | 15 HP & above. |
| e)Electric motors | - | 100 HP & above. |
| f)Auto transformer starters | - | All |
| g)Soft / Gentle start starters | - | All |
| h)L.T. Panel & L.T. breaker | - | Connected load of 100
HP and above |
| i)Transformers | - | 315 KVA & /above |
| j)L.T. Cable | - | 300 sq. mm. and above
if length is 300 m & above. |
| k)H.T. Cable | - | 95 sq. mm. & above & if
length required is 300 m & above. |
| l)H.O. T. Crane / mono rail | - | 3 MT & above. |
| m)Capacitor | - | 50 KVAR bank or above |
| n) Multi programmable automatic control unit
/ Motor protection relays | - | All |
| o)Voltage stabilizer | - | Above 25 KVA |
| p)Water hammer control device. | - | All |
- 14) Except pumping machinery and water treatment plant, the sluice valves and air valves of all makes as per approved list of MJP from time to time are only acceptable. For sub works of water treatment plant and pumping machinery, the makes of Sluice valves and air valves acceptable are IVC Kirloskar and IVI only

... 17.3.2010 ...

1) x-0x%0a00 ...

^00=0 -1 : ... ^00=0 -2 : ... ^00=0 -3 : ...

2) A0%0 0E0'0 ...

3) A000Y00'0 ...

4) 0'0 =0E , ...

5) m00'0-0'0'0 ...

**CONDITIONS FOR MATERIALS (PIPES, CEMENT M.S. H.Y.S.D.BARS ETC.,)
TO BE BROUGHT BY CONTRACTOR**

1. All materials such as pipes, cement, mild steel, HYSD bars, bulk asphalt etc required for execution of work shall be brought by contractor at his own cost.
2. The contractor shall maintain the record of these materials (Cement Steel etc). In the prescribed proforma and registers as directed by Engineer in charge. The sample of prescribed proforma is attached at the end . These registers shall be signed by both contractor and representatives of Engineer in charge. These register shall be made available for inspection, verification for the Department as and when required. These registers shall be in the custody of Department and shall be maintained by the Department.
3. The materials required only for this work shall be kept in the godown at site. No material shall be shifted out side of the godown except for the work for which this agreement is entered without prior approval of the Engineer-in-charge.
4. The material i.e pipes, cement, steel bulk asphalt etc brought on the work site shall be accompanied with the necessary company / Manufacturing firm's test certificates. In addition these material shall be tested as per frequency prescribed by the Department and the cost of such testing shall be borne by the Contractor. If the test results are satisfactory then and then only the material shall be allowed to be used on the work. If the test results are not as per standards, these materials shall be immediately removed from the work site at Contractor's cost. In case of cement, if so required by the Contractor in writing, material will be allowed to be used before receipt of the test results but this will be entirely at the risk and cost of the Contractor.
6. At these material i.e pipe, cement, steel, etc, shall be protected from any damages, rains etc. by the Contractor at his own cost.
7. The contractor will have to erect temporary shed of approved specifications for storing of above materials at work site having double lock arrangement (by double lock it meant that godown shall always be locked by two locks, one lock being owned and operated by contractor and other by Engineer-in-charge or his authorized representatives and the door shall be openable after both locks are opened)
8. If required, the weighment of cement bags/steel, etc. brought by the contractor shall be carried out by the contractor at his own cost.
9. The contractor shall not use cement and other material for the item to be executed outside the scope of this contract. Except for such ancillary small item as are connected and absolutely necessary for execution of this work as may be decided by the Engineer-in-charge.
10. Semmittee is not responsible for the loss in cement, steel bulk asphalt etc. during transit to work site. the cement brought by the contractor at the work site store shall mean 50 kg. equivalent to 0.0347 cubic meter per bags by weight. The rate quoted should correspond to this method of reckoning. In the case of ordinary / controlled concrete, if cement is found short, the shortage/shortages will be made good by the contractor at his cost.
11. Indemnity: The condition regarding indemnity as defined earlier will apply mutatis mutandis in case of material brought by contractor at the site for the execution of the work being executed under this contract.
12. In case of materials brought by the contractor become surplus owing to the change in the design of the work, the materials should be taken back by the contractor at his own cost after prior permission of the Engineer-in-charge.
13. All empty cement bags or empty asphalt drums shall be the property of the contractor and the same shall be removed immediately after completion of the work.

QUALITY ASSURANCE AND MAINTENANCE MANUAL

To ensure the specified quality of work which will also include necessary survey temporary works etc. the contractor shall prepare a quality assurance plan and get the same approved by the Engineer -in charge within one month from the date of work order. For this, the Contractor shall submit an organization chart of his technical personnel to be developed on the work along with their qualifications job descriptions defining the functions or reporting, supervisors inspecting and approving. The contractor shall also submit the list of tools equipment and the machinery and instrumentation which he propose to use for the construction and for testing in the field and or in the laboratory and monitoring. The contractor shall modify supplement the organization chart and the list of machinery, equipment's etc. as per the directions of S.R.T.M.U. and shall deploy the personnel and equipment on the field as per the approved chart and the list respectively.

The contractor shall submit written method statements detailing his exact proposals of execution of the work in accordance with the specifications. He will get these approved from the Engineer -in-charge. The quality of the work shall be properly documented through certificates, records, check lists and log books of results etc. Such as records shall be compiled from beginning of the work and be continuously updated and supplemented and this will be the responsibility of the contractor. The forms should be got approved from the Engineer-in-charge.

The contractor shall prepare and submit detailed, completion drawing after completion of the work. He shall also prepare and submit a maintenance manual giving procedure for maintenance, with the periodicity of maintenance works including inspections, tools and equipment to be used, means of accessibility for all parts of structure. He shall also include in the manual the specifications for the maintenance work that would be appropriate for the technique of construction. This manual shall be submitted within the contract period.

DRAWINGS

CONTRACT DRAWINGS:

The Contract Drawings provided for tendering purpose with the tender documents shall be used as a reference only. Contractor should visualize the nature of type of work contemplated and to ensure that the rates and prices quoted by him in the bill of quantities take due considerations of the complexities of work involved during actual execution / consideration as experienced in the field.

The tendered rates / prices for the work shall be deemed to include the cost of preparation, supply and delivery of all necessary drawings, prints, tracings and negatives which the contractor is required to provide in accordance with the contract.

DOCUMENTATION:

If so ordered by the Engineer-in-charge, the contractor will prepare drawings of the work as constructed and will supply original and three copies to the Engineer who will verify and certify these drawings.

Final as constructed drawings shall then be prepared by the contractor and applied in triplicate along with a micro-film of the same to the Engineer for record and reference purpose at the contractors cost.

SCHEDULE OF INTERMEDIATE PAYMENT**FOR SUB-WORK OF RISING / GRAVITY MAIN & DISTRIBUTION SYSTEM**

A	Providing of pipes and specials	
	1) On supply of pipes with requisite test reports	80%
	2) After laying	10%
	3) After hydraulic testing	10%
B	Laying and jointing with cost of jointing material, labour etc.	
	1) After laying and jointing	75%
	2) After hydraulic testing	20%
	3) After satisfactory refilling	5%

FOR SUB-WORK OF ELEVATED SERVICE RESERVOIR

1)	On approval of design	-	2%
2)	Excavation & PCC	-	2%
3)	On completion of footing	-	5%
4)	Staging half height	-	13%
5)	Staging full height	-	14%
6)	Bottom slab compete	-	22%
7)	Vertical wall half height	-	7%
	Full height	-	8%
8)	Roof slab	-	7%
9)	On completion of spiral stair case / M.S. ladder	-	3%
10)	On completion of plastering & finishing	-	1%
11)	On erection of pipes, vales & constructions of chambers	-	3%
12)	Hydraulic testing	-	10%
13)	Other Misc. items as per A/T including snowcem, painting, water level indicator, lightening conductor, M.S. ladder & name plate etc.	-	3%
			<u>100%</u>

Note : As 10% for hydraulic testing is provided at Sr. No. 12 above, no further deductions from any of the other percentage is necessary towards hydraulic testing.

GENERAL CONDITIONS

1. Unless otherwise specifically provided for either in tender items or in specifications or in the schedule of supply of materials, all items in the tender are inclusive of cost of all materials required for the execution of the items and these, as are provided as per relevant ISS or standard specifications.
2. All the materials used in the work shall be best quality and any materials rejected shall be removed from the site within 24 hours.
3. All other rules regarding Workmen's Compensation, etc. shall be binding on the Contractor.
4. All items to be executed in the course of the work have to be executed by the Contractor as specification in the P.W.D. Hand-books, the books of standard specifications, published by the Public Works M.C. of Government of Maharashtra, relevant I.S. specifications, latest editions, and practice in vogue, at the rates as per rules of the M.C. and conditions of agreement in this respect. The Contractor shall be responsible and liable to pay for damage to public property caused by him. He should keep the accounts of such materials in suitable book which would be available for inspection to the Engineer-in-charge. The Contractor shall be responsible for proper handling and safe custody of all material delivered by him for use on work. The material including pipes shall be procured by the Contractor as per requirement of work and no excess material shall be procured. Only used material shall be paid to the Contractor.
5. For all accidents on the contracted works, the Contractor shall be responsible to pay the compensation to the sufferer or his legal dependants as per the Legal Compensation Act in force.
6. The Contractor shall engage an authorized agent or an experienced qualified supervisor for the work capable of managing and guiding the work on his behalf. He shall take such orders as may be given to him by the Engineer-in-charge from time to time and shall be responsible to carry them out promptly.
7. A work order book shall be maintained at the works site. The Contractor shall sign the orders given by the Engineer-in-charge and Sub-Divisional Officer and shall carry them promptly. After completion of the work, the work order book shall be surrendered to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .
8. Quantities given in the tender are approximate and are liable for variation. Excavation of the trenches will be according to actual strata met with. The Contractor shall have no claim for compensation on account of any variation in the quantities and also for any variation in the depth for trenches shown in the drawings.
9. The Contractor shall at his own expenses make all necessary provisions for housing, water supply and sanitary arrangements for his employees and for the work under tender shall pay direct to the authorities concerned all taxes and other charges. The Contractor shall also comply with all requirements of the Health in regard to antimalaria.
10. All items occurring in the work and as found necessary in actual execution shall be carried out in workmanship like manner as per specifications given in P.W.D. Hand Book and as per the current specifications prevalent in Municipal Council, Basmat, as per orders of the Engineer-in-charge; as stated above.

11. It must be clearly understood that the conditions of the contract and specifications are intended to be rigidly enforced and no relaxation on the ground of conditions prevailing is to be allowed.
12. The Contractor will be entirely responsible for breach of laws of local bodies, Government, etc. while using private or public conveyance procuring and stacking materials. Employment of labour etc. and he will meet out all expense in this contract without any claim whatsoever on the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . and the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . shall not take any responsibility on this account.
13. Before entering any property, plot, land, premises or areas etc., the Contractor shall make his own independent investigation through the Collector or Inspector of Land Records, etc. on his own about the ownership of the plot, etc. and he will be liable for action for act of encroachment, trespass, etc. committed by him or his labour or for the steps taken by the party concerned.
14. The Contractor shall have to clear the site of work before the commencement of work and after the completion of the work without any extra cost. The Contractor shall construct at his cost a temporary shed of about 20 sq mt. as per specification, carpet area for use as office for inspection of the work by the officers and for discussing the details of work writing work order, etc. Necessary furniture such as chairs, tables, wooden box, etc. will be constructed and provided for within fifteen days from the date of receipt of work order. It will be maintained properly till the work is completed. The shed and furniture will be allowed to be taken back by the Contractor after the work is completed. The Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . shall not pay any rent, charges for the shed, etc. and no Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . 's materials will be issued by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . for this shed.
15. A jeepable service road, wherever necessary shall be provided and maintained by the Contractor at his cost till the completion of the work.
16. The Contractor shall arrange for final lineout of works at his own cost and under supervision of responsible representatives of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .
17. All cement concrete shall be machine mixed and machine vibrated unless otherwise instructed by the Engineer in charge.
18. The Contractor shall furnish a list of machinery in his possession which he proposes to use on the work.
19. The Contractor shall follow the instruction in general under notes for guidance of page I and II of the P.W.D. Hand Book Volume I.
20. Labour Regulation
The Contractor will have to abide by the provisions made under the Contract Labour (Regulations and Abolition) Act 1970 and Rules made thereunder by Government of Maharashtra. License shall have to be produced prior to starting of work.
21. Permission for constructing head works will be given by competent authority only. Yield test of source well is given by contractor and same is recorded in MB.

SPECIAL CONDITIONS OF CONTRACT

General

1. The quoted rate shall be total rate for the completed item of work as per the specifications, and shall be inclusive of all incidental charges such as lifts, leads for materials, water for construction, etc. The rates for excavation are inclusive of the fine edge of excavated pit beyond foundations.
2. The tenderer must obtain on his own responsibility and his own expenses all the information which may be necessary for the purpose of making a tender and for entering into a contract and must consider and satisfy himself with all local conditions, sites and quarries, means of accesses, the nature of rock, material to be met with in all execution and all materials pertaining to work.
3. Specifications of item stipulated for other sub works, shall be made applicable, where relevant.

Outline of Works

1. The work will be on the lines of plans attached to tender documents. The plans are, however, liable to be changed and strata as shown there is approximate.
2. The items of work and their approximate quantities are given in Schedule-B of the tender.

Unit

1. The rates quoted for each item are for units mentioned in Schedule-B against each item.

Site Conditions

1. It shall be presumed that the Contractor has satisfied himself as to the nature and location of the works, general and local conditions, particularly those bearing on transport, handling, storage of materials, availability of labour, weather conditions and has estimated the cost and quoted his rates accordingly. Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . will bear no responsibility for lack of such acquaintance with site conditions and consequences thereof. The Contractor satisfy himself for accuracy of the details for given information, drawings & data of the site & water quality. However the final responsibility for all the information shall be that of contractor. The contractor shall be presumed of have visited the site, sampled the raw water, confirmed the availability of all the chemicals, checked all the particulars such as levels, dimensions etc. personally. The contractor shall verify himself the foundation conditions by independent explorations before quoting the offer. No claims on this account shall be entertained.
2. Set of tender documents and conditions (upto a maximum of three sets) at the discretion of the Engineer in charge, will be supplied to the Contractor after acceptance of tender.

Extra, Omissions and Discrepancies

In all cases of the omissions, doubts or discrepancies in the dimensions of the drawing and items of works, references shall be made to the Engineer in charge, whose elucidation and elaboration shall be considered final.

Supply of Material by the Contractor

1. The Contractor should supply all materials mentioned in Schedule 'B'. This shall be conforming to relevant ISS. CI/DI/PVC/AC/PSC/MS/GI pipes and valves of various makes and CID joints will be accepted only after due inspection of SGS, RITES or Suptendence Company of India Pvt. The charges for the same shall be borne by

the Contractor. Items such as valves, specials, etc. shall be as per relevant ISS. Third party inspections shall not be insisted. for P.V.C. specials so also sluice vales, air valves and specials required for single village W.S.S. shall not be insisted for third party inspection.

2. Other materials such as cement, tor steel, etc. shall be conforming to relevant ISS. Testing charges for cement, tor steel shall be borne by the Contractor. L & T / Orient / Ambuja / Coromandal king cement of 43 grade shall be used for water retaining structures. Cement of Birla Gold, Ambuja, Vasavdatta, Orient, ACC & Rajashree can be used for other works. The cements shall be of 43 grade conforming to IS 8112/1989.
3. 90% of procurement price will be paid to the contractor on receipt of pipes, valves, etc. with due inspection on site, 5% shall be released after lowering laying & 5% shall be released after satisfactory hydraulic testing.
4. The Contractor shall provide, at the site of work satisfactory storage for not less than one month's average consumption of works and shall keep the cement stored in a manner that will satisfy the Engineer in charge. The arrangement of storage and utilization of cement in the order of its arrival at the stores and the Contractor shall maintain satisfactory records, which would at any time show the dates of receipt and proposed utilization of cement lying in the storage.
5. The Engineer in charge-in-charges shall at all the times have access to the stores and sites, method of storage records, and security provided by the Contractor. The Contractor shall comply with instructions that will be given by Engineer in charge, in this behalf.

The Contractor shall further at all times satisfy the Engineer in charge on demand by production of books, of submission of returns in proforma as directed, other proof. that the cement supplied is being used for the purpose for which it is supplied and the Contractor shall at all times keep his records up-to-date and available to the Engineer in charge.

ACQUAINTANCE WITH SITE CONDITIONS & WORK CONDITIONS

1. The Contractor shall study the site conditions, general conditions and data included in the tender papers and get it verified from actual inspection of the site etc. before submitting the tender. In case of doubts about any items or data included in this tender or otherwise, it shall be got clarified by applying in writing to the Engineer in charge, 15 days in advance before date of submission of the tender. Once the tender submitted, it shall be considered that the Contractor has verified and made himself conversant with all the details as required for quoting the rates and completing the work as per tender conditions and specifications.
2. Contractor shall not sell or otherwise dispose off or remove except for the purpose of this contract, the rubble, stone metal, sand or other material, which may be obtained from any excavation, made for the purpose of the contract. All such materials shall be Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . 's property and shall be disposed off in the manner and at place as may be directed by the Engineer-in-charge. Contractor may with the permission of the Engineer-in-charge in writing and when directed by him, use any of the materials free of cost.
3. Other unforeseen items to be done in the course of work will have to be done by the Contractor as per specifications in P.W.D. Hand Book Volume I and II and will be paid at mutually agreed rates, ISS and standard practice in vogue.

Extra charge of claims in respect of extra work shall not be allowed unless the work to which they relate are in the spirit and meaning of the specifications or unless such works are ordered in writing by the Engineer-in-charge and claimed for in the specified manner before the work is taken in hand.

Materials

4. The Contractor shall make his own arrangements for obtaining rubble, Khandki, headers, metal, sand, murum, etc. from Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . or private quarry. Applications of the Contractor for reasonable area of Government land required for this purpose can be recommended to Revenue Authorities without any guarantee of making the land for quarry available.

All the materials involved in the construction shall be of best quality and specifications and shall be got approved from the Engineer-in-charge before use. If necessary, materials shall be got tested from the Laboratory at his cost. Samples requiring approval shall be submitted by the Contractor to the Engineer-in-charge in good time before the use of each material. The samples shall be properly marked to show the name of the materials place.

5. The Contractor shall provide all labour, skilled as well as unskilled, pegs lime, strings, site-rails (wooden as well as steel, etc.) as and when required as per approved design and make available such other materials for surveying, lining out, setting out, checking of work, taking measurements, testing of hydraulic and other structures, without any payment by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . to him. He will also provide proper approach and access to all his works and stores without any extra cost over his tendered rates for the items to be inspected.
6. Rates quoted include clearance of site (prior to commencement of work and its closure) in all respects and hold good for work under all conditions of sites, moisture, weather, etc.
7. Failure to comply with any of the above instructions will result in the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . 's doing the needful

at the risk and cost of the Contractor. These conditions are for all items and as such no extra payment shall be made for observing these conditions.

8. The Contractor shall make his own arrangements for quarrying of rubble, stone, murum, sand, lime, metal, etc.
9. Overburden in a quarry will have to be removed by the Contractor at his own cost.
10. Unless a separate item is provided in Schedule "B" minor dewatering of foundations in excavation and during the construction of foundation masonry if required shall be done by the Contractor without claiming extra cost.
11. Masonry shall be kept wet for at least 15 days and concrete work shall be kept wet for at least 21 days commencing from the date of its final laying in position. In case during execution curing is found inadequate, it will be carried out by Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . and the cost thereof shall be recovered from the Contractor. The Contractor shall make his own arrangements for getting water at site at his own cost.
12. The proportion of cement concrete specified in the Schedule 'B' are nominal and are only an indication of approximate proportion of cement, fine aggregate and coarse aggregate which may have to be altered suitably at site to obtain the desired strength and workability. However quantity of cement shall not be less than the one specified below.

13. Site Office

1. The Contractor shall have to construct and provide laboratory cum sample room and site office with toilet for the supervision staff of the Employer in addition to his site office, godowns, etc. All these structures shall be semi-permanent in nature and shall be constructed by the Contractor at his own cost as per the plan prepared and approved by the Employer.
 2. The site office, laboratory cum sample room shall be independent structures or shall be housed under one roof. The site office shall have a cabin for the client well equipped with computer facility.
 3. The sample room shall be meant for keeping the samples of materials and the same shall be the sole property of the Employer to be supplied free of cost by the Contractor.
 4. A room for site laboratory shall be provided, maintained and equipped by the Contractor at his own cost.
14. As per provision in the tender, after receipt of work order it is binding on the contractor to submit the work programme within 15 days to the Engineer incharge for approval in the work programme the contractor will have to give the quantity of each item. Its amount and other details to be examined monthly to the Engineer incharge this programme without doing any change in the date of commencement and period of contract, form a monthly progress of quantities of times to be executed will be finalized by the Engineer incharge with justification if any and communicated to the contractor within 15 days from the date of receipt of such programme form the contractor.

Nominal Mix

1:1.1/2:3 (M200) 7.90 bags/one cum of Cement Concrete

1:2:4 (M 150)	6.27 bags/one cum of Cement Concrete
1:3:6 (M 100)	4.42 bags/one cum of Cement Concrete
1:4:8 (M80)	3.39 bags/one cum of Cement Concrete

In case of major items of concrete for RCC works, the Contractor shall prepare test blocks as per IS Specifications for testing its tensile and compressive strength at his own cost. These blocks will be tested in any of the Government Test Laboratories at the cost of the Contractor. The number of test blocks, frequency, etc. shall be as per ISS 456/1978 (Cl.-14) and acceptance criteria of concrete shall be as per clause 15 of ISS 456-1978. Also in accordance with letter No. MJP/MS(T)/TS-1/350 dt 7.1.98

15. Damages by Floods or Accident

The Contractor shall take all precautions against damage by floods and from accidents. No compensation will be allowed to the Contractor for his plant, material and works, etc. lost or damaged by floods or from other causes. The Contractor shall be liable to make good any part of material which is in charge of the Contractor and which is lost or damaged by floods or from any other cause. If the work executed is damaged, trenches filled due to any reason, Contractor shall have to make it good at his cost only.

16. Testing of Structure

In the case of work which creates reasonable doubts about the quality of workmanship or of materials used in the construction, the Superintending Engineer may order the Contractor to satisfy the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . by carrying out a suitable load test or test of the structure or parts thereof, in the manner as prescribed in Clause - 16.5 on Page No. 45, The Indian Standard Code of Practice for, plain and reinforced concrete for general building construction or as may be approved by him, in regard to the sufficiency of the strength as designed and in the event of any deficiency being noticed as a result of the test, the Contractor shall carry out necessary strengthening or dismantling as may be directed by the Superintending Engineer.

The Load test and strengthening or dismantling whenever directed shall be carried out by the Contractor entirely at his risk and cost and to the entire satisfaction of Engineer-in-charge or his authorized agent and till then the work shall not be considered to have been completed. No payment for dismantled work shall be made.

17. Supply of Rate-analysis in case of Extra Items

In case of the EIRL, the Contractor shall supply Rate Analysis based on labour and material in case he is called upon to do so.

18. Water required for Construction

The Contractor has to make his own arrangement at his cost for water required for construction, testing, filling, structure, etc. either from local bodies or from elsewhere, by paying the charges directly and arranging tankers, etc. as per necessity. No claim for extra payment on account of non-availability of water nearby or extra lead for bringing water shall be entertained. All required piping arrangements and pumping if required for water shall be made by the Contractor at his cost. If Contractor fails to pay the water charges to local bodies or private parties, these shall be recovered by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . from his bills. In case Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . 's water supply is available, a connections at a suitable place may be sanctioned but, all further arrangements of pumping if required, piping, etc. shall be done by the Contractor at his cost, and water charges in such a case, shall be paid

by the Contractor at the rates as decided by the Engineer in charge, which shall be final and binding on the Contractor.

Whenever Schedule 'B' Provides for any dewatering item, payment shall be admissible under that item, but apart from that item, no extra claims for dewatering required for executing various tender items, and for executing such items in wet condition shall be entertained as all these expenses are deemed to be included in the dewatering item.

19. Leads and Lifts

Unless otherwise specifically mentioned in the tender item, the tendered rate for all items in tender shall cover all lifts and leads encountered for the execution of the work as directed and no extra claims for additional lifts and leads shall be entertained.

20. Unless otherwise specifically provided for in the tender or a separate item is provided in Schedule 'B', all the sides of excavated trenches after the work is completed or in progress are to be filled by the Contractor to the original ground level from excavated stuff at no extra cost to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . .
21. Unless otherwise specifically mentioned in tender items, the net dimensions of RCC or CC Members actually cast are only admissible for payment under RCC or plain CC items. No increase in dimensions due to plastering or finishing shall be admissible for payment under RCC or plain CC items.
22. Cement that will be supplied by the Contractor shall be in Jute/PVC bags.
23. No claims for any desilting of trenches, foundation, etc., filled due to floods, untimely rains, or any other reasons whatsoever shall be entertained and Contractor shall have to do this desilting operation together with dewatering operations entirely at his cost.
24. Electricity supply required for construction of work/labour camp, etc. shall be arranged by the contractor at his own cost.

**RURAL WATER SUPPLY DIVISION
ZILLA PARISHAD WASHIM**

Name of work : Repairs of Village Water Supply Scheme At ----- Tq----- Dist.Washim

DATA SHEET FOR RAW WATER RISING MAIN WORKS

Location	PVC PIPE			GI PIPE			VALVES					
	Pipe	Dia.&Class	Length	Pipe	Dia.&Class	Length	Air Valve	Sluice Valve	Sluice Valve for scoure.			
									-			

Contractor

No. of Corrections

Sarpanch/Sachive

**RURAL WATER SUPPLY DIVISION
ZILLA PARISHAD WASHIM**

Name of work : Repairs of Village Water Supply Scheme At ----- Tq----- Dist.Washim

DATA SHEET FOR RAW WATER PUMPING MACHINERY & PURE WATER PUMPING MACHINERY

Pure water pumping machinery at Head Works				Pure Water pumping machinery at Proposed W.T.P.				Pure Water pumping machinery at Existing W.T.P.			
Discharge	Head	Type	Standby	Discharge	Head	Type	Standby	Discharge	Head	Type	Standby
							-	-	-	-	-

Contractor

No. of Corrections

Sarpanch/Sachive

**RURAL WATER SUPPLY DIVISION
ZILLA PARISHAD WASHIM**

Name of work : Repairs of Village Water Supply Scheme At ----- Tq ----- Dist.Washim

DATA SHEET FOR PROPOSED R.C.C. E.S.R.

Name of the area	Capacity	G.L. in m	L.S.L. m	F.S.L. m	Staging height in m	Bearing capacity T/m ²	Type of construction	Dia. of pipe in mm			Dia. of Sluice valves in mm			
								Inlet	Outlet	Washout & overflow	Inlet & bypass	Outlet	Washout	

Contractor

No. of Corrections

Sarpanch/Sachive

ZILLA PARISHAD WASHIM

GRAMPANCHAYAT ----- TQ----- Dist-WASHIM

Name of work : Repairs of Village Water Supply Scheme At ----- Tq----- Dist.Washim

DATA SHEET FOR DISTRIBUTION SYSTEM

Name of town	Length & Dia of Pipe & type of distribution mains P.V.C. 4 kg/cm² PIPE & GI pipe								No. of stand posts	No. of cattle troughs
	200 mm	140 mm	110 mm	90 mm	75 mm	GI Pipe 100 mm	GI Pipe 80 mm	GI Pipe 65 mm		

Contractor

No. of Corrections

Sarpanch/Sachive

ANNEXURE 'A'

ITEMWISE DETAILED SPECIFICATION

General

Following specifications are in amplification OR in addition to the specification for the respective items given in P.W.D. Hand Book Volume I and II (Later Edition), Red Book of Government of Maharashtra and shall strictly adhered to. Relevant ISS shall also be referred.

Alignment

Alignment and line out for the work is to be given by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. officials and the work shall be carried out as per the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. line out and alignment for which Contractor has to provide at his cost all materials such as sight-rails, honing rods, peggails, chumnam flags, etc. and also the required labour for line outs. The cost of constructing pillars, platforms for temporary benchmarks is also to be borne by the Contractor.

IDS 1 Excavation in Soft Materials and Hard Materials

The classification for all excavation met with shall be in two categories only, as under:

Soft Materials

Soft material shall include all types of earthy or sandy materials, soils of all types, clay, soft, average hard murum i. e. all kinds of disintegrated rock, shingles, clay, sand, made-up soils, bricks, bats and isolated boulders upto the size of 0.1 cum. The excavation macadam bound surfaces shall also be classified in soft materials.

Hard Materials

Hard materials will include boulders of size bigger than 0.1 cum, all types of rock, soft and hard, which can be best removed by blasting. Blasting will not be permitted in inhabited localities or in vicinity of properties, where damage to human life and property will be involved in the opinion of the Engineer in charge and in that case work will have to be done by chiseling and the like methods in the same tendered rates. By the term "SOFT ROCK" is meant rock in masses but of a softer variety, crystalline in structure, which is otherwise like hard rock. It only indicates the degree of softness, but will not include the disintegrated masses of rock, which generally have fractures or cleavages. Soft rock can be removed by a pick but mass removal, blasting has to be done. On hard rock a crow bar or a pick will only rebound removing but in significant quantity. The excavation in asphalt or concrete shall be classified as hard materials.

- 2) For pipe line trenches the classification for excavation met with shall be in one category only and is as under:

Under this item the excavation shall be carried out in earth, all types of soils, soft and hard murum, boulders, W.B.M. road and concrete road, old cement and lime masonry foundation, soft rock and hard rock by blasting wherever possible by chiseling by wedging, by line drilling by mechanical means. The items include cost of all materials and labour together with removing of the excavated material upto a distance of 50 m beyond the excavated boundary as directed. The excavated hard

rock shall be stacked in measurable heaps as directed. The item also includes cost of normal dewatering i.e. dewatering without employing pump sets i.e. dewatering done by bailing out of water manually.

The excavation shall be taken down to such depths as shown in drawing and/or as directed and shall be done in extra sections shown in drawings and stipulated in specifications elsewhere herein. Extra excavation done over and above specified for whatever reasons shall not be paid for. The bottom of the foundation shall be perfectly leveled before concrete or masonry is put in and shall be watered and thoroughly rammed. No filling will be allowed for bringing the foundation pit to level.

The excavation shall be taken down to such depths as shown in drawings and /or as directed and shall be done in extra sections shown in drawings and stipulated in specifications elsewhere herein. Extra excavation done over and above specified for whatever reasons shall not be paid for. The bottom of the foundation shall be perfectly leveled before concrete or masonry is put in and shall be watered and thoroughly rammed. No filling will be allowed for bringing the foundation pit to proper level.

The excavation may go down deeper by 3.0 M more to reach proper foundations and arriving certain levels, etc. for which necessary payment shall be made.

The section of excavation, however, may be increased correspondingly, if necessary, as directed by the Engineer in charge, for such extra depths and such increased section as directed by Engineer in charge, shall be admissible for payment at respective tendered rates.

All foundation pits shall be filled on the sides of masonry and concrete by the excavated stuff to the original surface of ground as required, watered and rammed, in 20 cms. thick layers and the tendered rate includes this operation.

Excavated material from foundations shall not be placed nearer than 1.2 M from the edges of excavation.

In case of excavation in town and inhabited places, it shall be strongly fenced and lighted during night by red lights in charge of watchman at Contractor's cost. Material should not be dumped on road.

Unless otherwise specific lifts and leads are mentioned in the tendered item, the tendered rate shall be for all lifts and leads involved in the work. The Contractor shall provide shoring and strutting of approved size and type for normal conditions wherever necessary for excavation in soft materials without extra cost unless otherwise provided for in separate tender item.

Excavation carried out in excess of the width specified shall be at Contractor's own risk and shall not be measured. So also the excavation carried out in excess of the required depths shall be made good to the required level by either concrete or masonry of proportion as directed by the Engineer in charge without extra cost. The tendered rate for excavation items shall include lifting and removing the excavated materials for proper disposal in the vicinity as directed by the Engineer-in-charge. Nothing extra shall be paid for removal of masonry concrete structures or for removal of stumps or roots or trees met with during excavation and for filling of holes or hollow due to removal of roots, etc. or existing originally which shall be filled up by earth and will be rammed and leveled.

The pay line allowed for excavation for wells in various strata shall be limited to the following

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V

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In soil	1-1/2	:	1
In Soft murum	2/3	:	1
In hard murum	1/2	:	1
In rock	1/10	:	1

The excavation for well shall be carried out with the above side slopes only. The excavation done beyond their slopes is not admissible for payment. If the excavation is done with lesser slopes than mentioned above, the payment shall be restricted to the actually excavated slopes.

If there is no separate item of dewatering in the tender, the Contractor's tendered rate shall include manual bailing, draining of the trench and the excavation shall be kept free from, water, while the work is in progress in a manner as may be directed by the Engineer in charge. When there is a tender item of dewatering then payment shall be admissible under dewatering required for all items in the tender from start till its completion. In either case the excavation item shall be dry as well as in wet condition, unless otherwise items exists for wet excavation.

In case of pipe trenches, Engineer-in-charge may reduce the width of trench wherever the hard strata met with, if he feels adequate and just sufficient to lay the pipeline in order to reduce the hard quantity. In such cases the contractor will be paid in the actual. measurements. No extra cost will be paid for putting the pipe all along the trenches before laying in the trenches.

Average width of excavation trenches that shall be admissible for payment for various diameters of pipelines (excepting PVC pipes) shall be as under.

No.	Internal dia. of pipe	Width of excavation of trench	Nature of Strata
1.	80 mm and below	0.70 M	In soft and hard material
2.	100 mm	0.75 M	In soft and hard material
3.	150 mm	0.75 M	In soft and hard material
4.	200 mm	0.85 M	In soft and hard material
5.	250 mm	0.85 M	In soft and hard material
6.	300 mm	0.90 M	In soft and hard material
7.	350 mm	0.95 M	In soft and hard material
8.	400 mm	1.10 M	In soft and hard material
9.	450 mm	1.15 M	In soft and hard material
10.	500 mm	1.20 M	In soft and hard material
11.	550 mm	1.25 M	In soft and hard material
12.	600 mm	1.25 M	In soft and hard material
13.	700 mm	1.30 M	In soft and hard material
14.	750 mm	1.40 M	In soft and hard material
15.	More than 750 mm	O.D. + 0.60 M	In soft and hard material

In case of PVC pipes following trench widths shall be adopted.

No.	Internal dia. of pipe	Width of excavation of trench	Nature of Strata
1.	Upto 110 mm	0.70 M	In soft and hard material
2.	140 mm	0.75 M	In soft and hard material
3.	160 mm	0.75 M	In soft and hard material
4.	180 mm	0.80 M	In soft and hard material
5.	200 mm	0.80 M	In soft and hard material
6.	225 mm	0.80 M	In soft and hard material

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7.	250 mm	0.85 M	In soft and hard material
8.	280 mm	0.90 M	In soft and hard material
9.	315 mm	0.90 M	In soft and hard material

Any width excavated more than above shall not be measured and paid for.

The Contractor shall carry out extra excavation for collar pits at joints wherever necessary and such extra collar pit excavation shall not be admissible for payment and will not be measured.

During excavation and till the trenches are properly refilled, if any public or private water tap connections, telephone wires, cables, etc. are damaged, the Contractor shall reinstate them at his cost.

The Contractor shall at his own cost give the satisfactory hydraulic testing which shall include all labour cost of water to feed and while testing, repairs required shall have to be carried out by the Contractor. No extra cost shall be paid.

IDS 2 Refilling Trenches of Pipelines

In no case the Contractor shall be allowed to refill the trenches in hard-excavated portion to be refilled by the boulders or the excavated stuff. This portion of trench shall be refilled by the soft murum or soft strata from excavated stuff from distant place. No extra cost shall be paid.

After the pipelines are laid, jointed and tested, the refilling of trenches with excavated stuff shall be done approximately in 20 to 30 cms. higher than road or natural ground level, to allow for sinking afterwards. This refilling shall be done in 15 cms. thick layers, duly watering compacting, each layer. The 15 cms thick layer immediately in contact on or under pipe shall have no stones or chips, but only soil or soft murum selected from the excavated stuff after refilling. If it is sunk below the road level after some time till completion of work, the Contractor shall have to make it good at his cost.

Before lowering of all pipes in trenches a layer of murum selected from excavated stuff shall be provided below pipeline for proper grading and to act as cushion, etc.

All Machinery, Piping, Fuel and Lubricating Oils Electricity

Consumption charges, electrical connection charges, etc. required for pumping machinery and together with erecting, labour and running charges are to be borne by the Contractor under this item. The trenches shall be kept free of water during the entire construction and arrangements to dispose off the bailed out water shall be properly made by the Contractor. The job also includes removal of muddy-water, muddy paste, etc.

If at any time during excavation till its completion, the work is filled with water or debris either due to untimely rains or due to underground springs being struck during excavation, slide slips or due to any cause whatsoever, the Contractor shall have to dewater and remove the debris, filled up material, etc. at his cost and no claims for extra rates shall be entertained. Similarly if the coffer dam is constructed for water diversion and is broken, washed away due to any reason, the Contractor shall make it good at his cost and no claim thereof shall be entertained.

If the work is continued for more than one working season, or beyond the stipulated time limit, due to any reason whatsoever, the Contractor has to do all the dewatering and removing and trench clearing operation entirely at his cost. If any accident occurs during dewatering operations or due to coffer dam, etc. on account of any

reason whatsoever, the Contractor shall be fully responsible for and shall have to shoulder all responsibility of compensation, etc. at his cost.

In short, this item of dewatering covers the materials and labour cost for the entire period of excavation from start till completion of work together with all eventualities mentioned above.

Till the work is completed, part rates as mentioned above shall be admissible against this item.

This item is operative only when dewatering operations are actually required to be done during execution and the payment shall be on the basis of units as mentioned in Schedule 'B'.

The dewatering job item is for various units as mentioned in tender item itself.

The dewatering sets or other machinery, if taken on hire from the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, shall be returned by the Contractor after the work is completed in the same condition as was at the time of hire or otherwise the Contractor shall have to pay the repair charges and other charges if any for making it good.

IDS 3 Providing and Fixing M.S. Ladders

Ladder shall be manufactured as per the details provided in the tender drawing. All the material and labour for executing the item are to be provided by the Contractor at his cost. The ladder shall be properly fixed at site as directed and the bottom and top shall be properly embedded in masonry or concrete and duly bolted with nuts and bolts and other arrangement as directed. The bottom if resting on ground shall be embedded in 1:2:4 CC Block as directed at Contractor's cost.

In order to have stiffness to the ladder cross supports or stiffeners at suitable intervals as directed shall be provided of suitable M.S. plates, duly embedded in walls and welded to ladder. The cost of these stiffeners is included in the tender rate. The ladder including stiffeners is to be painted with two coats of anticorrosive paint of approved shade. The rate includes bending, cutting, scrapping the M.S. plates, bars and welding and jointing thereof.

IDS 4 Weep Holes

The tender item includes the cost of PVC or AC pipe, with screen together with the labour charges for fixing it in the staining. The diameter of the pipe should be 63 mm to 90 mm and it may be of any class. The pipe should pass through the width of steining completely and it should be placed at slight inclination so as to facilitate the flow of water as shown in the drawing. On the face of the pipe perforated cement concrete cover shall be fixed in cement mortar to serve as screen to prevent sand, other objectionable materials flowing into jack well and inspection well.

IDS 5 M.S./C.I. Dapuri Type Steps

The cost of providing and fixing M.S. Dapuri steps is included in tender item. The size of M.S. Bar should be at least 22mm diameter and steps manufactured out of these bars shall be properly fixed at 0.30 M c/c distance and at places and in manner as directed. Painting with two coats of anticorrosive black paint is also included in this item.

IDS 6 Murum Bedding

The murum to be used shall be of approved quality soft murum to be laid in 15 cms average thickness to the grade as directed by the Engineer-in-charge. The width admissible for payment shall be the same as per excavation trench width admissible

under excavation item. The murum bedding shall be provided where there is black cotton soil or hard material below pipes or wherever directed and it shall be well rammed so as not to sink the pipeline. Extra excavation for murum bedding, wherever required as above shall be admissible for payment under excavation tender items.

IDS 7 Providing, Lowering, Laying CI/DI Pipes with Tyton Joints

Jointing the pipes with rubber gasket joints. (viz. Tyton Joints)

The tender item covers providing, lowering, laying and jointing of CI/DI pipes as well as CI specials, pipe-pieces, etc., as per requirement and as directed by the Sub-Divisional Officer, by rubber gasket joint viz. Tyton Joints.

The cost of conveyance of these materials from place of the site of work is also included in the tender item.

Tender rate includes jointing CI/DI pipes with providing rubber gasket made out of S.B.R. and including laying and jointing CI specials with lead joints. The rubber gasket should be of the best quality conforming to IS : 12820. The approved makes - orient rubber Nagpur for rubber gaskets for DI & CI pipes & National rubber co. for rubber gaskets for C.I. pipes.

The method of Tyton joint (i.e. Rubber Gaskets) is as under:

The rubber gasket is inserted in the socket of the pipe which is facilitated by applying a thin film of lubricating oil in such a way that the bulb of gasket is forward at the back and the socket and the groove in the gasket should be firmly fixed in the projecting ring inside the socket. The gasket has to be properly cleaned before inserting and it has to be ensured that it fits evenly around the whole circumference of the socket, removing any bulges which would prevent the entry of spigot end, then a thin film of lubricant should be applied to the gasket, inside & outside surfaces of entering spigot end for one inch after cleaning it. The pipe to be jointed should be supported centrally by the tackle, so that it is clear of trench bottom. The spigot of the pipe shall be carefully aligned and inserted in the adjoining socket, until it makes contact with the rubber gasket. The spigot shall be forced inside the socket past the gasket (which is thus compressed) until the spigot reaches the end of the socket. The forceful insertion has to be achieved with crowbars, jacks, and lowers, etc. as per the details given in the literature of TISCO or any other suitable method as directed.

However, before lowering of pipes in trenches a layer of murum bedding from the excavated stuff will have to be provided below the pipeline for proper grading and alignment and also to act as cushion and support to pipe.

Certain breakage results during the course of laying and hydraulic testing. These breakages shall be to the account of contractor and no payment on this quantity is admissible. The final quantity payable under this item shall restricted to the total length laid and successfully

Note

Above procedure with relevant changes will be applicable for the item of lowering, laying and jointing of A.C., R.C.C. pipes also. Lead required for the work should be brought by the Contractor at his own cost and the quality of the same should be got approved. The quantity of lead required per joint shall be as detailed below.

For 80 mm	1.81 kg
For 100 mm	2.20 kg
For 150 mm	3.47 kg

For 200 mm	4.60 kg
For 250 mm	6.74 kg
For 300 mm	7.33 kg

For collar joints measurements will be allowed as two joints.

IDS 9; PVC PIPES

In case of pvc pipes the above relevant specifications shall apply. The cost of jointing material is included in the item of lowering, laying and jointing of PVC pipes. The pipes and couplers should be cleaned thoroughly. Cement solvent should be applied quickly as it is fast drying. The surface temperature should not be more than 45 °C. Assembly jointing should be done till male and female ends of pipe are soft and wet with solvent cement. Excess cement should be removed.

Providing and supplying in standard lengths ISI mark rigid unplasticised PVC pipes for potable water **with rubber ring joints** including cost of rubber ring as per IS 4985-1988, all local and central taxes, transportation, freight charges, transit insurance, inspection charges, loading, unloading, conveyance to store / site and stacking the same in closed shed duly protected from sun rays and rains, etc. complete as directed.

Lowering, laying and jointing with P.V.C. pipes and specials of following diameter including cost of conveyance from stores to site of work including cost of all labour, material except cement solvent, rubber ring, giving satisfactory hydraulic testing as per IS code, etc. complete. (with cement solvent joint / ring fit joint), Working Pressure 10 Kg./Sqm

Following setting time should be observed for newly jointed pipes.

30 min. minimum @ 60 to 100 F	and above (15 to 40 C)
1 hour . minimum @ 40 to 60 F	and above (5 to 15 C)
2 hour . minimum @ 20 to 40 F	and above (-5 to 5 C)
4 hour . minimum @ 0 to 20 F	and above (-20 to -5 C)

Hydraulic Test

Suitable section as directed by the Engineer-in-charge shall be taken for such testing from time to time during progress of the work and satisfactory test given for that section. All testing apparatus, gauges, connections, etc. and water required for testing shall be arranged by the Contractor at his cost. The Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . does not undertake any responsibility to supply water for testing, which the Contractor has to arrange from the municipality or otherwise by paying the required charges directly. The Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . shall have the right to recover such charges from his bills if complaints are received that Contractor has not paid the charges thereof. If there is delay in testing, the Contractor shall refill the trenches for the time being and reopen them at time of testing at his own cost, failure of which shall entitle the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, . . to do the refilling and reopening of trenches at the risk and cost of the Contractor. If the trenches are filled due to any reason whatsoever before testing, the Contractor shall have to open them for testing at no extra cost.

1. Satisfactory hydraulic test shall be regarded when the section under test shall withstand the pressure as specified by the Engineer-in-charge for about 15

minutes without operating the test pump, the test pressure being maintained at the specified figures during that 15 minutes interval.

2. The field test pressure shall be as per circular no. MJR/RCC/322, dated 31-12-1997. After laying & jointing any pipeline, the pipeline must be hydraulically tested to ensure that pipes & joints are strong enough to withstand the maximum pressure likely to be developed under working conditions. All pipe lines should be tested as per the following field test pressures. Field test pressure for MS/DI/PSC/PVC/CI/ concrete pipes. as para 6.4.4.2 of G.O.I. manual on water supply & treatment should not be less than the maximum of the following.
 - a) 1½ times the maximum sustained operating pressure.
 - b) 1½ times the maximum static pressure in the pipe line.
 - c) Sum of maximum sustained operating pressure & the maximum surge pressure.
 - d) Sum of maximum pipe line static pressure, subject to maximum surge pressure, subject to maximum equal to work test pressure for any pipe / fitting incorporated.

The field test pressure for PV.C. pipe line should be 1.5 times the operating pressure i.e. 1.50 times the maximum static pressure. In case of gravity main the static head based is the difference between F.S.L. of source reservoir & lowest invest level of pipe in that section, i.e. the max static head in that section.

The field test pressure should wherever possible be not less than 2/3 work test pressure appropriate to the class of pipe except in case of spun iron pipes & should be applied & maintained for at least four hours. If the visual inspection satisfies that there is no leakage the test can be passed.

Where the field test pressure is less than 2/3 the work test pressure, the period of test should be increased to at least 24 hours. The test pressure shall be gradually raised at the rate of 1 Kg/cm²/min. If the pressure measurements are not made of the lowest point of section an allowance should be made for the differences in static head between the lowest point & the point of measurement to ensure that the maximum pressure is not exceeded at the lowest point. If the drop in pressure occurs; the quantity of water added in order to re-establish the test pressure should be carefully measured. This should not exceed 0.1 lit. per mm of pipe diameter per km of pipeline per day for each 30 M head of pressure applied for CI DI & A.C. pipes where as twice this figure shall be taken for prestressed concrete pipes. For P.V.C. pipes this should not exceed 1.5 lit. per 10 mm of nominal bore for a length of 1 km.

During testing if any joints are found leaky they shall be repaired and/or redone by the Contractor at his cost till the test is found satisfactory. Similarly, any pipes, collars, specials, show hair cracks, leaks, etc. during testing the Contractor shall replace them with sound pipes and specials together with new joints, entirely at his own cost, till a satisfactory test is given. The pipe, specials, etc. which crack during testing will, however, be supplied by the Contractor, replacement free of cost. The hydraulic test shall be given in the presence of the Engineer-in-charge.

20% amount of the item of laying, Jointing of pipeline will be withheld for hydraulic testing.

IDS 10 Fixing of Sluice Valves, Scour Valves, Air Valves, etc.

Unless otherwise specifically mentioned in the tender items the required sluice

valves, scour valves, air valves, etc. shall be supplied by the Contractor. The

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materials supplied shall be flanged as per requirement. The valves are to be carted to the site from supply place, lowered in the trenches and jointed to the pipeline as directed with cost of all jointing materials, such as lead, aloo-rope, rubber packing, nuts and bolts, fire wood, etc. and the labour cost, which included in the tender items. The joints may be either flanged or S & S lead joints depending upon the nature of valves supplied and Contractor shall have no extra claims for any particular type of joint required to be done. The required number of jointing for fixing these valves is included in the tender item. The measurement will be per number of valve and the length for tail pieces will be payable under item of laying and jointing. 90% amount will be paid on its supply and remaining 5 % amount will be released on completion of fixing and 5% on testing.

IDS 11 B.B. Masonry Chamber (Providing and Constructing)

The work is to be done in workmanlike manner as per type designs of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . and as directed. The cost of extra excavation in all strata which is in addition to the pipeline trench excavation is included in this item, while the excavation, covered under pipe line trenches coming in the chamber is admissible for payment separately under the respective tender items of excavation for pipe trenches.

Sizes of chambers mentioned in tender item are the internal dimension of the chamber.

The tender item covers 1:3:6 CC bedding 15 cms thick on the well rammed bottom 23 cms thick BB Masonry walls in CM 1:5 cement plaster 12mm in CM 1:4 from both faces, 1:2:4 CC either plain or RCC as required 10mm thick for coping and providing and fixing R.C.C. M.H. frame and cover. This is a completed item and any incidentals not mentioned above but are necessary as per type design are deemed to be included in this items.

The finished top of the chamber shall be flush with road-surface and shall not cause any hindrance to the traffic.

The measurements shall be on the basis of completed number of chambers.

IDS-11A Air Valve Shaft

This item consists of providing and fixing in position air valve G. I. medium class or M.S. 6mm thick pipe shaft assembly of 2.7 M height. The shaft shall be of diameters specified in the drawing appended. This shaft shall be provided and fixed on the branch flange air valve Tee fixed in pipeline. The item includes providing and making flanged joints with required rubber packing & nut bolts. This items also includes cost of providing and placing M150 concrete 150mm thick around air valve Tee including encasing of vertical shaft in P.C.C. M 150 as shown in the drawing. The Item also includes only fixing of air valve & isolating valve together with providing & fixing required specials for the purpose. The cost also includes R.C.C. raft as shown in the drawing when the strata met is of B.C. soil. But the cost of excavation, air valve Tee & air valve & isolating valves is not included in this item. The works shall have to be carried out as per the drawing & after fixing the assembly, it shall have to be tested hydraulically at no extra cost. The mode of measurement. shall be on number basis for complete assembly.

IDS 12 Providing, Erecting, Laying and Fixing in Position CI/MS Pipes and Specials for Inlet, Washout, Overflow etc.

The item includes providing, erecting, fixing, laying and jointing pipes and specials for inlet, outlet, washout, overflows, etc. as described in tender item. The pipes and the

specials of any category as specified are to be erected and jointed under ground or

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above either in horizontal or vertical or inclined direction as per requirements with all leads and lifts involved in the work. Erection shall be in perfect line and level. Necessary supporting girders, ropes, chain-pulley, etc. if required shall be arranged by the Contractor at his own cost.

The item includes cost of all labour and materials for jointing such as lead, nuts and bolts, rubber packing, etc. The materials shall be procured by the Contractor from open market at his own cost. The tendered rate includes both lead and flanged joints depending upon the nature of pipes and specials and no extra claims for any modification, increase or decrease in joints of any category shall be entertained. In case of lead joints the standard lead consumption for lead shall be as per specification of item of pipe line works.

The cost involved in fixing pipes and specials in walls, etc. together with leak proof arrangements thereof required is included in the tendered rate and no extra claims for any provision required shall be entertained.

Satisfactory hydraulic test shall be given by the Contractor at his cost, which is included in tender item. During testing if any joints are found leaky they shall be repaired at the Contractor's cost.

Pipes if found leaky, cracked, during testing they shall be removed, replaced refixed and jointed with good pipes and specials.

Two coats of anti-corrosive black paint shall be given to the pipe and specials above ground and cost thereof is included in the tender item. The job shall include laying of pipes and specials upto ground, sluice valves for inlet, outlet washout, overflow, etc. and their interconnection, etc. as required and directed by the Engineer-in-charge. The mode of payment shall be 90% on supply of material, 5% after erecting & Laying, and 5% after hydraulic testing.

IDS 14 Road Box

The item includes providing and fixing 225 x 300 mm CI road box including necessary excavation, supporting RCC pipes or BB masonry, etc. complete.

The mode of measurement shall be on basis of each number of completed item.

IDS 15 Providing and Fixing Manhole Frames and Cover, Cowl Type Ventilators

The cost of providing the above items is included in tender item. These are to be properly fixed at place and manner as directed. Painting with two coats of anticorrosive black paint is also included in this item. If locking arrangements are required they shall be done by the Contractor as directed without any extra cost.

IDS 16 Surface Road Boxes with Chamber

The Road Box should be of CI and trapezoidal having a size of 22.5 cm x 30 cm at height. The weight of the road-box should not be less than 18 kgs. The road box should have a hinged corner fixed to the body. The contractor shall produce sample of road box and get it approved and procure the entire number as per approved sample. The item includes necessary excavation, refilling, supporting, RCC pipe (450 mm dia) or BB masonry, etc. complete.

IDS 17 Specification for recuperation test

Taking recuperation test of supply well after completing the required depth of excavation as per tender, etc. complete.

The item includes carrying out recuperation including providing of electrical/diesel pump sets and pipe, etc. The test is to be performed by pumping out the complete

water from well by providing sufficient number of pumps (the total horse power of pumps shall not be less than the horsepower of the pumps included in the scheme). The test is to be carried out as indicated in the Manual on Water Supply and Treatment and as per the instructions issued in circular no. (Marathi) MJP/QC/TB/2597 dated 20-11-1997, vide Appendix V.

Measurement and Mode of Payment

Measurements

The measurements are to be recorded in measurements book as per manual on Water Supply and Treatment by an officer not below the rank of Deputy Engineer.

Mode of Payment

The payment can be made after carrying out recuperation test as indicated above, at least for five consecutive days. The Engineer in charge should record in measurement book that "I am satisfied with the test conducted and the results of recuperation test".

IDS 18 Nalla crossing

In the event of pipeline crossing the Nalla or River where considerable depth of soft materials or sand is anticipated the pipe line anchorage work shall have to carried out in the following manner.

After the pipe is laid to the required depth in nalla or river bed the anchoring of same has to be done by inserting 80 mm dia. GI pipe for a length of 1.50 m below invert of the pipe by hammering in the soft strata to its full depth. The material in the dug pipe shall be removed by small & long spoon for its full length. Then a 16 mm dia. 1.75 m long M.S. bar duly hooked at the upper end shall be inserted in the G.I. pipe as shown on the type design. This process shall be followed by pouring in of cement grout through the G.I. pipe. The cement grout shall be poured for sufficient time to see that cement bulb is formed at the bottom of the G.I. pipe dug, to hold M.S. bar tight in position. The item includes cost of all material viz. 80 mm dia. G.I. pipe, 16 mm M.S. bar, cement grout & all labour required for the work. But it excludes the cost of excavation on pipeline for its exposure up to invert. The work shall have to be carried out as per appended type design & as directed by the Engineer -in - charge.

The mode of payment shall be on the basis of per anchor pipe.

In case where hand strata is available in the river bed, the pipe line top should be at least 15 cms below the hard rock level in the river bed. This is needed for ensuring non-scouring of pipelines.

Alternatively pipeline can be laid above HFL it on RCC chairs, payable under relevant item.

IDS24) Detailed Specifications for Water Supply Arrangement, Drainage Arrangement & Electrification

1) Water Supply Arrangement :

This item includes providing and laying in trenches 20 mm dia. G.I. pipe - 30 m, providing and fixing polyethylene water storage tank of 500 liters, providing and fixing white glazed earthenware wash basin and 45 cm x 30 cm in size 1 No.. and providing and fixing 20 mm dia- screw draw bib/stop tap of brass - 4 Nos. etc.

2) Drainage Arrangement :

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This item Includes providing, laying and jointing 1 00 mm dia. salt glazed stoneware pipe - 1 0 m including excavation, refilling, providing and constructing brick masonry inspection chamber of 90 cm x 45 cm - 2 Nos. with RCC cover, providing and fixing hume pipe septic tank 900 mm dia. with vent pipes and cap including necessary fittings, providing and constructing soak pit of size 120 cm x 120 cm x 120 cm including brickbats providing and fixing Indian type W.C pane 27" white - 1 No providing and fixing 10 cm CI nahani trap etc. complete.

3) **Electrification**

This item includes providing and fixing point wiring for light/fan bell with ISI mark 2-

1. 5 sqm allum. insulation wire 1 - 1 kV in rigid PVC conduit heavy gauge of 20 mm dia - 25 points. providing and fixing independent plug - 5 Nos., supply and erecting approved make 1 x 40 watt white stove enamelled box fluorescent fitting made of ".S. sheet 0.8 m - 5 Nos. and supply. erecting wall bracket four corners and providing power supply to quarters including MSEB charges etc. including providing and making earthing arrangement as directed.

Barbed Wire Fencing

The item pertains to providing and erection of wire fencing of twisted galvanised iron seven stranded fencing wire in 8 rows supported on R.C C. post as mentioned in the item including excavating pits for the foundation, providing 1:4:8 cement concrete foundation block size 0 3 x 0 3 x 0 3 x 0.6 x 0.3 x 0.3 x 0.6 m fastening the wires and parting steel posts.

Bd.W.3.2 Materials : Seven strand twisted galvanized iron fencing wire No.4 shall be used It shall be of the usual commercial type and mild steel angle posts of 50 mm x 50 mm x 6 mm shall be 165 cm long shall confirm to (A-1 1) IS 226-1962 and IS 800-1962- The steel shall be free from defects mentioned in IS 226-1962 and shall have a smooth uniform finish. It shall be straightened if necessary, in the mill before shipment, Material shall be free from loose mill scale, rust-pits or other defects affecting its strength and durability, foundation block 1,4,8 concrete for the p.c.c. foundation shall conform to other specifications as mentioned elsewhere in the tender. Galvanised iron straining bolts 30 cm (about 12") long and 16 mm dia. shall be of the standard commercial type.

Erecting

The RCC post shall be fixed at 2 5 m c/c for the given length The holes shall be at 22 cm c/c leaving 22 cm from the ground level. The RCC poles at every 30 m shall be suitably struted on either side of the post. These struts shall be of the same size of post and shall have foundation of 1 4 8 cement concrete of 0 3 m x 0. 3 m x 0. 6 m These struts, shall be fixed at 451, and be fixed at the top post wire,

At the concrete has set the fencing wires shall be fixed through holes made in the m s angles and strained with straining bolts. The m.s. angles shall be painted with a priming coat of red lead and two coats of good oil paint of approved shade

Item to include

Supplying m.s. angles as mentioned in the item and specified above, seven strand twisted gaivanised fencing wires, straining bolts, foundation concrete, angle struts, oil paint for m.s angles, excavating pits, fixing m.s. angle and strut in 1:4-8 p.c.c fixing fencing wires to m s angles and straining the wires with all necessary labour materials and use of tools for the satisfactory completion of the item.

WATER RETAINING STRUCTURE SUCH AS ESR/SUMP, ETC.

a) Constructing Storage Reservoirs viz. ESR,GSR/Sump on Departmental Design

1. The reservoir will be a covered RCC container supported on RCC column with footing and intermediate braces, etc. as per drawing.
2. Suitable **MS Ladders for ESR** of capacity 2,00,000 litres with landing at regular intervals for approach to the gallery and top slab of ESR shall be provided. For above 2,00,000 liter capacity, R.C.C. spiral stair case with parapet should be provided. RCC cantilever catwalk (Gallery) of 1.0 meter width GI pipe railing shall be provided at floor level, preferably at junction of floor slab and vertical walls.

Ventilators shall be provided on top slab of ESR.

One number of CI Manhole frame and cover shall be provided and fixed in the roof of tank and at catwalk way.

One M.S. ladder shall be provided and fixed for access into the tank through manhole left in the roof. Ladders shall be provided as per specifications.

Water level indicator assembly of approved type shall be provided and installed.

Lightening arrester as per IS specifications and confirming to I.E. Rules shall be provided and fixed.

Vertical and horizontal piping of CI flanged pipes, C.I. specials of required sizes for inlet, outlet and overflow arrangements together with suitable sluice valves shall be provided as per drawings. For washout one tee shall be fixed on the outlet pipe with one valve of suitable diameter.

Sluice valves of required size shall be fixed for inlet, outlet and washout. These valves shall be supplied by the Contractor conforming to relevant ISS and of makes approved by MJP.

Required no. of BB masonry chambers of suitable size as directed with manhole frames and covers shall be provided and constructed at suitable locations for sluice valves.

Waterproof cement plaster of CM 1:2 proportion 20 mm thick shall be provided for inside surface of the tank; including roof slab bottom.

Outside surface of tank, exposed faces of columns, braces, beams, catwalk bottom portion of slab and exposed surface of the tank shall be provided with smooth finish and then three coats of approved shade of Snowcem paint as per colour scheme approved by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . shall be rendered.

Letters indicating capacity of tank, name of scheme and year of construction shall be either embossed or engraved on vertical wall of tank and shall be painted with suitable shade of oil paint in two coats.

On completion of work hydraulic test or water tightness test shall be given as per standard specification. Therefore, required water arrangements shall be made by Contractor at his own cost.

Since this is lump-sum offer, the interim payments, will be made at different stages of works contract, as per break-up schedule enclosed.

Since this is water retaining structure, Contractor shall give a satisfactory hydraulic test of the tank. This test shall be considered as water tightness test and accepted if the structure appears bone dry from outside after filling with water upto full supply level and the drop in water level is not more than 40mm in 7 days. For this purpose the water filling arrangements shall be made by the Contractor at his own cost including cost of water pumping arrangements, etc.

If during testing any damage occurs to the structure, it will be the responsibility of the Contractor to rectify the same. Until satisfactory water tightness test is given on completion of work, interim payments to be made at different stages of works, as per schedule of break up of payment enclosed.

Materials required for Construction

1. Sand, Metal and Bricks

Sand, metal and bricks of best variety within a lead of 30 kms will be insisted. Samples of these will have to be got approved prior to use on work.

2. Cement

OPC L & T / Orient / Ambuja / Coromandal king brand of 43 grade in Jute / Polythelene bags (weighing 50 kg. each) shall be used for all water retaining structures.

3. Reinforcement

The steel to be used shall be of grade Fe-250, Fe-415 as per design. The Contractor shall have to procure the steel from open market. The steel procured by Contractor shall be only tested one and the Contractor shall produce manufacturer's test certificate without which it shall not be accepted. Further the Contractor shall arrange to get tested any samples from steel brought at site by him in Laboratory at his cost and result should be submitted to the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . Defective steel brought by Contractor shall be rejected and will not be allowed to be used.

Atleast three samples of each diameter should be tested from every 5 tonnes or part thereof. Tested lots only will be permitted to be used.

4. Concrete

The PCC and RCC works shall be as per IS 456/1976. Concrete mixer shall be used for preparing concrete. Vibrator shall be used to consolidate concrete while placing in position.

While concreting, representative samples in form of test cubes shall be taken by the contractor under Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . **Supervisor and shall be tested under his supervision.** Charges of testing shall be borne by the Contractor and will be recovered from bills payable to him. Frequency of taking cubes (sampling, Acceptance, Criteria, Standard deviation values, carting of concrete cubes, test producers should be followed by contractor.

5. Water Level Indicator Assembly

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Mercury water level indicator with 15 mm dia. required G.I. pipes (Medium Duty), stop cock (2Nos.), necessary fixtures suitable for staging height upto 15 M and water depth upto 5 M to represent depth of water in tank, etc. shall be provided and fixed by the Contractor as per direction of Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . The indicator should be fixed to exterior face of column at about 1.5M above ground level at site or as per requirement of Engineer-in-charge.

6. Lightning Arrester

Lightening arrester conforming to IS and Indian Electricity Rules shall be provided. The lowermost portion of tape for 2 metres above ground level and 2 metre below ground level shall be enclosed by 50mm GI pipe of medium class.

7. Pipe Railing at free end of Catwalk

Railing shall be of GI pipes 'A' class not less than 25 mm diameter in the two rows and shall be fixed in position to RCC posts or M.S. anlge posts of size 65 mm x 65 mm x 6 mm, 1.0 meter in height, located at a maximum distance of 1M. C/C. The railing and the posts shall be provided with two coats of oil paint of approved shade.

8. M.S. ladder

One Number of M.S. ladder shall be provided and fixed to give access into the tank through manhole in the roof slab. The ladder shall be comprising of 65 mm x 6 mm M.S. angles placed at 45 cm. apart with 16 mm M.S. bars in double rows as steps at 20 cm c/c.

9. Centering Work

Before starting the work of ESR, the Contractor should submit design of centering and its detailed drawings for approval by MJP. This set of drawing shall be kept at site. This condition shall be applicable for the ESR with Contractor's design.

b) Specifications and Design Criteria for RCC ESRs, GSRs/Sump with Contractor's own Design

Design, Providing and Constructing RCC ESRs

1 General Note :

1.1 The Contractor shall quote his offer in Schedule 'B' for the complete work of constructing RCC ESR to be carried out as per his own design based on given data i.e. he shall tender the offer in Schedule 'B' for construction of elevated tank of required capacity including fixing pipes, specials, valves and providing and fixing, lightening conductor, C.I. manhole frame and cover, water level indicator ventilator, etc. complete with his own design and drawings. The design shall be got checked from the institutes like Engineering College. Remarks shall be complied and scrutiny charges shall be borne by the Contractor.

1.2 The contractor shall submit the name, qualifications and experience of Design Engineer who has prepared detailed RCC calculations or who will prepare design and drawings on acceptance of the tender. The authorised representative of the designer will have to inspect and certify the works at foundation level and every beam level.

- 1.3 The design Engineer has to prepare and submit a note on design methodology and construction and drawings in two copies through the contractor.

The note should indicate general description, and salient features of the design covering the following points :

- 1) Capacity
 - 2) Shape and type
 - 3) Staging height of tank indicating various levels
 - 4) Safe bearing capacity assumed in the design or safe bearing capacity of strata based on actual investigation report of laboratory and type of foundation provided with proper justification.
 - 5) Maximum and minimum subsoil water level.
 - 6) Site plan showing location water level.
 - 7) Line diagram showing dimensional and sectional elevation with important levels.
 - 8) Design parameters proposed to be adopted for detailed design.
- 1.4 This note on design will be subjected to thorough check by the Engineer-in-charge of the owner and the tender will be accepted and work order issued by the competent authority only after verification that the design to be offered will fulfil the requirements of the design as per tender specifications.
- 1.5 After acceptance of tender, the contractor will have to submit three copies of detailed design and drawings of the structure within 30 days of acceptance of the tender.
- 1.6 The design Engineer will be required to attend the office of Engineer-in-charge for preliminary discussion for scrutiny remarks, etc. whenever required with all reference data, books, IS specifications, etc. at his own cost.
- 1.7 It will be binding on the Design Engineer of contractor to clarify, modify, redesign and prepare drawing after compliance of scrutiny remarks by the owner or his representative such as an Engineering College, within 15 days of communication of remarks. Even though design will be approved by owner, it will be the entire responsibility of the Design Engineer and the Contractor.
- 1.8 On approval of the design, contractor shall supply, free of cost, eight sets of design and drawing duly bound for use of the Owner. The Contractor shall also furnish the details of steel requirement along with programme of execution for completion of work within the time limit stipulated in the tender.
- 1.9 Security deposit of the tenderer shall be forfeited if he fails to modify his design as per scrutiny remarks within specified time after levy of compensation as per tender agreement.
- 1.10 Even though the design and drawing submitted by the Contractor are approved by the Owner / Engineer-in-charge, the Contractor will not be relieved of his contractual obligations to hand over the structure in sound condition, duly tested.
- 1.11 In case of any damage/failure either during construction, testing or after commissioning, whether due to faulty design or defective construction, all repairs or reconstruction of the structure shall have to be carried out by the contractor, entirely at his risk and cost. No claim for such repairs/reconstruction shall be entertained.

**Special Obligatory Condition of Design for water Retaining Structure
ESR/GSR/SUMPS - Storage Reservoirs with own design**

Design Conditions

The Contractor can alternatively quote with his own design with following conditions:

1. The design of R.C.C. ESR shall be carried out by a designer having minimum qualification of graduation in Civil Engineering/Structural Engineering. He shall sign the design and affix his name and stamp.
2. The design shall be carried out in conformity with following IS code.
 - a) IS 456/1978
 - b) IS 3370- Part I and IV
 - c) IS 875
 - d) IS 11682
 - e) IS 1893 with inclusion of seismic zones as per latest circular.
 - f) IS 1786 for cold worked steel high grade deformed bars (Tor steel of 415 grade and Mild steel grade I shall only be used.)
 - g) IS 13920/1993-for ductile detailing, applicable for ESRs under seismic zone III, IV and V. (Recent editions of IS shall be referred.)
 - h) B.S.I. publication S.P. 34 (S and T) 1987.

3. Foundation for E.S.R.

The foundation should have the required safe bearing capacity Minimum depth of foundation shall satisfy the following criterion.

- a) Depth in soft rock shall not be less than 1 m or depth in hard rock shall not be less than 0.5 M.
- b) The total depth in all stratas put together shall not be less than 1.50 M.
- c) In B.C. soil, raft shall be provided at minimum depth of 3 M.

No extra payment shall be given to the contractor on increase in depth of foundation.

4. The free board shall be included in the depth of water for design purposes.
5. Minimum free board shall be 300 mm; measured below bottom of roof beam.
6. Maximum actual water depth shall not exceed 5.0 M.
7. Clear cover for reinforcement shall be provided as below :

- | | |
|---|---------------------------|
| a) Footing / Raft | 50 mm at bottom and sides |
| | 40 mm at top |
| b) Columns | 40 mm |
| c) Braces, beams, slab (Bottom and roof), vertical wall, gallery. | 25 mm |
8. Minimum thickness of container member shall be as below.
 - a) Bottom slab and vertical wall 200 mm
 - b) Roof slab 120 mm

9. The design and casting of container members which includes bottom and roof beams, bottom slab, roof slab, vertical wall and gallery, shall be done in M-20 grade of concrete (1:1.5:3 proportion.)
10. The staging of ESRs (Columns, braces, footing/Raft) shall be designed in M-15 Grade of concrete (1:2:4), however, casting shall be done in M-20 grade of concrete (1:1.5:3 proportion.)
11. The staging shall be designed for ductile detailing as per IS 13920/1993, wherever applicable.
12. The width of braces shall be maximum of the following in case of Earth Quake Zone III and above.
 - a) 250 mm or
 - b) 75% of column side (column diameter in case of circular column)
13. Minimum width of brace in case of Earth Quake Zone I and II shall be 200 mm.
14. Width to depth ratio in case of braces shall preferably be more than 0.30.
15. Increase in permissible stress in braces, for earth quake / wind force design will not be allowed.
16. The centre to centre distance between braces shall not exceed 4.50 M. At the joint of brace and columns, the links to the column bars shall be tied properly and this shall be thoroughly checked before concreting.
17. Wherever annular raft is provided, the inside and outside width of raft shall be provided in such a way that the centre of gravity of upward reaction shall coincide with column/raft beam centre.
18. Uplift pressure on the foundation of structure should be considered as per available water table at site in rainy season. However, minimum uplift upto 50% of depth of foundation below ground level should be considered in the designs.
19. 20mm thick cement plaster with CM 1:2 proportion with water proof compound shall be provided to the container from inside (including roof beams and roof slabs/dome, etc.)
20. The shape of container may be square or circular. Similarly the column shape may also be square or circular.
21. Minimum size of column (width or diameter) shall not be less than 300 mm. Columns, if required to be provided inside container, for supporting roof ring beam/dome/slab, may be provided as per design requirements, following minimum cover requirements. However the size shall not be less than 200 x 200 mm (or 200 dia.)
22. Minimum dia. of main bars in the footing shall be 10 mm and minimum clear distance between reinforcing bars shall not be more than 180 mm.
23. Water density shall be taken as 1000 Kg/Cum and live load on gallery shall be considered as 300 Kg/sqm. Minimum load of water proof treatment on roof slabs shall be taken as 100 Kg/Sqm.
24. The diameter, weight per metre, tensile strength and minimum elongation properties of steel, brought by the contractor/supplied by the department, shall be got tested from the approved laboratory before using it. It shall be used only when the test report indicated that the steel is in accordance with the I.S. specifications and design presumptions.

25.
 - i) The inlet, outlet, overflow and bypass piping shall be of cast iron D.F. pipes only. M.S. pipes will not allowed.
 - ii) Spout type overflow arrangement shall not be allowed. Overflow arrangement shall be from top to bottom as a vertical pipe assembly with proper drainage arrangement.
 - iii) For all duck foot bends for inlet, outlet and overflow arrangements, individual columns with footings resting at foundation level of ESR, columns/raft shall be provided.
 - iv) The manhole frame and covers, provided in the roof slab, shall be of cast iron only. Mild steel covers shall be allowed.

The above four conditions i.e. 24(i), 24(ii), 24(iii), 24(iv) shall be followed without substitutes and equals. No M.S. piping and spout type overflow arrangement shall be accepted, even if rebates, etc, are offered.
 - v) Inlet, outlet, bypass and scour valves with chambers shall be provided. The horizontal piping for inlet, outlet, overflow, bypass upto 3 M from outer brace shall be provided and laid without any extra cost.
 - vi) Lightening conductor, water level indicator, central ventilator and M.S. ladders / RCC stair case shall be provided as per Dept. specifications.
26. The design submitted by the Contractor, shall be got checked from the nearest Government Engineering College/Government Polytechnic/reputed Engineering College/reputed Consultants, for which the scrutiny charges shall be borne by the contractor. The delay in checking designs from third party as above shall be treated as the delay on the part of contractor for operation of tender clauses.
27. The Contractors who have already successfully constructed, tested, as per provisions of I.S. 3370, and commissioned minimum three no. of ESRs shall only be allowed to quote for alternative offers for the work on own design basis. The contractors desiring to quote for alternative offer, based on their own design, will be required to submit a certificate to above effect, at the time of pre-qualification. The certificate shall be signed by an officer of rank not below Engineer in charge. The tenders shall be invited, based on the departmental designs only, while those pre-qualified as above, may quote alternative offer. The alternative offer shall be in the form of additional amount/rebate in terms of fixed sum over the main offer. The main offer (Departmental Design based) shall essentially be quoted. The officer accepting the tender shall be competent to decide whether to accept the alternative offer or not. The alternative offer shall be accepted only in cases where it is beneficial to the Municipal Council, .
28. Size of inlet, outlet, overflow, bypass piping and valves including scour valve shall be specified as per actual requirements and makes of valves shall also be specified as per standard practice.
29. Capacity of the container of the tank shall be the volume of the water it can store between the designed full supply level and the lowest supply level.
30. Height of staging shall be the vertic the difference between lowest supply level and the average ground level at the site of tank.
- 30a. If the staging of the ESR increases or decreased than the specified in schedule "B" item, necessary payment for increase in staging height or rebate due to decrease in staging height will be effected at the prevailing rates of DSR in force at that time.

Note: Above conditions shall also be applicable for design of RCC ESRs of capacity more than 5.0 lakh litres and above except for conditions at Sr. No. 26 and with a change in condition at Sr. No. 9, that the design of staging shall be in M-200 only i.e.(1:1-1/2+:3) and construction should be in M-250 only.

31. Rectification of Defective Members

If it is found that certain members are defective and are found giving acoustical or vibrational disturbance even though these may be structurally sound, rectification of such members should be done by the contractor free of charge and to the satisfaction of Engineer-in-charge.

II CRITERIA FOR DESIGN OF R.C.C. ESR

1. The structural design of water tank shall conform to the following standard, specification and codes of Practice of I.S.

IS : 456	Code of Practice for plain and reinforced concrete (latest edition)
IS : 875	Code of Practice for structural safety of building loading standards (latest edition)
IS : 3370	Code of Practice for concrete structures for storage of
Pare I to IV	liquids (latest edition)
IS : 1893	Criteria for earthquake resistance design of structures (latest edition) other ISS

1. General

Capacity of the container of the tank shall be the volume of the water it can store between the designed full supply level and the lowest supply level.

- 2.1 Free board is the indication of space provided above full supply level and shall be measured at a vertical distance above F.S.L. upto soffit of beam supporting the roofs slab/dome. Free Board shall be minimum 30 cm below soffit of beam or slab, in case of domed roof, free board may be reduced upto 15 cm.
- 2.2 The walls of container shall be designed for free board full condition.
- 2.3 The tank foundation and other members of the structure shall also be designed for free board full condition.
- 2.4 Part of the tank in contact with stored water and enclosing water vapour above F.S.L. shall be in concrete M-200 or even in richer grade.
- 2.5 The allowable bearing pressure or safe bearing capacities are indicated in Schedule 'B'.

The tenderer is, however, advised to verify actual strata before tendering and designing the structure and offer suitable design with full justification.

- 2.6 Not with standing anything mentioned above if directed by the Engineer-in-charge the contractor shall carry out actual strata exploration as mentioned in para 0.2 of IS 1892-1979 through a Government laboratory and adopt bearing capacity so arrived for the design.
- 2.7 The factor of safety shall be adopted as per clause 6.1 of IS - 6403-1971.
- 2.8 If the foundation consists of individual column footing minimum clear distance between centre of column shall be equal to twice the width of footing and clear distance between edges of footing shall be not less than width of footing.
- 2.9 The foundation should be checked for negative pressure on soil due to combined direct and bending stresses. Negative pressure shall not be allowed on the foundation soil.
- 2.10 Classification of soil and characteristics of soil relevant to S.B.C. and A.B.B. shall be as per the soil investigation reports of Government institution/Government approved investigators.
- 2.11 For the design of foundation of the solid raft type, the Plate Theory shall be adopted.
- 2.12 In normal circumstances, minimum 100 mm thick plain cement concrete with 100 mm projection all around in grade M-100 with coarse aggregate as metal shall be provided as levelling course. Where injurious soils or aggressive water are anticipated the levelling course shall be of grade not weaker than M 150 and if necessary sulphate resisting or other special cement shall be used and the thickness of the levelling course shall be kept not less than 150 mm. The ground level within the foundation area of the structure shall be consolidated properly with suitable slope to drain out rain water outside the foundation zone.
- 2.13 In the vicinity of mines, collieries and blasting sites or areas which may be subjected to blast or shock, the tank shall be designed for dynamic forces adopted to shock.
- 2.14 Column may be assumed as fixed at the top of footing.
- 2.15 Following shall be the minimum thickness of various members of the tank container:

Roof Slab	120 mm
Bottom Slab	200 mm
Roof dome	80 mm
Vertical wall of container	200 mm

3. Loads

- 3.1 For all RCC and PCC components unit weight of concrete shall be taken as 25000 M/Cum and 24000 N/Cum respectively.
- 3.2 Water load and snow load shall be taken as per IS 875-1964 or its latest revision.
- 3.3 Seismic forces shall be as per IS 1893 (its latest revision).

4. Design

- 4.1 Shape of structure shall be the most economical as directed by Engineer-in-charge and shall be selected depending upon site conditions.
- 4.2 Design shall be based on the worst possible combination of various loads, moments, shears, resultant stresses in the tank in following cases.
 - 1) Tank Full
 - 2) Tank Empty
 - 3) Uplift pressure if any

Tank full means depth of water inside the container is upto full height of the container including free board.

- 4.3 Design shall be based on accepted bases and methods of design as well as the provisions of IS 3370, IS 456, IS 1343. Code of Practice for prestressed concrete IS 2210. (Later edition of IS shall be referred)

However, methods based on experimental investigation as mentioned in para 18.2 'C' in IS 456-1978 shall not be entertained.

- 4.4 Design of members other than those excluded by Clause 5.4 above (i.e. roof, walls, floor, etc. of the container) shall be based on consideration of adequate resistance to cracking as well as adequate strength. Calculation of stresses shall be as per para 3.3.2. of IS 3370 (Part II) (its latest revision).

5. Permissible Stresses in Concrete for Resistance to Cracking

- 5.1 For calculations relating to the resistance of members to cracking the permissible stresses in tension (direct and due to bending) and shear shall conform to the values specified in Table I of IS 337 (Part II). "The permissible tensile stresses due to bending apply to the face of the member in contact with the liquid." In members with thickness less than 225 mm and in contact with the liquid on one side, these permissible stresses in bending apply also to the face remote from liquid.

5.2 For Strength Calculations

For Strength calculations, the permissible concrete stresses shall be in accordance with Para 44 of IS 456-1978 where the calculated shear stress in concrete alone exceeds the permissible value reinforcement acting in conjunction with diagonal compression in the concrete shall be provided to take the whole of the shear. The maximum reinforcement shall conform Clauses 25.5.1.1 and 25.5.1.2 of IS 456 - 1978.

6. Permissible Stresses in Steel

- 6.1 For strength calculation (concrete assumed to be cracked) the permissible stresses in reinforcement shall be as per table 2 of IS 3370 (Part II) (its latest revision). For tor steel, the stress shall be as per IS 1786-1979 for cold worked steel high strength deformed bars for concrete reinforcement or its latest revision.
- 6.2 The modular ratio 'm' for different concrete mixes shall be as under :

Grade of Concrete	Module ratio 'm'
M : 150	19
M : 200	13
M : 250	11

6.3 Modulus of elasticity of concrete E_c shall be taken as $5700 E_{ck}$ where E_c is the characteristic cube strength of concrete in N/Sq.mm. as per clause 5.2.3.1 of IS 456-1978

7. Age Factor

Age factor for increasing strength shall not be considered for the design.

8. Units :

Design should be in Metric units only.

9. Detailing

9.1 Minimum Reinforcement for Water Retaining Members

The minimum reinforcement in walls, floors, roofs in each of two directions at right angles shall have an area of 0.3% of the concrete section in that direction for sections upto 100 mm thick. For sections of thickness greater than 100 mm and less than 450 mm the minimum reinforcement in each of the two directions shall be linearly reduced from 0.3% for 100 mm thick sections to 0.2% for 450 mm thick section. For section of thickness greater than 450 mm minimum reinforcement in each direction shall be kept at 0.2%. In concrete sections of thickness 225 mm or more, two layers of reinforcing steel shall be placed one over each face of the section to make up the minimum reinforcement specified in this clause.

9.2 The minimum reinforcement specified in 9.1 above may be decreased by 20% in case of high yield strength deformed bars conforming to IS 1786 or IS 1139 (Latest version of ISS shall be followed.)

9.3 Covers to Reinforcement

9.3.1 Minimum clear cover to reinforcement shall be per IS 456 and 3370. (Latest version shall be referred.)

9.3.2 For members of structures in contact with water effective cover shall not be more than 60mm. For bars subjected to bending stresses. For bars subjected to pure tension the effective cover shall not be more than 75mm.

9.4 Spacing of Reinforcement

9.4.1 Spacing of reinforcement shall be as per para 25.3 of IS 456 1978.

9.4.2 Spacing of lateral ties for column shall satisfy the provisions of para 25.5.3.2 'C' of IS 456-1978.

9.4.3 Reinforcement steel which accounts for resisting moments, tension etc. i.e. other than temperature and shrinkage steel, shall comprises of minimum 8 mm dia. for ribbed bars and 10 mm dia. for mild steel bars. For compressive members, the minimum dia. of main reinforcement shall not be less than 12 mm dia.

Note :

1. In case of dispute regarding interpretation of any of the above clauses, the decision of the owner or his representative will be final and binding on the designer and contractor.

2. In case of any clause not included in the above criteria, the decision of the owner or his authorised representative will be final and binding on the designer and contractor.

General Specifications, Technical Specifications and Design Criteria.

1. General Note

1.1 Design Criteria, Structural and General

- 1.1.1 The Contractor shall quote his offer in Schedule 'B' for the complete work of constructing Unconventional Water Treatment Plant to be carried out as per his own design based on the data furnished in this documents.

He shall tender the rates in Schedule 'B' for construction of complete Unconventional Water Treatment Plant including commissioning, trial run, water tightness test, etc. complete.

The work shall be carried out as per the relevant ISS (latest edition), "Red Book" published by PWD department of Government of Maharashtra and practice in Maharashtra Jeevan Pradhikaran. The structures shall be designed for seismic forces as per the recent declaration of zones wherever necessary.

- 1.1.2 The work of providing and constructing unconventional WTP, ESR Wash Water drainage arrangement, including providing, designing, constructing, giving water tightness test, trial run shall be carried out as per relevant ISS, standard specifications (Red Book published by PWD of Government of Maharashtra and practice in vogue in Maharashtra Jeevan Pradhikaran).

The contractor shall submit the name, qualifications and experience of design Engineer who has prepared detailed RCC calculations or who will prepare design and drawings on acceptance of the tender. The authorised representative of the designer will have to inspect and certify the works at foundation level and every beam level.

- 1.1.3 The design Engineer has to prepare and submit a note on design methodology and construction and drawings in two copies through the contractor.

The note should indicate, general description, and salient features of the design covering the following points :

- 1) Capacity : General layout size of structure
- 2) Shape and type of wash water tank
- 3) Staging height of tank indicating various levels.
- 4) Safe bearing capacity assumed in the design or safe bearing capacity of strata based on actual investigation report of laboratory and type of foundation provided with proper justification.
- 5) Maximum and minimum subsoil water level.

6) Site plan showing location of WTP, ESR, Sump.

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- 7) Line diagram showing dimensional and sectional elevation with important levels.
- 8) Design parameters proposed to be adopted for detail design.
- 1.1.4 This note on design will be subject to thorough check by the Engineer-in-charge of the owner and the tender will be accepted and work order issued by the competent authority only after verification that the design to be offered will fulfil the requirements of the design as per tender specification.
- 1.1.5 After acceptance of tender, the contractor will have to submit three copies of detailed design and drawings of the structure within 30 days of acceptance of the tender.
- 1.1.6 The design Engineer will be required to attend the office of Engineer -in-charge for preliminary discussion for scrutiny remarks, etc. whenever required with all reference data, books, IS specifications, etc. at his own cost.
- 1.1.7 It will binding on the Design Engineer of contractor to clarify, modify, redesign and prepared drawing after compliance of scrutiny remarks by the owner, or his representative such as an Engineering College within 15 days of communicating of remarks.
- 1.1.8 On approval of the design, contractor shall supply, free of cost, eight sets of design and drawing duly bound for use of the Owner. The contractor shall also furnish the details of steel requirement along with programme of execution for completion of work within the time limit stipulated in the tender.
- 1.1.9 Security Deposit of the tenderer shall be forfeited if he fails to modify his design as per scrutiny remarks within specified time after levy of compensation as per the tender agreement.
- 1.1.10 Even though the design and drawing submitted by the contractor are approved by the Owner/Engineer-in-charge, the contractor will not be relieved of his contractual obligation to hand over the structure in sound condition, duly tested.

In case of any damage/failure either during construction, testing or after commissioning, whether due to faulty design or defective construction, all repairs or reconstruction of the structure shall have to be carried out by the contractor, entirely at his risk and cost.

No claim for such repairs/reconstruction shall be entertained.

1.2 Common Conditions

- 1.2.1 The Contractor at his own cost shall provide necessary housing accommodation and the sanitary arrangement for his staff and labour and shall pay direct to the authorities concerned all rates, taxes, royalties and other charges. The contractor shall also comply with the requirements of the Health Department as regards antimalaria measures, etc.
- 1.2.2 A work order book shall be maintained on site of work and the orders given by the Engineer-in-charge shall be signed and carried out by the contractor.

The contractor shall construct a temporary shed of about 20 sq. m. for use as office for inspection of works within 30 days of work order. The shed shall be the property of the contractor.

- 1.2.3 Water required for execution of the work and for the water tightness test of the reservoir shall be supplied by the contractor at his own cost in the manner satisfactory to the Engineer-in charge of work.
- 1.2.4 All materials to be used shall confirm to the relevant specification as per latest version of Indian Standards, unless otherwise stated in the detailed specification of items of work.
- 1.2.5 Wherever a reference to any I.S. appears in specifications, it shall be taken to mean as a reference to the latest versions of the standard.
- 1.2.6 The work under this contract includes the supply of material at site of work including railway freight, loading, carting, unloading stacking as directed, insurance, local taxes, etc.
- 1.2.7 The contractor shall be responsible for observing the laws, rules and regulations under the "Minor Mineral Act" and such other laws and rules prescribed by the Government from time to time.
- 1.2.8 The hydraulic test of water retaining structure shall have to be given by the contractor without any extra cost. The filling of the reservoir WTP or any other water retaining structure shall be carried out gradually at the rate not exceeding 30 cm rise in water level per hour and shall not exceed 2.0 metres in 24 hours and total period of 72 hours. Records of leakages starting at different level of water in the reservoir, if any, shall be kept. The reservoir once filled shall be allowed to remain filled for seven days before any readings drop in water level are recorded. The level of water shall be recorded again at subsequent intervals of 24 hours over a period of seven days. The total drop in surface level over a period of 7 days shall be taken as an indication of the water tightness of the reservoir, which for all practical purpose shall not exceed 40 mm.

If the structure does not satisfy the condition of test and the daily drop in water level is increasing the period of test may be extended for a period of seven days and if the specified limit is then reached the structure may be considered as satisfactory. 10% payment shall be with held till satisfactory test is given.

- 1.2.9 If even after extending the period of test, the drop is more than permissible, the contractor should empty the reservoir, rectify the defects in tank by replastering whenever necessary, applying water proofing paint, etc. and give the water tightness test till the drop in level is within permissible limits. This shall be repeated at the cost of the contractor without claiming extra cost.

Any delay in giving water tightness test will invite penal action under relevant clauses of tender agreement.

- 1.2.10 The contractor shall provide cement plaster to the external faces of the structures in CM (1:4) 12 mm thick

3. Technical Specifications

General

- 3.1 The tender is inclusive of necessary excavation in all types of soft and hard strata, lean concrete below foundation, foundation concrete, R.C.C. footing, container tank covered with R.C.C. roof slab/dome, with RCC ventilator in the roof, RCC stair case or M.S. ladder, lightening conductor, G.I. pipe railing, fixing of pipe assembly, valves, construction of B.B. Masonry chambers, providing and laying R.C.C. pipe line for drain, cement plaster for tank from inside with waterproofing material neat finishing, cement based paint from outside, painting capacity, name of scheme, etc. on body wall of tank, etc. complete as per detailed specifications for all units of WTP, Sump Pump House, etc. complete.

3.2 Clearing of Site

Before starting the work the site shall be cleared of all shrubs, grass and other vegetations including large and small bushes, all stumps, removal of roots, cutting and disposal of small trees upto 300 mm girth, etc. (The girth shall be measured at a height of 1.5 metre above G.L.) The site to be cleared consist to be cleared shall consist of the entire area required to be cut down to accommodate the reservoir. The contractor shall make himself familiar with the local rules and regulations pertaining to land clearance, special requirements of forest area, wherever applicable, and the shall be carried out in strict accordance therewith.

3.3 Excavation

The side slopes of the cutting shall generally have the following slopes for stability:

- a) 1:1 slopes for excavation in earth, murum, boulders etc.
- b) 1:2 slope for excavation in hard murum.
- c) No slope will be allowed for soft and hard rock.

If, however the strata met with can sustain safety, steeper slopes than those mentioned above may be permitted with the prior written permission of the Engineer-in-charge of the work.

3.4 Dewatering or Pumping

If pumping or dewatering of water is required to be done at any time during excavation, the contractor shall arrange for such draining by excavating channels, pumping or otherwise and shall maintain such arrangements to the satisfaction of the Engineer-in-charge for such a period as may be required. The discharge of the dewatering pumps shall be conveyed to drains and shall not be allowed to be spread in the vicinity of the work site. All cost for such arrangements including shall be borne by the contractor and no extra payment shall be admissible for such operations.

3.5 Shoring

Open cutting shall be suitable shored, sheathed and braced, if required by the Engineer or by site conditions or to meet local laws, for protecting life, property, adjoining work site.

Adequate shoring and strutting shall be provided by the contractor at his own cost; warped or deformed timber shall not be used. The shoring shall project at least 150 mm above ground level and shall extend to a suitable depth below and bottom. Wherever necessary the planks or struts shall be driven by compressed air pile drivers. The planks shall be fixed close enough to avoid any running in of sand or earth through the joints. The shoring materials shall not be of size less than those specified below, unless steel sheet piling is used or unless approved by the Engineer in writing.

- | | |
|-------------------|---------------|
| a) Planks | 5 cm thick |
| b) Walling pieces | 10 cm x 20 cm |
| c) Struts | 15 cm x 20 cm |

For walling pieces round timber shall not be allowed in a vertical plane, there shall be at least three struts or more as directed by the engineer. They shall rest on walling pieces. The spacing of the struts shall be as per the requirement. At the bottom, extra struts shall have to be provided if ordered by the Engineer-in-charge.

- 3.5.1 The excavated material shall be transported by the contractors and stacked at suitable places as directed by the Engineer-in-charge. The stacks shall be made outside the area of excavation and shall not endanger the work in any way and shall avoid the obstruction to footpaths, road-driveways, hydrants, access to the properties and work sites. Gutter shall be kept clear. Natural water courses shall not be obstructed.

Separate stacks shall be formed for :

- a) rubble considered suitable for masonry work or road work;
- b) rubble of inferior quality and boulders
- c) soft rock, earth murum
- d) road spoils upto 150 mm size.

3.6 General Requirements

- 3.6.1 Cement concrete shall be in accordance with IS 456-1978. Fine and coarse aggregates shall be conforming to 383-1970, or its latest revision. The selection of the type of fine and coarse aggregates to be actually used shall be as directed by the Engineer-in-charge. The proportion of fine and coarse aggregates to be actually used shall be as directed by the Engineer-in -charge. The proportion of fine and coarse aggregates and water to be actually used shall be such as to produce dense concrete of the required standard.

3.7 C.I./M.S. Pipe Assembly of Flanged and S&S Pipes & specials & Sluice Valves

- 3.7.1 Detailed drawing showing the pipe assembly with pipes, specials, valves, etc. shall be obtained from the owner before fixing the pipes, specials, valves vertically and

horizontally. The drawing shall also show bye pass arrangement from incoming main to distribution as also the draining of overflow and washout.

- 3.7.2 For duck foot bends plan concrete block of adequate size and in M-150 grade shall be provided by the contractor. These concrete blocks shall rest on firm ground (and not on refilled soil) or on the raft slab & shall have to minimum depth of 600 mm. The width of the block shall be such that it should have an off set of 150 mm on all sides.
- 3.7.3 Thrust blocks of adequate size and in M-150 grade shall also be provided wherever required or as directed by the Engineer-in-charge.
- 3.7.4 All the C.I./M.S. flanged pipes, S&S pipes, specials and sluice valves, M.H. Frame and covers as per requirement will have to provided by the contractor. Jointing materials shall be provided by the contractor at his own cost and got approved from the Engineer-in-charge before using. Pig lead if required shall be procured by the contractor. Material shall be as per respective ISS. MS or C.I. pipe insert with middle flanges for insertion in concrete for inlet, outlet, overflow, etc. shall also be provided by the contractor without claiming extra cost. Material shall be as per respective ISS-M.S. or C.I. pipe inserts with crippling flanges for insertion in concrete for inlet outlet overflow, etc. shall be provided by contractor.
- 3.7.5 The pipes before using shall be cleaned properly from inside. The vertical pipes shall be fixed exactly in plumb. The horizontal flanged and / or S and S pipes shall be laid to proper grade and alignment. The flanged pipes and specials and sluice valves shall be jointed by means of nuts and bolts, washers, and 3 mm thick tree play rubber packing with hubcock. The S and S joints shall be made with rubber or pig lead as directed.

The sluice valves shall be fixed on horizontal pipe line for inlet and outlet, washout and bye pass. Pipes shall have to be cut by the contractor if required without claiming extra cost.

The vertical pipes, specials and valves shall be painted with three coats of anticorrosive paint after jointing and testing.

For draining the washout, R.C.C. NP2 class, pipes as specified in the drawing shall be provided, laid and jointed by the contractor.

This work includes giving satisfactory hydraulic test to the required head of water and all material, equipment and labour shall be arranged by the contractor at his own cost.

- 7.6 The horizontal pipes shall have minimum cover of 1.0 M chamber of adequate size and height/depth as required shall be constructed for sluice valve in brick masonry 225 mm thick in CM 1:6. The foundation concrete shall be 150 mm thickness in C.C. M 100. The inside shall be cement plastered in CM 1:3. The outer side shall be pointed in 1:2 PCC coping 100 mm thick cast in situ in CC M 150 (1:2:4) and including providing and fixing of C.I. M.H. Frame and Cover medium duty of size 0.9M x 0.5 M as per IS-1726-1997.

4. Water Level Indicator

A water level indicator shall be provided and fixed, reading depth of water in metre upto 10 cm. The system shall consist of uncorrodable materials and shall be simple and easy to maintain. The water level indicator shall be provided and fixed as approved and directed by Engineer-in-charge. The indicator shall be full scale to upto 3.0 metres and ratio type above 3.00 metres height. Alternatively manometric gauge or electronic water level indicator can be offered.

5. Access to Roof

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Access to the roof and entry to the inside of the tank shall be provided by MS ladder of 45 cm width at roof level of the tank. The access to roof manhole shall be provided with parapet or G.I. pipe railing. At ground level or at walk-way level, the access for going up shall be provided with a M.S. door and locking arrangement.

6. G.I. Pipe Railing

G.I. Pipe railing at roof level shall be provided as per details given in para 7.22.

7. Painting

Name of the project and capacity of RCC GSR/ESR shall be painted on the container.

- 8.** At least two C.I. manholes frame and cover with locking arrangement shall be provided diagonally in opposite directions with ladder for entering into the container for maintenance purpose. The size of manhole frame and cover shall be 900 mm x 450 mm rectangular as per IS 1726 - 1991.

9. Lightening Arrester

Lightening arrester shall be provided at the highest level on the roof of the tank as per IS 2309-1969. Code of Practice for protection of building and allied structures against lightening. Position and height of lightening arrester shall be such that the whole structure shall be enclosed within cone having it apex at top end of the arrester and generated by a line inclined at 60 deg. to the vertical. The arrester shall be suitably earthed.

10. Ventilator

The roof of the tank shall be ventilated by providing cowls or shaft ventilator 1.00 metre x 1.5 metre height with mosquito-proof net for ventilators. The net shall be fixed with proper framing. Ventilation area shall not be less than 0.04% of the free water surface when cowl type ventilators are provided.

11. Waterproof Plaster

20 mm thick water proof plaster in CM 1:3 shall be provided on the inner sides of the container and top of the floor slab of the container using minimum 1 kg. of water proofing powder per bag of cement or as per manufacture's specifications used for preparing mortar for plastering.

12. M.S. Ladder

The contractor shall provide and fix 450 mm wide M.S. dia. double mild steel bars for each step at 300 mm c/c. The ladder shall be fixed by stay of 10 mm x 50 mm flat fixed 2 M c/c.

13. Spiral Staircases

The contractor shall provide RCC circular 1.0 M wide spiral stair case with central circular column with 1.0 M high parapet in M150 as per criteria for capacities greater than 2 lakh litres. M.S. ladder shall be provided for smaller capacity tanks.

14. Jointing Material

All necessary jointing materials for pipe assembly, G.I. railing, M.S. ladder, etc. such as nuts, bolts, rubber packing and any other miscellaneous materials required shall be provided by the contractor at his cost.

15. Colour Wash

Snowcem paint of approved shade shall be applied in two coats to whole structure externally.

16. M.S. Door

M.S. steel door for stair case entrance shall be provided and fixed as per instructions of engineer or his representative.

- 17.** 25 mm dia. G.I. railing with two horizontal rows of pipes posts of RCC 15 cm x 15 cm bottom and 10 cm x 10 cm at top or angle iron of size 65 mm x 65 mm x 8 mm and placed at 1.5 M c/c interval including painting two coats and anchorage in C.C., etc. shall be provided at top of tank and at intermediate gallery.

18. Staging

- 18.1 The supporting staging shall be in the form of columns, braces. Staging on hollow cylindrical shall not be accepted, unless otherwise specially asked in NIT. If shaft staging is permissible, the following specifications will apply for the shaft portion and specifications for other items remain the same as specified in the foregoing paras.

For load bearing, shaft minimum thickness should be 200 mm. Shaft should be designed in M-200 mix.

- 18.2 Shaft supporting a water tank must be designed as given under the para "Stresses in Circular Supporting Walls" at page 84 of the book "Concrete Water Towers Bunkers Silos and other elevated structures" by Gray and Manning (5th edition), published by Cement and Concrete Association. The vertical load causes direct compression. Under wind load, the wall acts as a vertical cantilever of hollow circular section and has to resist bending moment and shearing forces. In addition to main stresses, caused by the wall acting as a hollow circular vertical cantilever, the wind flowing on one face tends to flatten that face, distorting the circle into an oval. Horizontal reinforcement to resist a bending moment. $M=+0.035 PD^2$ producing tension on the inside face and a moment $M =-0.031 PD^2$ causing tension on the outside face, where P =Unit wind pressure in KN/M and D =c/c diameter of shaft in metres.

The reinforcement arrived as above should be provided on both, inside and outside faces. However minimum horizontal reinforcement in the shaft shall be 0.3% of the gross concrete area provided. In case of towers in high seismic zones (i.e. Zone- IV and V) minimum horizontal reinforcement shall be 0.4% of the gross concrete area provided. Minimum vertical reinforcement in the shaft shall be 0.4% of the gross concrete area required and it shall be provided equally on both faces of the load bearing shaft.

Shaft shall be checked for combined axial load and bending due to wind or seismic loads and shall satisfy the provisions of IS-456-1978 in tank full and tank empty conditions.

Horizontal construction joints in shaft shall be as minimum as possible.

Age factor for increasing strength shall not be considered.

Shaft should be checked for tensile stress in worst condition for combination of axial tension on bending axis due to wind or seismic load for tank full and tank empty conditions.

On account to minor inaccuracies in construction of the shaft the allowable direct compressive stress shall be reduced by multiplying with a factor of 0.85. On account of buckling reduction factor if any shall be multiplied by the factor of 0.85. For the calculation of direct compressive stress the contribution of steel shall be neglected.

For buckling calculations reduced value of modulus of elasticity due to creep shall be maximum 0.4 times its value as per IS 456-1978.

At the plinth panel 50 mm thick M 150 grade shall be provided.

Rectification of Defective Members

If it is found that certain members are defective and are found giving acoustical or vibrational disturbances even though these may be structurally sound, rectification of such members should be done by the contractor free of charge and to the satisfaction of Engineer-In-Charge.

7.0 GENERAL BUILDING WORKS

7.1 Applicable Codes and Specifications

The following codes, standards and specifications are made a part of this specification. All standards, tentative specifications, specifications, codes of practices referred to herein shall be the latest edition including all applicable official amendments and revisions.

In case of discrepancy between this Specification and those referred to herein, this Specification shall govern.

IS:110/1983 Ready mixed paint, brushing, grey filler, for enamels for use over primers.

IS:269/1989 Specification for 33 grade ordinary portland cement.

IS:280/1978 Specification for mild steel wire for general engineering purposes.

IS:287/1993 Recommendations for maximum permissible moisture content of timber used for different purposes.

IS:337/1975 Varnish, finishing interior.

IS:348/1968 French polish.

IS:383/1970 Specification for coarse and fine aggregates from natural sources for concrete.

IS:412/1975 Expanded metal steel sheets for general purposes.

IS:419/1967 Specification for putty for use on window frames. IS:428/1969 Distemper, oil emulsion, colour as required.

IS:702/1988 Specification for industrial bitumen.

IS:710/1976 Specification for marine plywood.

IS:712/1984 Specification for building limes.

IS:733/1983 Wrought aluminum and aluminum alloys, bars, rods and sections for general engineering purposes.

IS:777/1988 Specification for glazed earthenware tiles.

IS:1003/1991 Specification for timber paneled and glazed shutters (Part 1)

IS:1003/1994 Specification for timber paneled and glazed shutters (Part 2)

IS:1038/1983 Specification for steel doors, windows and ventilators.

IS:1077/1992	Specification for common burnt clay building bricks.
IS:1081/1960	Code of practice for fixing and glazing of metal (steel & aluminum) doors, windows and ventilators.
IS:1124/1974	Method of test for determination of water absorption, apparent specific gravity and porosity of natural building stones.
IS:1237/1980	Specification for cement concrete flooring tiles.
IS:1322/1993	Bitumen felts for water- proofing and damp proofing.
IS:1346/1991	Code of practice for waterproofing of roofs with bitumen felts.
IS:1361/1978	Specification for steel windows for industrial buildings.
IS:1397/1990	Specification for craft paper.
IS:1443/1972	Code of practice for laying and finishing of cement concrete flooring tiles.
IS:1477/1971 (Part 1).	Code of practice for painting of ferrous metals in buildings
IS:1477/1971 (Part 2).	Code of practice for painting of ferrous metals in buildings
IS:1542/1992	Specification for sand for plaster.
IS:1580/1991	Specification for bituminous compounds for waterproofing and caulking purposes.
IS:1597/1992	Code of practice for construction of stone masonry : Part 1 Rubble stone masonry.
IS:1659/1990	Specification for block boards.
IS:1661/1972	Code of practice for application of cement and cement-lime plaster finishes.
IS:1834/1984	Specification for hot applied sealing compound for joint in concrete.
IS:1838/1983	Specification for preformed fillers for expansion joint in concrete pavements and structures (non-extruding and resilient type): Part 1 Bitumen impregnated fibre.
IS:1948/1961	Specification for aluminum doors, windows and ventilators.
IS:1949/1961	Specification for aluminum windows for industrial buildings.
IS:2074/1992	Ready mixed paint, air drying, red oxide-zinc chrome, and priming.
IS:2114/1984	Code of practice for laying in-situ terrazzo floor finish.
IS:2116/1980	Specification for sand for masonry mortars.
IS:2185/1967	Specification for concrete masonry units (Parts 1,2 & 3).
IS:2202/1991 Part 1.	Specification for wooden flush door shutters (Solid core type):
IS:2202/1983 Part 2.	Specification for wooden flush door shutters (Solid core type):
IS:2212/1991	Code of practice for brickwork.

IS:2250/1981	Code of practice for preparation and use of masonry mortars.
IS:2338/1967 materials (Part 1).	Code of practice for finishing of wood and wood based
IS:2338/1967 materials (Part 2).	Code of practice for finishing of wood and wood based
IS:2339/1963	Aluminum paint for general purposes, in dual container.
IS:2395/1994 surfaces (Part 1).	Code of practice for painting Concrete, masonry and plaster
IS:2395/1994 surfaces (Part 2).	Code of practice for painting Concrete, masonry and plaster
IS:2402/1963	Code of practice for external rendered finishes.
IS:2571/1970	Code of practice for laying in-situ cement concrete flooring.
IS:2572/1963 masonry.	Code of practice for construction of hollow concrete block
IS:2645/1975	Specification of integral cement waterproofing compounds.
IS:2690/1993 made.	Specification for burnt clay flat terracing tiles: Part 1 Machine
IS:2691/1988	Specification for burnt clay facing bricks.
IS:2750/1964	Specification for steel scaffoldings.
IS:2835/1987	Flat transparent sheet glass.
IS:2932/1993 undercoating (b) finishing	Specification for enamel, synthetic, exterior types (a)
IS:3036/1992 roof finish.	Code of practice for laying lime concrete for a waterproofed
IS:3067/1988	Code of practice of general design details and preparatory work for damp proofing and waterproofing of buildings.
IS:3068/1986	Specification for broken brick (burnt clay) coarse aggregates for use in lime concrete.
IS:3384/1986 damp proofing.	Specification for bitumen primer for use in waterproofing and
IS:3461/1980	Specification for PVC-asbestos floor tiles.
IS:3462/1986	Specification for unbacked flexible PVC flooring.
IS:3495/1992	Method of test for burnt clay building bricks: Part 1 to 4.
IS:3536/1966 pink.	Specification for ready mixed paint, brushing, wood primer,
IS:3564/1995	Specification for door closers (hydraulically regulated.)
IS:3696/1987	Safety code of scaffolds and ladders (Part 1).
IS:3696/1991	Safety code of scaffolds and ladders (Part 2).

IS:4020/1998	Methods of test for wooden flush door (Part 1 to 16).
IS:4021/1995	Specification for timber door, window and ventilator frames.
IS:4351/1976	Specification for steel door frames
IS:4443/1980	Code of practice for use of resin type chemical resistant mortars.
IS:4457/1982	Specification for ceramic unglazed vitreous acid resisting tile.
IS:4631/1986	Code of practice for laying epoxy resin floor toppings.
IS:4832/1969	Specification for chemical resistant mortars (Part 2).
IS:4860/1968	Specification for acid resistant bricks.
IS:4948/1974	Specification for welded steel wire fabric for general use.
IS:5318/1969	Code of practice for laying of flexible PVC sheet and tile flooring.
IS:5410/1992	Cement paint, colour as required.
IS:5411/1974	Specification for plastic emulsion paints (Part 1)
IS:5411/1972	Specification for plastic emulsion paints (Part 2).
IS:5437/1994	Wired and figured glass.
IS:5491/1969	Code of practice for laying of in-situ granolithic concrete floor topping,
IS:6041/1985	Code of practice for construction of autoclaved cellular concrete block masonry.
IS:6042/1969	Code of practice for construction of light weight concrete block masonry.
IS:6248/1979	Specification for metal rolling shutters and rolling grilles.
IS:7193/1994	Specification for glass fibre base coal tar pitch and bitumen felts.
IS:7452/1990	Specification for hot rolled steel sections for doors, windows and ventilators.
S:8042/1989	Specification for white portland cement.
IS:8543/1978	Methods of testing plastics (Part 1/Section 1)
IS:8543/1979	Methods of testing plastics (Part 1/Section 2)
IS:8543/1977	Methods of testing plastics (Part 2/Section 1)
IS:8543/1977	Methods of testing plastics (Part 2/Section 2)
IS:8543/1977	Methods of testing plastics (Part 2/Section 3)
IS:8543/1978	Methods of testing plastics (Part 3/Section 1)
IS:8543/1978	Methods of testing plastics (Part 3/Section 2)
IS:8543/1984	Methods of testing plastics (Part 4/Section 1)
IS:8543/1977	Methods of testing plastics (Part 13/Section 1)
IS:9197/1979	Specification for epoxy resin, hardeners and epoxy resin composites for floor topping.

IS:9862/1981 Specification for ready mixed paint, brushing, bituminous, black, lead-free, acid, alkali, water and chlorine resisting.

IS:12200/1987 Code of practice for provision of water-stops at transverse contraction joints in masonry and concrete dams.

7.2 Brickwork

7.2.1 Mortar

Mortar for brickwork, blockwork and stonework shall be prepared in accordance with IS 2250. Cement mortar shall consist of 1 part of portland cement to 4 parts of sand.

Mortar shall be mixed on clean, hard dry platforms protected from sun and rain. The constituents shall be measured using properly made gauge boxes and shall be thoroughly mixed dry before water is added. Any mortar not used 30 minutes after the water is added shall be discarded.

Portland cement for mortar shall comply with Clause 3.4 of the Specification. Sand for mortar shall comply with IS 2116 and shall be of the following grading:

IS Sieve	Percentage Passing by Weight
4.75 mm	98 – 100
2.36 mm	80 - 100
1.18 mm	60 80
600 microns	40 65
300 microns	10 40
150 microns	0 10

Sand for mortar shall be from an approved source and shall consist of hard, coarse siliceous grains free from deleterious matter. It shall be stored separately from other sand or fine aggregate and shall be kept covered. The Contractor shall submit samples of sand for mortar for the Engineer's approval if ordered.

Water for mortar shall comply with Clause 3.4 of the Specification.

7.2.2 Bricks

Bricks for common brickwork shall be whole, sound, well burnt clay bricks, free from cracks and best locally available. Samples of bricks to be supplied shall be submitted to the Engineer for his approval prior to procurement. Bricks shall not be tipped on the Site but shall be carefully stacked by hand keeping the different grades. Broken or damaged bricks shall not be used in brickwork.

The crushing strength of ordinary clay bricks shall not be less than 50 kg/cm^2 and its water absorption shall not be more than 20 % for bricks used in panel walls and 15 % for load bearing walls. Tolerances in dimensions of bricks shall be allowed only in conformity with IS 1077 (i.e. $\pm 3.3\%$).

7.2.3 Brickwork

Brickwork shall be built in accordance with the requirements of IS 2212. Every brick shall be wetted and laid on a full and close joint of mortar on its bed, side and end in one operation, joints being fully flushed up as the work proceeds. The previous course shall be wetted; if it has dried and the walls shall be brought up evenly with no portion racked up (and not toothed) more than one meter higher than another. All

brickwork shall be properly bonded together. Joints shall not exceed 10 mm in thickness and shall be raked out to a depth of 7.5 mm as a key for rendering or plastering. All courses shall be truly horizontal and all perpends shall be strictly plumb and square.

In cavity walls the two leaves of brickwork shall be bonded with galvanized wall ties 150 to 250 mm long as required. The ties shall be built into the horizontal joints as the work proceeds and the space between successive ties shall not exceed 750 mm horizontally nor 250 mm vertically. Ties shall be staggered and shall be laid sloping down towards the outer leaf of the cavity. Cavities shall be kept free from mortar droppings by the use of suspended battens and temporary openings at the bottom of the wall. Every fourth vertical joint in the external face in the course immediately above the horizontal damp proof courses shall be raked out and left open to form a weephole. Completed masonry shall be kept wet for a minimum period of 14 days.

All 230 mm thick brick masonry shall be plumb from outside but 350 mm thick brick masonry shall be plumb on both faces.

7.2.4 Measurement of Brickwork and Uncoursed Stone Masonry

Unit of measurement for brickwork shall be cubic meter for 230 mm thickness and above and square meter for 115 mm thickness. Unit of measurement shall be cubic meter for uncoursed stone masonry in foundation and plinth and shall be running meter for compound wall. No deductions will be made for openings less than 0.1 square meter in area in brick or masonry walls. The rates shall include for carrying out the work as specified and no separate payment will be made for cutting, scaffolding, watering, forming openings and reveals, building to shape around other structures, forming cavities, wall ties, building in lintels, pipes and beams and providing weep holes and transoms and mullions as indicated in drawing including shuttering. Only reinforcement shall be paid for extra.

7.3 Finishes

7.3.1 Finishes Generally

The Contractor shall demonstrate his ability to apply finishes to the standards required under the Contract. If, in the opinion of the Engineer, the demonstrations do not satisfy the standards required, the Engineer may order the Contractor to employ a specialist firm of sub-contractors approved by the Engineer to carry out all or part of this work.

7.3.2 Floor Screeds

Where specified, dense concrete floor screeds shall be placed over the structural concrete floor. Before the structural concrete is fully hardened, the surface shall be roughened by wire brushing in order to expose the aggregate. Immediately before laying the screed, the concrete shall be cleaned with stiff brushes and then thoroughly dampened. Before the screed is laid and after the excess water has been removed, a thin layer of stiff cement grout shall be well brushed into the roughened surface.

Where directed by the Engineer, an approved waterproofing admixture such as "Sisco" or "Impermo" shall be added to screed concrete in accordance with the manufacturer's recommendations.

7.3.3 Marble Mosaic Flooring

Marble mosaic tiles of approved make and quality shall be used for flooring, where directed or specified by the Engineer. The tiles shall not be less than 25 mm thick. The tiles shall be laid in slope or level as directed, in lime mortar bed cushioning (lime and sand in the proportion of 1:2 or cement mortar 1:3) and shall be finally set in cement float of required colour and as directed. The flooring shall then be machine polished to give smooth surface and left clean after polishing.

7.3.4 White Glazed Tile Flooring and Dado

White glazed tiles including angles, corners, borders and specials shall be of Johnson or B.P.T. 1st quality or any other make and quality approved by the Engineer. They shall be 6 mm thick and 15 cm x 15 cm in size or as approved by the Engineer.

The tiles before laying shall be soaked in water for at least 2 hours and shall be set in lime mortar 1:2 or cement mortar 1:3 for floors and dado to walls. Tiles, which are fixed in the floor adjoining the wall, shall be so arranged that the surface of the round edge tiles shall correspond to the skirting or dado. Neat cement grout of honey like consistency shall be spread over the bedding mortar just to cover so much area as can be tiled within half an hour. The edges of the tiles shall be smeared with neat white cement slurry and fixed in this grout one after the other, each tile being well pressed and gently tapped with a wooden mallet till it is properly bedded and in level with the adjoining tiles. There shall be no hollows in bed or joints. The joints shall be kept as close as possible and in straight lines. The joints between the tiles shall not exceed 1.5 mm wide.

7.3.5 Integral Cement Finish on Concrete Floor

In all cases where integral cement finish on a concrete floor has been specified, the top layer of concrete shall be screened off to proper level and tamped with tamper having conical projections so that the aggregate shall be forced below the surface. The surface shall be finished with a wooden float and a trowel with pressure. The finish shall be continued till the concrete reaches its initial set. No cement or cement mortar finish shall be provided on the surface. Where specified, a floor hardener as approved by the Engineer shall be supplied and used as recommended by the manufacturer

7.3.6 Measurement for Flooring and Dado.

Unit of measurement for flooring and dado shall be sq. m. or part thereof of the superficial area. Actual quantity of flooring work carried out will be measured and paid for after making deductions for openings etc. For skirting, unit of measurement shall be linear meter for the specified width.

7.3.7 Cement Plaster

- a) Cement and sand
Cement and sand shall conform to the specifications as mentioned in Clauses 3.4.
- b) Neeru
Neeru shall be made of the best description of lime, slaked with fresh water and sifted. The lime shall be reduced to fine powder by grinding it on a stone

or in a hand mill, with a thick solution of mussalla to be made or as may be desired by the Engineer. The neeru thus prepared shall be kept moist until

used and the quantity to be prepared at one time shall be such that it can be used within eight days in the works.

c) **Workmanship**

All stone or brick masonry shall be thoroughly wetted and joints raked out to a depth of at least 20 mm and walls washed before any plastering is done. The surface shall then be rendered with a mortar of specified parts of portland cement and fine sand, to 20 mm thickness and specified roughness. The surface shall then be floated or set with a thin coat of 3 mm thick cement and polished well with a trowel or flat board. The cement mortar shall be used within 30 minutes after it leaves the mixing board or mill.

Before any plaster work is started patches of plaster 150 mm x 150 mm shall be put on at every 3 meters apart as gauges so as to ensure an even thickness throughout the work. Cement plaster shall be done in even squares or strips. Care shall be taken to keep the whole surface thoroughly wetted for at least a week. The finishing surface shall be as specified and directed. Neeru finish shall be applied to the prepared and partially set but somewhat plastic surface, with steel trowel to a thickness slightly exceeding 1.5 mm, (1/16") and rubbed down to 1.5 mm (1/16") thickness and polished to a perfectly smooth and even finish working from top to bottom.

The junction between beams and brickwork shall be plastered after fixing the expanded metal wire mesh of 300 mm width. The wire mesh shall be of size 20 mm x 20 mm gauge thickness. No separate payment shall be made for fixing such mesh.

7.5 Glazing and Metal Doors and Windows

7.5.1 Glass Generally

Glass shall conform to the requirements of relevant IS codes and shall free from bubble, smoke wanes, air holes, scratches and other defects and shall be cut to fit the rebates with due allowance for expansion.

7.5.2 Sheet Glass

Sheet glass shall be flat, transparent and clear as judged by the unaided eye. It shall be free from cracks. Sheet glass shall be of B quality or ordinary quality and the thickness shall be as specified in the Bill of Quantities. Sheet glass used for glazing in building shall conform to IS 2835. Modulus of rupture of sheet glass shall be 380 kg/cm². Density of sheet glass shall be 2500 Kg/m³.

7.5.3 Wired Glass

All wired glass shall be 6 mm thick, polished Georgian or equivalent wired glass with both faces ground and polished. The glass shall conform to IS 5437.

7.5.4 Plate Glass

Generally where specified windows shall be glazed in polished plate or float glass of glazing glass quality (G.G) of 6 mm or 10 mm thickness. Modulus of rupture of plate glass shall not be less than 190 Kg/cm².

7.5.5 Glazing

Putty for glazing to wood shall be prepared in accordance with IS:1635. Glazing work in buildings shall conform to IS 3548.

Compound for glazing to metal is to be an approved special compound manufactured for the purpose.

7.71 Distempering, White/Colour Washing and Painting

7.7.1 Distempering

The surface to be treated shall be thoroughly cleaned of all dirt and loose particles etc. Inequalities and holes shall be filled with gypsum which should be allowed to set hard before distemper is applied.

Distemper shall be of well known brands of approved make. It shall be applied by a broad stiff brush in two coats over a coat of primer. The first and second coat shall be applied only after the primer coat has thoroughly dried. The first coat shall be of a lighter tint. The shade of the distemper shall be got approved by the Engineer. Water bound and oil bound distemper shall conform to the requirements of IS:427 and 428 respectively.

7.7.2 Asian oil bound distemper acrylic from inside two coats in addition to primer.

7.7.3 Cement painting in two coats from outside in addition to primer coat.

7.7.4 Painting Generally

All paints and preserves shall be of approved make and their application shall conform to the manufacturer's instructions. Where more than one undercoat is specified it shall be applied in coats of distinctive tints.

Unless the manufacturer's instructions state otherwise 48 hours drying time shall elapse between successive applications of any primer and 24 hours between applications of all subsequent coats. The surface of bituminous paints shall be left at least 3 days before further handling.

No paints in any coat shall be applied until the Engineer's Representative is satisfied that the surface is clean and dry, and that any previous coat is satisfactory and has hardened adequately. When a surface has been approved, it must be painted immediately.

Paintwork shall be rubbed down with glass paper between coats. No paint shall be applied to a surface, which is damp, dirty or otherwise inadequately prepared.

Final painting shall not be commenced until substantial completion of the Contract unless otherwise ordered.

7.7.5 Painting of Concrete and Brickwork

Where specified to be painted, concrete shall be rubbed smooth and any cracks, blister holes and other imperfections cut out, filled and made good. The concrete and brick work shall be dried to the satisfaction of the Engineer before painting is commenced and drying time of at least 28 days shall be allowed after laying brickwork or stripping formwork from concrete. The surface shall be brushed to remove any efflorescence and then painted with the following :

- (a) for interior brickwork and concrete, apply two coats of plastic emulsion paint over a coat of primer.
- (b) for exterior brickwork and concrete, apply two coats of cement based paint over a coat of primer with a water repellent coat of siloconate solution of approved make.

Paint to be used for the various items of work should be approved make and colour. It is imperative that the Contractor should obtain Engineer's permission in regard to the make and colour of paint that he proposes to use for the various items of work. The painting work shall be carried out as directed by the Engineer, keeping, however, in view the recommendations of the manufacturer.

Where painting with plastic emulsion is specified, all uneven surfaces shall be made up by use of putty of appropriate quality, after the surface has been thoroughly cleaned of all dust, dirt and sand papered. One primer coat and two coats of emulsion paint shall be applied. Workmanship shall conform to the requirements of IS 2395 (Parts 1 & 2).

7.7.6 Ironwork and Ungalvanised Steel work

Structural steelwork shall be shot blasted to a "White metal" finish, and grease and oil removed prior to painting. Priming shall immediately follow blast cleaning and no cleaned surface shall be left unprimed for more than four hours. Only primers that chemically inhibit corrosion shall be used. Where the iron or steelwork is not in contact with raw or treated water the primer shall be red lead complying with IS 57. Where there is a possibility that the steel or ironwork may come in contact with water the priming treatment shall be non toxic, zinc chromate or equivalent. Where it is anticipated that further welding will be required, an approved welding primer shall be applied to the areas to be welded and reprimed with the main primer when welding has been completed. Primer coats shall not be less than 0.05 mm each.

After erection all damaged areas shall be made good, and reprimed where the original coat has scraped or chipped off. If rust has spread under the primer the affected surface shall be cleaned down to bare metal to the satisfaction of the Engineer and then re-primed. Repainting shall be carried out as soon as possible after erection. If it is to be exposed to weather or condensation it shall receive two further coats of primer. Metalwork in intermittent or permanent contact with raw or treated water shall have two finishing coats of an approved coal tar pitch epoxy paint such as "Comastic" or "Epilux 5" by Berger Paints, or equivalent. The total coating shall be a minimum of 0.125 mm thick. After priming, iron and steelwork to have a decorative finish shall be painted as follows:

- (a) interior work shall be given one coat of micaceous iron oxide paint, then one approved undercoat plus one coat of gloss paint.
- (b) exterior work shall be as for interior work except that two coats of micaceous iron oxide shall be applied.

7.7.7 Galvanised Steelwork

Newly galvanised steelwork shall be primed with an etch primer such as calcium plumbate. Steelwork that has been galvanised for a long period so that the surface

has oxidised adequately to allow adhesion of undercoats, need not have an initial

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coat of etch primer. However, this decision shall lie with the Engineer. After priming, galvanised steelwork in constant or intermittent contact with raw or treated water shall be given two coats of an approved coal tar pitch epoxy paint such as "Epilux 5" by Berger Paints, or equivalent. The total coating shall have a minimum thickness of 0.125 mm. Protective coats for galvanised steelwork not in contact with water shall be :

- (a) one coat of an approved micaceous iron oxide paint for interior galvanised steelwork.
- (b) two coats of an approved micaceous iron oxide paint for external galvanised steelwork. The F432 line from I.C.I. Paints or similar approved would be suitable.

Galvanised steelwork not in contact with water shall be finished with at least one coat of gloss paint on top of an approved undercoat.

Bituminous Surfaces

Metalwork items that have been given a shop treatment of bituminous paint shall be painted with two coats of an approved anti-bleed paint before applying a coat of decorative finishing paint

7.7.8 Access Ladders

Access ladders shall be of mild steel and galvanised and painted as specified in Clause . Stringers shall be 60 mm x 12 mm flat spaced 375 mm apart. Rungs shall be 25 mm diameter at 250 mm centres turned to 20 mm diameter each and rivetted to stringers.

Ladders shall be fixed at the top and the bottom and at intervals not exceeding 2 m by brackets of 50 mm x 10 mm flat, of such length that the rungs are not less than 200 mm from the wall, secured by galvanised ragbolts of an approved type. Brackets shall be fixed to the ladders by one 16 mm diameter bolt through each stringer.

Ladders may also be fixed at the bottom by bending the stringers and bolting to the floor.

7.7.9 Handrails

Handrails shall be provided on open sides of platforms, stairways and around all openings as shown on drawings. Handrails shall be of standard weight galvanised steel pipe of flush welded construction, ground smooth, using 32 mm nominal bore light class pipe provided with double rail, top rail about 1 meter above platform level and pipe posts spaced not more than two meters apart. Angle handrail posts shall be provided only if specifically called for in the Engineer's drawings.

Smooth uniform curves and bends shall be provided at stair returns and also wherever required / specified. Posts connected to curb plates shall have a neat closure at the bottom and a 6 mm thick plate neatly welded to posts for attachments to curb plate. All necessary fittings including inner dowels at splices, brackets, bolts, bends, flanges and chains, where required shall be furnished by the Contractor. Open ends of all the pipe posts shall be plugged and welded. A minimum radius of 3 times the pipe diameter shall be provided at all points of direction changes in the handrail.

The rate quoted for handrails shall be per running meter of completed hand railing including posts, fittings, etc. and shall also include galvanising and painting of the

same. It shall be clearly understood that individual lengths of runners, posts, etc. will not be measured for purposes of payment.

7.7.10 Chequered Plates

Chequered plates used shall be 6 mm thick or as indicated on drawings and shall be capable of carrying a minimum live load of 750 kg / sq. meter unless otherwise specified on design drawings. Chequered plates shall be fixed by 8 mm diameter cadmium plated mild steel screws with counter sunk heads at a maximum spacing of 400 mm. Members supporting the chequered plates shall have matching holes tapped in them. The chequered plate pattern shall be approved by the Engineer. Chequered plates may also be required to be welded to the structural steel framing. The decision in this regard will be given by the Engineer.

7.7.11 Measurement of Painting

The cost of any shop treatment and priming of surfaces shall be included for in the supply of the item concerned.

The requirements of Clauses 7.7 shall be measured on the basis of area of surface required to be painted, white/colour washed or distempered.

The area of surface painted at Site shall be measured once only for the number of coats specified herein.

Measurement shall be net with no allowance for boltheads, rivet heads or other protuberances. The Contractor shall include in his rates for painting pipework all coats of treating brackets and supports and in his rates for walls and ceilings, all costs for painting electrical conduit switch boxes and other small items needing different treatment to the surface on which they are fixed. All costs of making good damaged surfaces shall be included in the rates.

Except where otherwise stated, rates entered in the Bill of Quantities shall allow for the supply of the paint.

GENERAL SPECIFICATIONS

GS 1 Sand and Metal

Sand and coarse aggregate (metal) shall be stored separately on site on hard ground so as to keep them free from foreign materials such as soils, clay, glass etc. In case of machined crushed metal separate depot shall be prepared for different sizes of metal and suitable proportion to form dense mix as directed by the Z.P..shall be taken from these different sizes of metal.

GS 2 Form Work

- 2.1 The wooden shuttering planks shall be not less than 40 mm thick or such other thickness as may be allowed by the Engineer in charge for a particular job. The entire form work, whether of steel, plywood or wooden planks, shall be very strongly proposed and braced with sufficiently strong vertical and horizontal members and the entire supporting structure shall be of sufficiently horizontal members and the entire supporting structure shall be sufficiently strong to take up the load of concrete and all stresses it may be subjected to, without any deflection. The Contractor shall be wholly and fully responsible for any defects in the entire form work and its supporting structure.
- 2.2 The form work shall be very smooth and entirely free from any dust particles direct and its inner surface shall be oiled for the easy facility of form removal and shall be watertight.

GS 3 Reinforcement

- 3.1 The Contractor has to procure it from open Market at his cost. The bars shall be scrapped thoroughly for removing any scales, rust, etc. before use in work. Bars that may be found defective in any way shall not be allowed to be used. The reinforcement is to be fabricated and placed in position as per the departmental design to be intimated to the Contractor during execution from time to time.

The hooks, laps, anchors, cover, etc. shall be as directed by the Engineer in charge toThe Contractor has to place in position the reinforcement as directed and to secure it by binding wire to be provided at Contractors cost. Any additional reinforcement provided by contractor in addition to Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . 's design and direction shall not be measured and paid for.

- 3.2 To ensure that the minimum cover require for slabs, beams, etc. is provided. Separators of precast or cast in situ CC block with wires embedded shall be used and shall be tied to the reinforcement with wires. Between 2 or more layers of reinforcement, separators, of 200 mm or 25 mm size bars as directed shall be used duly tied. The separators of M.S. bar piece shall not be admissible for payment. The GI binding wire shall not be admissible for payment.
- 3.3 When Contractor has to bring steel then it shall be only tested one and Contractor shall produce the manufacturers rolling mills test certificate without which it shall not be accepted. Further the Contractor shall arrange to get tested

any samples from steel brought at site in a laboratory at his cost, and result

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should be submitted to Executive Engineer Rural Water Supply Division Zilla Parishad Washim, Defective steel shall be rejected.

GS 4 Mixing

- 4.1 Good clean water shall only be used for mixing. Arrangements for bringing such water shall be done by the Contractor at his cost. The amount of water to be used shall be as directed by the Engineer-in-charge. on the bases of correct water cement ration. The water measuring apparatus shall be provided by the Contractor at his cost.
- 4.2 For R.C.C. reservoirs and for other works which in the opinion of the Engineer in charge are important the concrete shall be only machine mixed. The mixing shall be continued for at least 8 minutes after all materials and water are placed in the drum which shall revolve for 14 to 18 revolutions or as specified by the manufacturers. The mixer for this purpose shall be brought by Contractor at his cost and the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. does not take any responsibility for supply of mixer which could be conveniently spared to the contractor, that will be issued to him on hire or contractor's request, as per MJP's rules in force from time to time. If as a result of break down of mixer during concreting, hand mixing has to be resorted to temporarily. Only such work which is considered absolute essential by the Engineer in charge shall be allowed to be done by hand mixing and the entire operation of hand mixing and precaution thereof shall be taken as will be directed by the Engineer-in-charge. For hand mixture for sufficient time till it is of uniform colour. The required quantity of aggregate shall then be added and the mixture again turned over for at least times. The required quantity of water shall then be added gradually through rose pieces attached to the can until process of turning is in progress and till is of uniform consistency where such hard mixing is allowed as a result of area requirement and no extra payment for this excess cement shall be admissible.
- 4.3 For works other than mentioned in above para, hand mixing will be allowed and in such cases, cement to be used shall be as per standard requirement only.
- 4.4 Normally the standard cement consumption will be as under :

for one cum of concrete

1:2:4 (M-150)	1:1.1/2:3 (M-200)	1:3:6 (M-100)
6.27 bags	7.9 bags	4.42 bags

For any other mix the cement consumption shall be as decided by the Engineer in charge. The consumption as mentioned above shall be for the gross RCC column actually cast. The cement for finishing , rendering cement, wash, etc. shall be in addition to above.

GS 5 Concrete Laying

- 5.1 The forms shall first be lightly moistened before laying concrete. The concrete shall be placed in position within 20 minutes after adding water to the mix and shall be slowly deposited in its place and not thrown or dumped from a height

shall be placed in uniform layers. For vertical walls or water retaining structure, water stoppers shall be provided.

- 5.2 For columns the concrete shall be laid in maximum 1.2 M height at a time. For vertical walls of reservoir it shall be laid in maximum 0.6 M height only at a time.

GS 6 Tamping, Ramming and Consolidating

- 6.1 For all RCC Reservoirs and other works which are considered by the Engineer in charge to be important mechanical vibrators shall invariably be used by the Contractor at his cost. The Contractor shall provide at least 2 vibrators in good working condition, so as to have one as a stand-by and to prevent interruption in work. The concrete being laid shall be vigorously vibrated laying and also loaded by bars where vibrator cannot reach so that dense and complete filling is assured. The Contractor shall make his own arrangements for procuring vibrators at his cost
- 6.2 For all other works consolidation and tamping shall be manual labour by rodding vigorously by M.S. bars, throughout for a sufficient time and in such manner as directed by the Engineer-in-charge. Adequate number of labourers shall be set apart specifically for tamping and ramming with relievers.
- 6.3 The efficiency of tamping and consolidation shall be judged by absence of any air pockets and absence of honey combing any defective consolidation and tamping shall be entirely on Contractor's risk and costing will have to be entirely pulled down if so directed and redone properly entirely at the cost of the Contractor.

GS 7 Curing

- 7.1 All RCC work will be watered and kept constantly wet for 23 days after initial set casting by means of wet gunny bags and ponding as directed by the Engineer-in-charge. This operation shall start immediately after initial set of the concrete. Should the Contractor fail to water the concrete - continuously, it will be done immediately at Contractor's cost.

7.2 Removal of Form

It shall be generally as under, subject to the written approval and modification by the Engineer-in-charge.

Column and Beam Sides	3 Days
Vertical Walls	6 Days
Bottom of Slab and Domes	10 Days
Bottom of Beams	14 Days
Bottom of Beams of Span 4.5 M and above	21 Days
Bottom of Placing CC	3 Days

GS 8 Inspection

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The work of each category of operation i.e. completion of form work placing reinforcement, concreting, removal of form, etc. must be got inspected by the Junior Engineer before commencing and succeeding operation in case of RCC elevated reservoir and major RCC jobs. In all cases, however, before the concrete is laid it must be got inspected and approved by the Deputy Engineer to concreting shall be commenced with approval of the Deputy Engineer. In case of RCC reservoir and other major works concreting must be done in presence of Deputy Engineer himself. In other case, it shall be done in presence of junior Engineer. In case of failure to comply with above specifications, the work is liable to be pulled down if directed for any work which is done contrary to specification and no payment thereof shall be admissible.

GS 9 Finish and Quality of Concrete

9.1 The RCC work cast shall be of dense mix, homogenous without any honey combing true in size alignment and shape. Any defective work shall not be entitled for full tendered rates for payment and if the defects are major no measurements and payment are admissible and Contractor shall have to pull down such defective work and redo at his cost. The decision of the Engineer in charge regarding such defective work and the decision, viz. pulling it down or reducing rates as may be necessary shall be final and binding on the contractor.

9.2 All RCC work shall be finished as directed by the Engineer in charge. It should be clearly understood that the finishing is not meant to cover the casting defects but only to give a smooth appearance. In case of RCC reservoirs and other major RCC works Contractor shall not commence finishing unless and until Engineer-in-charge has inspected the casting of concrete after removal of form and has satisfied about its quality failing which it shall be regarded that casting was defective and action deemed fit as per clause (11) 1 above will be taken since finishing has to commence immediately after removal of forms. The forms removal in RCC reservoirs and other major work shall be done in presence of Deputy Engineer.

28 days test :	1:2:4	1:1.1/2:3
	150 Kg/cm ²	200 Kg/cm ²

Cube casting acceptance of concrete will be as specified in IS 456 - 1964 and relevant ISS. Unacceptable quality concrete shall be demolished and redone without any extra cost by the contractor.

The Engineer in charge at his discretion consider substandard work at a suitable reduced rate, provided such weak concrete is restricted to such members and in such quantities, which in the opinion of the Engineer in charge will not endanger the safety of the structures. Engineer in charge's decision in such cases shall be final and binding on the contractor.

9.3 Surfaces not in contact with form work and not subject to any plaster shall be finished by a float to present a smooth and uniform appearance. Surfaces which are in contact of form work but for which no plastering is provided as per plan and estimate shall also be finished smooth, and sand faced as directed. Surfaces for which plastering is to be done, as per separate provision of

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plastering plans and estimates, shall immediately on removal of forms, be roughened for bond by a pointed tamping tool.

- 9.4 In case, whether would be specified in the tender item or not the finish shall be such as to match with the rest of the structure to present a harmonious appearance. It shall consist of 3 coats of cement, rendering, plastering float finished faced, etc. as per the requirement at site and as directed by the Engineer in charge and Contractor shall have to do it at his own cost. Failure to do proper finishing as directed shall result in payment at reduced rates only to the Contractor and the decision of the Engineer in charge in this respect shall be final and binding on the Contractor.

GS 10 Testing

- 10.1 All structure meant to hold water shall be rested for water tightness test at Contractor's cost, by filling them to their desired level. The water tightness test shall be considered satisfactory when the fall in water level after the container is filled to the FSL is not more than 5 mm/25 hours and there is no sweating from outside or bottom whatsoever.
- 10.2 Contractor has to make his own arrangements for water for testing at his cost and these arrangements shall be such that immediately after initial setting of plaster, the containers are filled with water. After the satisfactory water tightness test the container shall be kept constantly filled with water at Contractor's cost till the completion of work.
- 10.3 Till satisfactory water tightness test is given by the Contractor, at his cost, to the satisfaction of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim, only 90% tendered rates shall be admissible for payment for RCC concrete items.
- 10.4 In case of RCC elevated reservoirs and other major RCC works from batches or concrete mix actually being laid, testing cubes shall be cast periodically as directed by the M.J.P, in presence of the Deputy Engineer-in-charge and these cubes shall be got tested after they have attained their full strength, from a suitable testing laboratory. The Executive Engineer Rural Water Supply Division Zilla Parishad Washim, representative shall arrange for taking test cubes, sending them to laboratory and obtaining test results, at full cost of Contractor.

The charges of this viz. moulds, labour for casting, materials, conveyance charges to and from the laboratory including TA of staff members and laboratory test charges, etc. are included in the tender rates and they shall be recovered from Contractor's bills. The ultimate compressive stress as revealed from these tests shall not be less than

28 days test	1:2:4	1:1.1/2:3
	150 Kg/cm ²	200 kg/cm ²

Cube casting acceptance of concrete will be as specified in IS 456-1964 and relevant ISS. Unacceptable quality concrete shall be demolished and redone without any extra cost by the Contractor.

The Engineer in charge at his discretion consider substandard work at a

suitable reduced rate, provided such weak concrete is restricted to such members and in such quantities, which in the opinion of the Engineer in charge

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will not endanger the safety of the structure. Engineer in charge's decision in such cases shall be final and binding on the Contractor.

GS 11 Measurements

- 11.1 The Measurements shall be the unit as mentioned in the Schedule 'B' and break- up schedule.
- 11.2 Mode of measurements shall be :-
- a) Columns : Height from top of footing to bottom of beams shall be measured as columns.
 - b) Braces for columns shall be measured as net between column faces.
 - c) For straight beams, duly ribs between column top and slab bottom surface shall be measured to beams and rest in slabs.
 - d) For ring beams the full section of beams from bottom to top shall be measured in beams and quantities laying outside the full beam section in beams. Slant walls, slabs, etc. as the case may be shall be measured in the respective slant wall vertical wall, flat slab, etc. as the case may be.
 - e) Vertical walls shall be measured for net quantity outside columns, beams, slabs.
 - f) No deduction shall be made for reinforcement in RCC work.
- 11.3 The measurement under RCC works for net dimensions cast as directed without any allowance for rendering, finishing, etc.

GS 12 UCR Masonry, GSRs

In case of UCR masonry reservoir, relevant specifications for ESR and other items shall be followed. the work shall be carried out as per type design.

GS 13 Specification for Masonry viz. UCR/CR, Brick Masonry Khandki Facing, etc.

- 13.1 The masonry shall be either UCR/CR Khandki facing, BB Masonry, etc. as specified in the respective tender items.
- 13.2 For stone masonry either UCR/CR or Khandki facing, with 1:4 proportion cement mortar, which has to retain, the percentage of mortar shall be between 40% to 45% of the gross built-up masonry and in no case less than 40%. The cement to be used in masonry shall be on the basis of this percentage. If the masonry is constructed with less percentage of the mortar than specified above and if in the opinion of Engineer in charge it is not suitable retain water pressure, it shall have to be dismantled and redone at Contractor's cost with correct percentage of mortar.
- 13.3 For all other masonries viz. UCR/CR/BB, etc. the percentage of mortar shall be as per P.W.D. Hand Book Specifications and cement to be used shall be based on these percentage.
- 13.4 For CR Masonry, khandki facing masonry etc all courses shall be of equal height, to be specified by the Engineer-in-charge and only one row of khandkies shall be allowed in one course.
- 13.5 Tender rates of masonry item, unless otherwise mentioned specifically in the

tender items, shall include scaffolding, watering, curing and cement pointing in CM 1:2 to the exposed faces, where necessary and as directed.

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- 13.6 For masonries meant for retaining structures, the Contractor shall give a satisfactory water tightness test at his cost to the satisfaction of board Till such a satisfactory water tightness test is given, only part rates (90%), as directed by the Engineer in charge shall be admissible for payment and the decision for such part regarding reduced rates, shall be final and binding on the Contractor. It shall be Contractor's responsibility to give the water tightness test and he may use standard waterproofing compounds at his cost in the mortar.
- 13.7 In all other items viz. materials like sand, stones, joints, headers, khandkies, etc. the PWD Hand Book Specifications (latest edition) and specifications given in standard specification Book (Red Book) shall apply.
- 13.8 The wall of masonry should be truly vertical on both faces or should be truly as specified grade.
- 13.9 The height of masonry should not be raised at more than 1 M per day.

GS 14 Doors, Windows

CCTW Doors, Windows, Cupboards, etc.

- 14.1 Sizes shown on drawing are clear opening in masonry and not the shutter's size. these sizes shown on drawings are, therefore, inclusive of required frame sizes and doors, windows, etc. and shall be manufactured, accordingly. If sizes bigger than shown in drawing are manufactured, as instructed specifically in writing they shall be measured and paid for accordingly.
- 14.2 The work shall be executed as per the size of frame thickness of shutter type viz. plain planked panelled, glazed, etc. and fixture, etc. as described in tender item. Iron bars for windows ventilators are to be provided if specifically mentioned in the tender item at Contractor's cost. Specifications. in PW standard specifications shall be applicable.
- 14.3 The design shutters and quality of wood shall be got approved from the Engineer-in-charge before manufacture. The CCTW to be used for wood work shall be uniform in substance straight, free from large dead knots, flows flanks. The work shall be done as per specification of P.W.D. hand books latest edition. The joints shall be perfect. The work be done as per specification Book (Red Book) published by B&C Department.
- 14.4 Parts of wood embedded in masonry shall be painted with the tar. The frames of doors, windows, ventilators, etc. shall have proper holdfasts embedded in masonry.
- 14.5 Whenever iron bar is to be provided as per tender item the rate thereof is included in tender item.

The pointing shall be done as prescribed in tender item. No painting, however, shall be permitted till the wood work is approved by the Engineer-in-charge.
- 14.6 Any substandard work not conforming to the specifications shall be paid at reduced rates only and also liable to the outright rejected and Engineer in charge's decision in such cases shall be final and binding on the Contractor.
- 14.7 The mode of measurement shall be on area units as mentioned in Schedule 'B'.

GS 14 A Steel doors, windows and ventilators

14 A.1 General

The specification lays down the requirements of providing the steel doors, windows and ventilators shall conform to I.S. 1038 - 1975 its latest revision.

14 A.2 Materials

Rolled Steel Sections :

They shall be manufactured from steel conforming to I.S. 1977-1962 specifications for structural steel. They shall be free from rolling defects and shall be suitable for punching and welding.

Coupling Sections for Non-modular Opening :

They shall be manufactured from mild steel plate 1.6 mm in thickness conforming to the dimensions as given in figure 84 or I.S. 1038 - 1975 as specified in the Item

1. Glass Panels

Glass panels shall weigh at least 7.5 kg/sqm. and shall be free from flaws, specks and bubbles. All glass panels shall have properly squared corners and straight edges. The size of glass panels shall be as specified in the item.

Workmanship

The doors windows, and ventilators shall be fixed in true line and level, to the entire satisfaction of the Engineer-in-charge. The damaged works shall be made good to the level of original works.

Screws

Screws threads of machine screws used in manufacture of steel doors, windows and ventilators shall conform to the requirements of I.S. 7362-1962.

14 A.3 Mode of measurement and payment

The item shall include -

- a) Providing and fixing of steel frames and shutters to line and level.
- b) Fixing of required fixtures and fastenings of approved quality.
- c) Glazing or paneling with specified materials such as glass or steel sheets etc. in workman like manner.
- d) Painting the steel sections and portion of the doors windows and ventilators with three coats of synthetic enamel paint of approved quality and shade.

The item will be measured and paid on square meter basis.

GS 15 Plastering

15.1 12 mm , 20 mm and 25 mm cement either plain or waterproof.

The plastering items shall be executed in thickness and cement mortar of proportions as detailed in respective tender items. Similarly, the plastering shall be either ordinary or waterproof as specified in tender item.

15.2 In case of waterproof plaster, standard and approved waterproofing compounding shall be mixed in cement mortar in required percentage as directed and then the plaster is applied. Unless and until the water tightness test is given by the Contractor to the satisfaction of the board only part rates shall be paid.

- 15.3 The finishing shall be either smooth or rough cast as may be directed by the board unless otherwise specifically mentioned in the tender item.
- 15.4 Neeru finish wherever directed by the board shall be done from inside at no extra cost.
- 15.5 Specification given for this item in Standard Specifications Book (Red Book) published by B&C Department shall be followed
- 15.6 Curing and watering shall be done as directed and plaster shall be in alignment and level. Any substandard work is liable to be rejected and shall have to be redone at Contractor's cost. Sand to be used shall be of approved quality only.
- 15.7 Cost of all scaffolding is including in the tender rate.

GS 16 Flooring - IPS Flooring

1.1/2" thick cement concrete 1:2:4 shall be provided for IPS flooring. The size of metal shall not be more than 1/2" and it shall be properly graded. A thin coat of very fine plaster shall be provided on top to give it a smooth finish. The marking of false grooves to surfaces as directed includes the cost of labour.

GS 17 Shahabad Stone Flooring

- 17.1 Stone shall be specified in tender item. The Shahabad stones shall be square with suitable dimensions and of approved quality only. All stones shall be of the same size. They shall be either rough Shahabad or polished Shahabad as mentioned in tender item. If there is no such mention, they shall be rough shahabad only. These shall be set in 1:2:4 CC and joints properly finished in CM 1:1 pointing. The CC bedding below 10 cm thickness (M-100) is included in the item.
- 17.2 All other specifications of P.W.D. Hand Book latest edition and specifications given in Standard Specification Book (Red Book) published by B and C Department shall apply to the above flooring items.

GS 18 Painting

- 18.1 The work shall be carried out as per the description of the tender item and as directed by Engineer-in-charge. It shall be whitewashing, distempering and / or snowcem painting. Shade and make shall be as directed by the board and for decorative purpose, board may ask for different shades to be provided for different components or different parts of the same component which the Contractor shall have to do within his tendered rate only at no extra cost to the board Cost of priming coat as directed, scaffolding, etc. is included in the tender item. The work shall be executed as per the specifications of P.W.D. Hand Book latest edition and specification for painting in Standard Specification Book (Red Book) published by B and C Department.

GS 19 Providing and Fixing M.S. Ladder

Ladder shall be manufactured as per the details provided in the tender item. All the materials and labour required for executing the item are to be provided by the Contractor at his cost. The Ladder shall be properly fixed at site as directed and the bottom and top shall be properly embedded in 1:2:4 CC block as directed at Contractor's cost. In order to have stiffness to the ladder, cross supports or stiffeners at suitable intervals as directed, shall be provided of suitable M.S. flats duly

embedded in walls or welded to the ladder. The specifications for this item as given

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in the Standard Specification Book (Red Book) published by B And C Department shall be followed.

GS 20 GI Hand Railing

The item shall be executed as specified in the tender item and as shown on drawing. The vertical supports shall be properly fixed at base either in masonry or concrete by nuts and bolts duly embedded in the form, right anchorage holes in the vertical support to pass GI piping in it or welding to fix the GI pipes to support together with MS cleats, etc. are included in this item. The GI piping shall be provided along with required specials, fixtures, fastenings, etc. and GI collars or welded as per necessity. The diameter of GI piping, number of rows, size and type to vertical posts together with its center to center distance height, etc. shall be as specified in the tender item in absence thereof as per the board type design in force. The rate shall also include 2 coats of approved shade oil paint. Cost of all the materials which shall be procured by the Contractor, labour involved for executing this item is including in tender item. The measurements and the payment shall be on the basis of lengths in running metres occupied by the completed railing assembly in plan.

GS 21 Providing, Fixing RSJ and Other Structural Steel Works

21.1 This item covers fixing MS/RS girders, MS angle, channel, flats base plates, gusset plates, clear, bracket, etc. and other accessories as per requirement and as directed and fabricating the assembly by cutting, drilling holes, etc. and erecting and fixing item at site with necessary rivetted or welded joints, fixtures with nuts and bolts, etc. Wherever necessary as directed. Structural steel works materials shall be procured by the Contractor from open market at his cost. The item includes 3 coats of oil paint of shade as directed to all structural work.

21.2 All above operations including cost of material and labour thereof are included in the tender item. The measurement and payment shall be on the weight basis in the unit as mentioned in Schedule 'B', actually erected at site as directed shall be admissible for payment. RSJ channels, angles, flats, gusset plates, brackets, base cleats, packing pieces actually used as directed shall be admissible for payment but not the rivets, nuts and bolts, etc. The rivetted or welded joints or fixing with nuts are included in the tendered rates. The specification for this item given in Standard Specification (Red Book) published by B&C Department will be followed.

GS 22 Murum filling, Bedding etc.

22.1 When tender item provides that murum available from excavation is to be used free of cost, whatever murum that is available and suitable from excavated stuff shall be used by the contractor shall be used by the contractor free of cost.

22.2 The murum filling or bedding is to be done in 15 cm to 20 cm thick layers, watered and duly consolidated by hand rammers as directed.

GS 24 Maintaining Water Supply Scheme for Twelve Months

24.1 On completion of scheme, the Contractor should commission the scheme to its rated capacity, including cost of all labour items, attending execution defects noticed, including cost of material and labour for above period till the time the concerned Village Panchayat takes over the scheme whichever is earlier. The period may extend upto six months if Village Panchayat does not take over the

scheme.

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- 24.2 The Contractor should employ necessary staff such as operator, valveman. It should be the responsibility of the Contractor to see the regular supply is maintained which should be disinfected by TCL and the Village Panchayat is made aware of day-to-day maintenance. The running charges exclude the cost of TCL and cost of electrical bills. The defects noticed during this period, arising out of defective workmanship should be attended by the Contractor, without any extra cost.
- 24.3 The Contractor should maintain necessary log book of pumping and chemical dose etc. up-to-date. If the Village Panchayat accepts the scheme earlier than 6 months, the joint inspection of the committee members shall be arranged, as decided by the Engineer in charge, and regular handling over note shall be signed by the concerned authorities. The responsibility of the Contractor shall cease only after signing of such.

GS 27 Approach bridge

The width of approach bridge to pump house shall be provided as under

- a) upto 100 HP pumps - 2.5 m (excluding space required for rising main)
- b) for 101 HP & above pumps - 3.50 m (excluding space required for rising main)

If the raw water rising main is of P.V.C., the same should be provided of C.I./D.I. of suitable dia & class on the bridge portion.

GS 29 Compaction of subgrade of road

This item shall be executed as per specification No. RD -35 of red hand book. The rolling for sub-grades shall be done 3 times i. e. after laying of soling & murum over it, after laying of 60 mm size over size metal & murum over it, and after laying of 40 mm size metal & murum over it. For every time rolling operation, payment on sq. m basis is payable.

**DETAILS OF RESPECTIVE I.S.S. AND APPROVED MAKES FOR
MATERIAL TO BE USED FOR EXECUTION OF WATER SUPPLY SCHEMES
LATEST VERSION OF ISS SHALL BE REFERRED**

No.	Material	ISS No.	Approved make
1.	Cement	26(a)	Approved manufacturers
2.	Tor Steel	1786 (Fe415)	Approved manufacturers
3.	MS Round Bar	432 (Part I & II) / 1982	Approved manufacturers
4.	CI Pipes	1536/1989	Firms on Rate Contract of D.G.S. & D
5.	AC Pipes and CID Joints	1592/1989 8794/1978	S.S.I. units registered with Government of Maharashtra and holding valid BIS license.
6.	GI Pipes	For pipes 554/1975 For thread 1239/1990	Manufacturers holding valid BIS license
7.	PVC Pipes and PVC Specials	IS 4985/1988	SSI units registered with Govt. of Maharashtra, and holding valid BIS license
8.	Sluice Valves 50 to 300 mm dia. Above 300 mm dia.	780/1984 2906/1984 GNK Catalogue	Makes approved by MJP Makes approved by MJP.
9.	Air Valves	Firms approved by M.C. under letter no. MWSSB/1091/33/Store/5284 dated 17.7.1992	Makes approved MJP
10.	CI Specials for CI pipes CI Specials for AC pipe	1538/1960 5531/1969	Manufacturers approved by MJP Manufacturers approved by MJP.
11.	Tyton rubber rings	5382-1985 12820-1989	Approved manufacturers
12.	Reflux Valves	IS-5312 (Part I) 1984	Approved manufacturers
13.	Jiffy Mech. Joints	13282/1992	Manufacturers approved by MJP

Notes :

- In case of cement and steel, Contractor shall submit manufacturer's test certificate. However, samples of the materials supplied by the Contractor will be tested by the M.C. from Govt. Engineering/Recognized Institutes at contractors cost.
- All types of pipes i.e. CI/DI/PVC/AC/PSC/MS/GI, etc. shall be tested by EIL, SGS or RITES before dispatches from Manufacturer's places at Contractor's cost.
- The Contractor shall purchase A.C./PVC pipes, C.I.D. joints at RC rates from any RC

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holder SSI unit of his choice through MSSIDC only.

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REFERENCE OF TECHNICAL SPECIFICATIONS

Sr. No.	Short Description of Tender Items	Specifications reference from book of Standard Specifications of Govt. of Maharashtra (Red Book)
1.	Excavation in all sorts of material	Sp. No. B-1 on Page No. 24 to 28, Spn. IDS-1
2.	Plain Cement Concrete	Sp. No. B-6 on Page No. 33 to 38 of Volume I and Bd-EP No. 287 to 291 of Volume II Spn. GS -1 to GS - 11
3.	Masonry Work (Stone Masonry)	Sp. No. B-9, Page No. 55 to 60 of Volume I and BH and Page of Volume II Spn. GS-12
4.	Murum Bedding	Sp. No. Bd, A.P. No. 262 to 265 of Volume VI, IDS-6, GS-22
5.	M.S. Reinforcement Grade II in Tor Steel (Fe415)	Stresses as per IS-456/1976 and Sp. No. B-10, Spn. GS-3
6.	CC 1:2:4 proportion of 1:1.1/2:3 Proportion for RCC work to 309 and ISA 456-1976. Spn. GS - 1 to GS-11	Page No. 62 to 65 of Vol. I, IS 3370 Part I and Part II, Sp. No. Bd -F- P No. 297
7.	B.B. Masonry Work Spn. GS-13	Sp. No. 88 (b), Page No. 42, Volume I,
8.	Dewatering	Sp. No. BR-4 Page No. 103 to 104.
9.	Cement Plasters	Sp. No. B-11, Page No. 60 to 66, Spn. GS-15
10.	Whitewash and Colour Washing	Sp. No. BD-P-1, Page No. 411 to 412, Spn. GS-18
11.	Oil Bound Distemper, etc.	Sp. No. BD-P- ii P.S.P. No. 431, 414, Spn. GS-18
12.	T.W. Doors and Windows	As per Sp. No. B and C7, Page No. 418 and Sp. BD-1-4 Page No. 479, Spn. GS-14
13.	Structural Steel	Sp. No. Bd-C-6, Page No. 277 Spn. GS-21
14.	Rough Shahabad Stone Flooring	Sp. No. Bd-N-1, Page No. 379 Spn. GS-16
15.	Lowering, Laying and Jointing of all types of pipes	As per Departmental Specifications, IDS-7, IDS-8, IDS-9
16.	Road Surface Boxes	As per type design and Department Specifications Spn. IDS-16

Sr. No.	Short Description of Tender Items	Specifications reference from book of Standard Specifications of Govt. of Maharashtra (Red Book)
17.	B. B. Masonry Chamber	As per type design and Department Specifications Spn. IDS -11
18.	Fixing of Valves Air Valves, etc.	As per type design and Departmental Specifications Spn. IDS-10
19.	Constructing Standpost	As per type design and Departmental Specifications Spn. IDS - 13
20.	Refilling	As directed by the Engineer-in-charge, Spn. IDS-2A
21.	Storage Reservoirs	Spn. IDS-17
22.	Fixing of Inlet, Outlet, Overflow and Washout	As per Departmental Drawing and Designs & Specifications
23.	Lightning Conductor	As per ISS and IS rules Spn. IDS-17
24.	M.S. Ladder	Sp. No. Bd-V-19, Page No. 559 Spn. GS-20
25.	G.I. Pipe Hand Railing with RCC bars	Sp. No. BR-51 (a), Page No. 136 and 139 Spn. GS-20
26.	Providing, lowering, laying slotted pipe gallery	Spn. IDS-2
27.	Providing and fixing weep holes	Spn. IDS - 4
28.	Dapuri type steps	Spn. IDS-5
29.	Providing and fixing CI MH frame and cover	Spn. IDS-15
30.	Plastering	Spn. GS-15
31.	IPS flooring	Spn. GS-16
32.	Rubble Filling	Spn. GS-23
33.	Maintaining of Scheme	Spn. GS-24
34.	Providing earth work for embankment	Sp. No. Rd - 13 page 194
35.	Supplying 15 & 23 cum soling	Sp. No. Rd-19 Page 197
36.	Supplying 60 mm over size metal	Sp. No. Rd- 20 page 200
37.	Supplying 40 mm size metal	Sp. No. Rd - 22 page 201

Sr. No.	Short Description of Tender Items	Specifications reference from book of Standard Specifications of Govt. of Maharashtra (Red Book)
38.	Supplying soft murum	Sp. No. Rd-24 page 203
39.	Laying 15 to 23 cm rubble soling	Sp. No. Rd- 27 page 204
40.	Spreading soft murum	Sp. No. Rd-28 Page 205
41.	Spreading 40 to 60 mm metal	Sp. No. Rd-29 Page 205
42.	Compacting subgrade/soft murum 60 mm oversize metal 40mm metal layers.	Sp. No. Rd-35 page 209
43.	Providing & fixing guard stone in C.C. M-8	Sp. No. Rd - 70 Page 244

Note : Specifications mentioned above are for reference only. Other relevant specifications shall be referred.

GENERAL CONDITIONS OF CONTRACT AND DEFINITIONS

(A) DEFINITIONS

- 1.0 DEFINITIONS :** The terms and words used in the contract are defined as follows. The terms shall have the meanings described which shall be applicable to both the singular or plural thereof.
- 1.1 OWNER/PURCHASER :** The term owner/purchaser shall mean the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,.
- 1.2 ENGINEER IN CHARGE :** The term Engineer shall mean the person or firm appointed by the owner to undertake the duties and powers assigned to the Engineer by the owner and by these specifications acting directly or through authorized representatives. The term Engineer is referred to 'throughout the contract documents as if singular in number and masculine in gender and means the Engineer, or his authorized representative including the Engineer employees. The contractor will be notified in writing the name of the Engineer.
- 1.3 ENGINEER'S REPRESENTATIVE :** Means any resident Engineer or assistant to the Engineer appointed by the Owner or the Engineer to perform the duties set forth in clause 3 thereof by the Engineer.
- 1.3 CONTRACTOR'S EQUIPMENT :** The contractor's equipment means appliances or things of whatsoever nature required in or about the execution, completion, commissions and maintenance of the works but does not include plant intended to form of forming part of permanent work.
- 1.5 TENDERER.VENDER :** Any person or association of persons, firm corporation or organisation submitting a Tender for the works.
- 1.6 TENDER :** The offer or proposal of the Tenderer submitted in the prescribed form setting for the prices of the work to be performed and setting for the his acceptance of the terms and obligations of the conditions of the contract & specification except in so far as the variations requested by the Tenderer at the time of tender.
- 1.7 CONTRACTOR :** The contractor is the person or partnership of persons, firm or corporation or Organization identified as such in the contract Agreement and is referred to throughout the contract Documents as if singular in number and masculine gender. The term contractor means the contractor or his authorized representative and permitted assigns of such individual or firm or company.
- 1.8 CONTRACTOR DOCUMENTS :** The contract documents consist of the contract Agreement, the notices, instructions, the contractor's Tender, The Tender Security, the notice of Award, the notice to proceed, the Conditions of the contract, the Bond the Drawings, the specifications and all Agenda.
- SPECIFICATIONS :** The specifications cover the general terms, conditions and requirements of the contract and the materials supplied therefore, and the workmanship from the contractor. The specifications and the bill of quantities form part of the contract and are supplementary to the General conditions of Contract Wherever the term specifications is used apart from a specified standard specification or plan prepared for a particular item, as instructions of the contractor in executing that item of the work.
- 1.9 CONTRACT AGREEMENT:** The contract documents for the contract agreement. The Contract Agreement represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representation, or agreements either written or oral.

- 1.11 **STANDARDS : I.S.** Refers to Indian Standards issued by the Indian Standards Institution. All materials and workmanship which form part of this project shall conform to the relevant up to date amended IS or in its absence any other standard, as the Engineer may approve or direct.

(B) INSTRUCTIONS FOR GUIDANCE OF CONTRACTOR

1. The tenderer will be liable to be rejected outright if while submitting the tender.
- i) The tenderer proposes any alternation in the work specified in the tender or in the time allowed for carrying out the work or any other conditions
 - ii) Any of the pages of the tender are removed and or replaced.
 - iii) All corrections and additions of pasted slips are not initialed by the tenderer.
 - iv) Any erasures are made by him in the tender.
 - v) The tenderer or in the case of firm or company, the person having power of attorney does not sign or page 2 of B-1 tender form in the spaced provided for the purpose and signature is not attested by the witnesses.

2. MODE OF PAYMENT :

The break up of payment admissible for pumping machinery and other mechanical and electrical items shall be as under :

- i) 80% against receipt of materials at site and proper storing.
- ii) 10% after installation of all equipment in position complete.
- iii) 10% on testing and commissioning and satisfactory trial run for 2 weeks.

3. QUALITY OF MATERIALS:

All electrical, mechanical and other equipment will be of approved make, best quality and ISI mark only. These should be got approved before erection from the Chief Officer.

4. POWER OF ATTORNEY:

In case the tenderer is a firm or a company they should in their forwarding letter mention the names of partners and of the persons who hold power of Attorney authorizing him to conduct transactions on behalf of the firm or company and should produce a certified copy of the power of Attorney and partnership deed along with the tender.

5. The general conditions for supply and erection of equipment should be adhered to as detailed in Section 4 included in the document.

6. The contractor shall provide at his cost a temporary office with area of covered 200 sqft. with necessary furniture for use of Government Officer directed by the Engineer-in-charge. The shed and furniture on completion of work is however the property of the contractor and shall be removed by him at the close of work.

7. ACQUAINTANCE WITH SITE & WORK CONDITIONS ETC.:

The contractor shall study the site and general conditions in respect of approaches, labour, water supply, climate, quarries and the data included in the tender papers, get it verified from the actual inspection of site etc.before submitting the tender. In case of doubt about, any item or date included in the tender or otherwise it shall be got clarified in pre-conference. Once the tender is accepted it shall be concluded that the contractor has verified and made himself conversant with all the details required for completing the work as per tender conditions and specifications.

7. CHANGE IN SITE ALIGNMENT OR ORIENTATION:

No compensation shall be paid on account of change in site, alignment or orientation of proposed work.

9. CONTRACTOR TO MAKE HIS OWN ARRANGEMENT FOR APPROACH ROADS FOR CONVEYANCE OF MATERIAL ETC.:

The contractor shall make his own arrangement for obtaining the materials of construction required from quarries and see for himself if there are any approaches or not for conveyances of materials labour etc. to site of work and no extra claims shall be entertained due to non availability of such roads approaches etc. for conveyance of materials equipment's etc.

10. IMPORT LICENCE & PROCUREMENT OF IMPORTED MATERIALS:

The contractor shall quote for the indigenous equipment only as far as possible for the work contracted to be executed. Foreign exchanges and import license if any required shall have to be arranged for by the contractor independently. The department shall not take any responsibility in this regard. A certificate stating the necessity of the particular material for the work entrusted to the contractor would only be issued by the Department if required by contractor in writing. Delay in getting any materials will not be entertained for extension of time limit.

11. WATER FOR CONSTRUCTION AND TESTING ETC.:

The contractor shall make his own arrangement at his cost to get water for construction and hydraulic testing of the structure and pipeline. Department shall issue only recommendatory letter in this respect if requested by the contractor in writing. The Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. . however, if possible and without any obligation on its part may give water at prevailing commercial rate. However water for testing and commissioning of pumping machinery will be made available free of cost.

12. MACHINERY REQUIRED:

All machinery required for construction purpose such as mixers, vibrators, trucks etc. shall be arranged by the contractor. Department shall not take any responsibility for providing such machinery even on rental basis. For all concerning works mixers and vibrators must be used. No concerning shall be permitted unless centering and reinforcement are approved by the Engineer-in-charge.

13. ELECTRIC POWER SUPPLY:

Electric power supply required by the contractor for the purpose of execution of work and erection of pumping machinery and equipment shall have to be arranged by himself at his cost and department shall not take any responsibility in this respect.

However A.C. Electric power supply at 415 volts with permissible variation, 3 phase, 50 Hz at the site for the purpose of trial run of the pumping machinery will be arranged free of cost by the Department.

The contractor shall communicate the total electrical load required during successful operation of the pumping machinery.

14. USE OF SITE:

The contractor shall be permitted free of charge for bonafide purpose of execution of contracted work, the use of –

A) The site required for construction of work.

- B) The available approach or roads.
- C) The available and required land for labour camp and store for stacking his materials, layout of which shall be got approved from the Engineer-in-charge. The extent of land required shall be decided by the Engineer-in-charge at his sole discretion.

Land used at A, B & C above shall be handed over back in good condition to the Department excepting the areas where structure under contract is constructed, within 15 days of completion of work or the notice given by the Engineer-in-charge.

If adequate land is not available With the Department, the contractor shall make his own arrangements to get the private land on hire at his own cost for his labour camp and stacking of materials, stores etc.

15. INDENT OF MATERIAL TO BE SUPPLIED BY THE DEPARTMENT:

Within **90 days** from the date of work order contractor shall submit in triplicate phasewise requirement of materials which the department is supposed to supply as per Schedule-A.

16. SUPERVISORY STAFF:

The contractor shall have a well qualified experienced Resident Engineer who will be versed with design and installation aspect of heavy duty electrical pumping machinery, to be in day to day charge of the work and he shall be authorized to receive instructions from the Engineer-in-charge or the Dy.Engr ./S.D.O. in charge of the work. Instructions and order given to the Resident Engineer shall be deemed to have been given to the contractor.

For this purpose the contractor shall communicate to the Department, Name, Qualifications and experience of such Engineer to be appointed for execution of the work.

17. TENDER TO BE STRICTLY ACCORDING TO TENDER CONDITIONS AND SPECIFICATIONS :

It should be clearly noted that the tenderer has to strictly comply with the conditions and specifications laid down in the tender and no variations or deviations are permissible.

18. TRIAL PITS:

Contractor shall ascertain the strata at the proposed sites of work before submission of the tender. No extra claims for change in type of strata during actual execution shall be entertained.

19. PROGRAMME OF EXECUTION OF WORK:

The contractor shall furnish in duplicate to the Engineer-in-charge within one month from the date of issue of work order, a programme indicating progress of work to be achieved for completion within tendered time limit. The progress schedule shall be in the form of bar charts, statement forms, periodical out turn of quantities. Should the programme be found defective in any respect or impracticable the same shall be modified as required. Should the actual progress of work lag behind at any stage, revised programme by accelerating the progress to be achieved shall be drawn up keeping the target of completing the scheme unaltered.

20. DEWATERING:

Dewatering if any required to be done during any stage of work shall have to be done by the contractor without claiming any extra cost.

21 WORK ORDER BOOK :

A bound half sheet size work order book shall be provided by the contractor and handed over to the Department, for maintaining at the work site. This shall be a permanent record. The contractor or his Resident Engineer shall sign below the orders recorded by the Engineer-in-charge in token of having received them. He may take out a copy thereof if necessary. He will not record any remark in the order book but may take up the matter recorded therein. He shall carry out the orders promptly and report compliance.

22. FOUNDATIONS CONDITIONS AND PRESCRIBED BEARING CAPACITIES

The structures shall be founded on hard, firm and unyielding strata. The foundation strata shall be passed by the Engineer-in-charge without which the foundations shall not be laid. The bearing capacity to adopt for the foundation strata shall be appropriate for the strata passed by the Engineer-in-charge, and the super loads as per I.S. provisions.

23. DRAWINGS AND DESIGN SUBMITTED WITH THE TENDER:

Acceptance to the tender shall not mean approval to Design or Drawing, enclosed by the tenderer while submitting his offer. All the tendered drawings will be treated as tentative Deficiencies if any found from functional, technical and departmental obligatory requirements points of view shall have to be rectified and made good in detailed working drawings as pointed out by the Department without any extra claim.

24. DETAILED HYDRAULIC DESIGN, MACHINERY CALCULATIONS, FLOW DIAGRAM, LAYOUT PLAN AND DETAILED WORKING DRAWINGS :

- i) The contractor shall submit detailed working drawings showing plan, elevation section etc. for each unit, detailed calculations for pumping machinery and equipment such as pumps, motors, capacitors, transformer etc. in triplicate to The Chief Officer and simultaneously one set to the Engineer in charge.
- ii) The design of the various components of work shall be based on prevailing relevant I.S.I. standards and standard recognized reference book and shall be as per standard Engineering code of practice and shall be such as to meet functional technical. structural, aesthetic requirements.
- ii) Any modifications, alterations in design calculations and detailed drawings to be carried out as a result of compliance of scrutiny remarks of the competent authority shall be carried out and submitted a fresh by the contractor if called upon to above all concerned authorities in the manner indicated in (i) above without claiming any extra cost.
- iv) The actual execution of work shall be started by the contractor only after receipt of approval to the above detailed design calculations, and detailed drawings, from the competent authority.

Normally a period of 30 days would be required for scrutiny of and getting approval of the Engineer-in-charge to the design and detailed drawings from the date of receipt from the contractor by all concerned. The contractor shall be fully response for the delay that would be caused in scrutiny for giving approval to the design and drawings due to their being incomplete, shabby and haphazard manner without illustrative dimensioned sketches in the design and drawing; non-submission of reference books called for. No extra time limit shall be granted on account of legitimate time required in carrying out the scrutiny as mentioned above by the department and due to

improper designs and drawings submitted by the contractor.

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25. DESIGNER'S ACCEPTANCE

Contractor shall furnish if services are availed, the names of their designer and consultants along with their qualifications, addresses and written consent letters from them for accepting this work.

26. RESPONSIBILITY OF CONTRACTOR FOR DESIGN DRAWING AND WORK:

Even though the design and drawings are approved by the competent authority of the Department the contractor shall be fully responsible for the technical and arithmetical correctness and soundness of the design and drawings and for the safety of the works executed on the basis of such approved design and drawings and to the damages and failures etc. of the works so constructed whether due to bad workmanship or faulty designs and shall on no account claim any compensation and repairs of reconstruction to such damages or failure of the works. It shall have to be done by the contractor entirely at his cost.

27. DESCRIPTION AND OMISSION:

The tender drawings and specifications shall be considered as explanatory of each other and together shall form the technical requirements and stipulations of tender documents. Detailed drawings shall have preference over small sketch drawings. Similarly detailed specifications shall have preference over general specification. Should any discrepancy arise as to the meaning, intent or interpretation of any specification or drawing the decision of the Engineer-in-charge shall be final and binding on the contractor.

28. INSPECTION AND TESTING:

All equipment irrespective whether specified or not, shall be tested at manufacturers works or laboratory and test certificates for all equipment shall be furnished. Test shall be witnessed by the Engineer and/or inspection from third party appointed by the M.J.P. as and where specified. The items e.g. pipe works which are fabricated at site shall be tested for the pressures or such tests specified IS/tender specification.

Cost for all such tests including all incidental expenses shall be borne by the contractor and cost for all such tests shall be deemed to have been included in the tendered rates. However where the tests are to be carried out in presence of the Engineer, only tour expenses of the inspecting officers shall be borne by the Department. Inspection fee to third party shall be paid directly by the contractor.

29. ELECTRICAL INSTALLATIONS:

All electrical installations shall be carried out as per the provisions of Indian Electricity Act. Indian Electricity Rules, instructions and requirements of statutory authorities i.e. Electrical Inspector and Maharashtra State Electricity Board, Necessary test reports, shall be given by the contractor. The layout of H.T. substations and other electrical installations in indicative only. It will be the responsibility of contractor to design the layout as per applicable rules, regulations, instructions and requirements of IE Rules, IE Acts and statutory authorities. The contractor shall be responsible to get approval of the electrical inspector and work shall be executed as approved by the electrical inspector. All expenses including inspection fee shall be borne by the contractor.

30. FORCE MAJEUR:

The contractor shall not be held responsible for delay or failure to perform the

contract, only in case of force major conditions listed below :

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- i) Acts of the God, acts of Public enemy, acts of Government fires, flood, epidemics, quarantine restrictions.
- ii) Lockouts and strikes in factories manufacturing the pumps, motors, transformer and breakers.

Except the force major conditions stipulated above no other condition shall be considered as Force major conditions.

In the event of force major condition stipulated above suitable extension only will be granted. The contractor, however, will not be entitled for any other compensation including price variation due to such extension.

31. DISPOSAL OF SURPLUS EXCAVATED STUFF:

All surplus excavated stuff when would remain at site after refilling and consolidation and bringing the surface to original condition, shall be used by the contractor for filling up low laying areas or pits within the fenced premises or disposed off suitably as directed, without any extra.

32. HOUSING AND FOOD GRAIN FOR LABOUR:

The contractor shall be fully responsible for making arrangements entirely at his cost housing all laboratory employed by him and make necessary satisfactory arrangements for the same as may be required under the rules and laws of the Central Government, State Government and Local body. All the rules regarding workmen's compensation etc. shall be binding on the contractor without any claim on the Department

So also food grains for the labour shall be arranged by the contractor where it is not available in the open market.

33. ACCIDENTS ON THE WORK

The contractor shall be fully responsible for any accident that may occur to the labour on his work on duty and report the same to the Engineer-in-charge and concerned Govt. labour dept. authority shall pay all necessary compensation as per rules, failing which it would be paid by the department from the amount payable to him.

34. RATE INCLUSIVE OF ALL TAXES, DUTIES ETC.

All the taxes and duties levied by the state and Central Govt. and by the local body at prevailing rates applicable on the date of receipt of tender shall be fully borne by the contractor and shall not be reimbursed to him on any account. The tendered rates shall be inclusive of all taxes, duties and ceases and shall also be inclusive of the tax leviable as sales tax on works contract under the provision of Maharashtra sale tax on transfer of property in good involved in the execution of works contracts Acts 1985 (Maharashtra Act of XIX of 1985) and turn over tax. Maharashtra Act No. XXXVI of 1989.

35. NON REFUND OF OCTROI DUTY

In respect of provision made in clause No. 35 of B-1 tender form, it is made clear that octroi duty paid to the local body on materials brought against this tendered work shall not be refunded so also no octroi exemption certificate shall be issued by the Department.

36. NON INTEREST ON DUES

No interest shall be payable by the Dept. on the amounts due to contractors pending final settlement of the claims.

37. INCOME TAX

As per rule Income tax on gross value of each bill shall be deducted towards income tax and a certificate to that extent shall be issued by the Engineer-in-charge.

38. PERFORMANCE TEST

The performance test shall be conducted immediately after trial run and commissioning period as specified else where in this tender, Certificate shall be recorded by the officer not below the rank of Dy. Engineer, (Mech.)

39. GUARANTEE PERIOD AND FINAL CERTIFICATE

Guarantee period shall be of twelve calendar months from the date of issue of final certificate by the Engineer-in-charge. Final certificate shall be issued only after all works are completed in accordance with the contract agreement, -commissioned and have passed field performance test and subject to provision in B-1 form, site is cleared and Twelve week period for trial and commissioning over. Final certificate will be issued once only for entire works and not for completion of part work. Guarantee covers all replacement of defective items free of charges.

During the guarantee period any failure or defect attributable to manufacture, design shall be expeditiously attended by the contractor free of charge to the Engineer's satisfaction. If such attendance is unduly delayed, the Engineer-in-charge shall rectify the failure/defect at the risk and cost of the contract. Any provision regarding period in B-1 form in contravention of 1----- /-s guarantee period shall be null and void.

40. RECORD DRAWINGS DESIGNS

After satisfactory completion of the work in all respect the contractor shall submit five sets of designs and completion record drawings of each and every works as actually constructed with all dimensions and levels with the stamp "Record Drawings" along with the specifications, operating manual and instructions etc. before finalization of the final bill without claiming any extra cost, failing which the final bill shall not be paid.

41. REFUND OF SECURITY DEPOSIT

The security deposit lodged by the contractor shall be refunded after expiry of guarantee period or payment of final bill whichever is later. Any provision in B-1 form which is in contravention of above stipulation shall be null and void.

GENERAL SPECIFICATION FOR SUPPLY AND ERECTION OF PUMP

1. GENERAL

This part covers conditions pursuant to the contract and will form an integral part of contract. The following provisions shall supplement the general conditions detailed specifications and requirements.

2. LIMITS OF CONTRACT

Equipment furnished shall be complete in every respect with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and or needed for erection, completion and safe operation of the equipment as required by applicable codes though they may not have been specifically detailed in the technical specifications, unless included in the list of exclusions. All similar standard components / parts of similar standard equipment provided shall be interchangeable with one another.

3. ENGINEERING DATA

The contractor shall furnish complete engineering data of each set of equipment such as name of manufacturer, the type of model of each principal item of equipment proposed to be furnished and erected in the annexes Standard catalogs pages and other documents of the tenderer may be used in the tender to provide additional information and data as deemed necessary by the tenderer. The review of these data by the Engineer will cover only general conformance of the data to the specifications and document, interfaces with the equipment provided under the specifications. External connections and of the dimensions which might affect plant layout. This review by the engineer may not indicate a thorough review of all dimensions, quantities and details of the equipment, materials. any device or items indicated or the accuracy of the information submitted. This review and / or approval by the engineer shall not be constructed by the contractor, as limiting any of his responsibility and liabilities for mistakes and deviations from the requirements, specified under these specifications and documents. All engineering data submitted by the contractor after final process including review and approval by the engineer shall form part of the contract document and the entire works covered under these specifications shall be performed in strict conformity, unless otherwise expressly requested by the engineer in writing.

4. DRAWINGS

Each drawing submitted by the contractor shall be clearly marked with the name of the owner, the nit designation, the specification number and the names of the project. If standard catalog pages are submitted the applicable items shall be indicated their. All titles, noting, marking and writings on the drawings shall be in English. All the dimension should be in metric units. All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawing shall be at the contractor's risk. The contractor may make any change in the design which are necessary to make equipment conform to the provisions and intent of the contract and such changes will again be subjected to the approval by the engineer. Approval of contractors drawings or work by the engineer shall not relieve the contractor of any responsibilities and liabilities under the contract.

Drawings shall include all installation and detailed piping drawings wherever applicable. All piping 100 millimeter and larger shall be routed in detail and smaller pipe shall be shown schematically or by isometric drawings. All drawings shall be fully corrected to agree with actual as built construction.

5. DESIGN IMPROVEMENTS

The engineer or the contractor may propose changes in the specification of the equipment of quality there of and if the parties agree upon any such changes the specification shall be modified accordingly. If any such agreed upon change ins such that it affects the prices and schedule of completion, the parties shall agree in writing as to the extent of any changes in the price and of schedule of completion before the contractor proceeds with the changes following such agreements the provision there of shall be deemed to have been amended accordingly.

6. CONTRACTOR'S MATERIALS BROUGHT ON TO SITE

The contractor shall bring to site all equipment, components, parts, materials, including construction equipment, tools and tackles for the purpose of the Works under intimation to the engineer. All such good shall form the time of their being brought, vest with in the owner. but may not on any account be removed or taken away by the contractor or his sub-contractors without the written permission of the engineer. The contractor shall nevertheless by solely liable and responsible for any loss or destruction thereof and damage there to.

The owner shall have a lien on such goods for any sum or sums which may at any time to be due or owing to him by the contractor, under, in respect of or by reasons of the contract, After giving a fifteen (15) days notice in writing of his intention to do so, the owner shall be at liberty to sell and dispose of any such goods in such a manner as be shall think fit including public auction or private treaty and to apply the proceeds in or towards the satisfaction of such sum or sums due as aforesaid.

After the completion of the works, the contractor shall remove from the site under the direction of the engineer the material such as construction equipment, erection tools and tackles scaffolding, etc. with !he writ-ten permission of the engineer. If the contractor fails to remove such materials, within fifteen (15) days of issue o notice by the engineer to do so, then the engineer shall have the liberty to dispose of such materials and credit the proceeds thereof to the account of the contractor.

7. MAINTENANCE TOOLS AND TACKLES

The contractor shall supply with the equipment one complete set of all special tools and tackles for the erection, assembly, disassembly and maintenance of the equipment. However, those tools and tackles shall be separately packed and brought on to site. The tenderer shall indicate all the above items in the annexure.

8. CONTRACTOR'S CO-OPERATION WITH THE OWNER

In cases where the performance of the erection work by the contractor affects the operation of the system facilities of the owner. such erection work of the contractor shall be schedule to be performed only in the manner stipulated by the engineer and the same shall be acceptable at all times to the contractor The engineer may impose such restrictions on the facilities provided to the contractor such as electricity, water, etc. as he may think fit in the interest of the owner and the contractor shall strictly adhere to such restrictions and co-operate with the engineer. It will be the responsibility of the contractor to provided all necessary temporary instrumentation and other measuring devises required during start up and operation of the equipment system which are erected by him. The contractor shall also be responsible for flushing and initial filling of the oil and lubricants required for the equipment furnished and erected by him, so as to make such equipment ready for operation the contractor shall be responsible for supplying such flushing oil and other lubricants unless otherwise specified elsewhere in these documents and specifications.

9. QUALITY ASSURANCE PROGRAMME

The equipment and service under scope of this contract whether manufactured or performed within the contractor's works or at his sub-contractor's premises or at the owner's site or at any other place of work are in accordance with the specifications, the contractors shall adopt suitable quality assurance programme to control ch activities at all points, necessary. such programme shall be outlined by the contractor and shall be finally accepted by the engineer after discusson before the award of contract, and such agreed programme shall form part of the contract.

10. UNFAVORABLE WORKING CONDITIONS

The contractor shall confine all his field operation to those works which can be performed without subjecting the equipment and materials to adverse effects, during inclement weather conditions, like monsoon storms etc. and during other unfavorable construction condition. No field activities shall be performed by the contractor under conditions which might adversely affect the quality and efficiency thereof, unless special precautions or measures are taken by the contractor in a proper and satisfactory manner in the performance of such works and with the concurrence of the engineer. Such unfavorable construction conditions will in no way relieve the contractor of his responsibility to perform the works as per the schedule.

11. PAINTING

All exposed metal parts of the equipment including piping, structures, railings etc. wherever applicable, after installation unless otherwise surface protected, shall be first painted with at least one coat of suitable primer which matches the shop primer paint used, after thoroughly cleaning all such parts of all dirt, rust, scales, greases, oils and other foreign materials by wire brushing scraping or sand blasting, and the same being inspected and approved by the engineer of painting. Afterwards, the above parts shall be finished with two coats of allied resin machinery enamel paints. The quality of the finish paint shall be as per the standards of I.S.I. or equivalent and to be of the color as approved by the engineer.

12. FIRST FILL OF CONSUMABLES, OILS AND LUBRICANTS

All the first fill of consumables such as oils, lubricants and essential chemicals etc. which will be required to put the equipment covered under the scope of the specifications, in to successful trial operation, shall be furnished by the contractor unless specifically excluded under the exclusions in these specifications and documents.

13. CHECK OUT OF CONTROL SYSTEMS

After completion of wiring, cabling furnished under separate specifications and laid and terminated by the owner, the contractor shall check out the operation of all control systems for the equipment furnished and installed under these specifications and documents.

14. EQUIPMENT PERFORMANCE GUARANTEE

The performance guarantee for the equipment under the scope of the contract are detailed separately in the technical specifications. These guarantee hall supplement the general performance guarantee provisions covered under general terms and conditions.

15. PERCOMMISSIONING TRIALS - TESTS

15.1. START UP

On completion of erection of the equipment and before start-up, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the engineer and the contractor for correctness and completeness installation and acceptability for start up, leading 0 initial pre-commissioning test at site. The list of pre-commissioning test to be performed shall be as mutually agreed and included in the contractor's quality assurance programme. The contractors commissioning start up engineers, specifically identified as far as possible shall be responsible for carrying out all the pre-commissioning test. On completion of inspection, checking and after the commissioning test are satisfactorily over, the contractor's, the complete equipment shall be placed on initial operation during which period the complete equipment shall be operated integral with sub-system and supporting equipment's as a complete plants.

15.2 TRIAL OPERATION

The plant shall then be on trial operation during which period all necessary adjustments shall be made while operating, over the full load ranging the plant to be made ready for performance and guarantee test.

The duration of trail operation of the complete equipment shall be **twelve months** out of which at least seventy two (72) hours shall be continuous operation on full load or any other duration may be agreed to, between the engineer and the contractor The trial operation shall be considered successful, provided that each item of the equipment can operate continuously at the specific operating characteristics, for the period of trial operation.

For the period of trial operation, the time of operation with any load shall be counted. Minor interruptions not exceeding four (4) hours at a time, caused during the continuous operation shall not affect the total duration of trial operation. However, if in the opinion of the engineer, the interruption is long, the trial operation shall be prolonged for the period of interruption.

A trial operation report comprising of observations and recordings of various Parameters to be measured in respect of the above trial operation shall be prepared by the contractor. This report, besides recording the details of the various observations during trial run shall also include the dates of start and finish of the al operation and shall be signed by the representative of both the parties. The report shall have sheets, recording all the details of interruptions occurred, adjustments made and any minor repairs done during the trial operation. Based on e observation, necessary modifications repairs to the plant shall be carried out by contractor to the full satisfaction of the engineer to enable the latter to accord permission to carry out performance and guarantee test on the plan. However for defects which do not endanger the safe operation of the equipment shall be considered as reasons for withholding the aforesaid permission.

The commissioning and operation period generally will be 8 continuous weeks, unless otherwise specifically specified. During the commissioning and operation period, the contractor shall depute his personnel full time to operate, maintain and repair the equipment the personnel so deputed shall maintain log books and other records as directed by the engineer.

During this period, the owner shall make only electricity available to the contractor, all

other consumable materials (lubricants and other requirements) shall be provided by

the contractor at his cost. During commissions period the owner's personnel who shall continuously work with contractor personnel, shall be adequately trained by the contractor's personnel to the full responsibility of operating maintaining, repairing etc. the equipment and plant.

16. ELECTRICAL SAFETY REGULATIONS

In no circumstance will the contractor interfere with fuses and electrical equipment belonging to owner or other contractors.

Before the contractor connects any electrical appliances to any plug or socket belonging to the other contractor or owner, he shall :-

- a. Satisfy the engineer that the appliance is in good working condition.
- b. Inform the engineer of the maximum current rating, voltage and phases of the appliances.
- c. Obtain permission of the engineer detailing the sockets to which the appliances may be connected.

The engineer will not grant permission to connect until he is satisfied that :

- a. The appliance is in good condition and is fitted with a suitable plug.
- b. The appliance is fitted with suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.

No electric cable in use by the contractor / owner will be disturbed without prior permission. No weight of any description will be imposed on any such cable and no ladder or similar equipment will rest against or be attached to it.

No work will be carried out on any live equipment. The equipment must be made safe by the engineer and permit work issued before any work is carried out. The contractor shall employ the necessary number of qualified, full time electricians to maintain his temporary electrical installation.

PUMPING MACHINERY

Detailed specification for pumping machinery

The item quoted by the contractor in schedule b are to be executed as per detailed specification below mention and of all material, labour, transport to site watch and work and all sundry cost to run and commission required for this work, is included in rate quoted for item in schedule B

ITEM NO. 1 Submersible Motor Pumpset

Approved Make – As per schedule attached

The pump should be capable of giving discharge of **4832 lit/hr** one pm against total head of **55 M.** from all causes when running on 2900 rpm the pump should also cover the head range from **00.00 to 55 M.** the shut of head should be sufficiently high over the working range of the pump the minimum hp acceptable is **3 BHP**

The pump should be minimum size of 150 MM and have a bronze impeller, stainless steel shaft, minimum no. of stages, stem line non return valve, strum brass strainer etc completed. The efficiency of pump should be maximum at duty point condition that is should not be less than 65%. The pump should conform to IS 8034/1976 The submersible motor should be wet/water filled, squirrel cage type, fitted with stainless steel shaft, seal cap, expansion chamber, thrust bearing etc completed. Suitable to operate on 380/415 volts 3 Ph 50 Hz Ac supply. The motor bearing should be adequate capacity. The HP of motor should be such that its should have 10% reserved margin over and above the power required under optimum critical condition. the motor shall conform to IS 9283:1979 The pump and motor should be coupled directly. The motor shall have same speed that is 2900 RPM The Motor pumpset shall be suitable both for vertical and horizontal installation. The pump should be provided with flanged type outlet connection minimum Hp for motor required is **3 BHP.** The Motor pumpset shall be installed on open well of **6.00 M.** dia. In a vertical / horizontal position the necessary MSSD clamps of suitable size should be provided by contractor to enable installation in horizontal position to be provided for fixing each pump in position. The pump should be erected on square frames of suitable size with extension on two sides so as to rest the MSSD clamps {To be provided for folding the drop pipe and pumping unit firmly} on it. The frames shall be supplied by the contractor the design of square frame should be such that the pumping unit should be pass through it very easily. The square frame to be fixed in the main girder by nut and bolt arrangement only. The drawing of square frame and pump motor stools is given.

The pump set above 30 HP shall be inspected by EIL and this inspection fee should be paid by the contractor.

In case of horizontal installation the submersible Motor Pump shall be installed horizontally at the bottom of well on the MS fabricated resting stool prepared out of MS heavy duty suitable size channels/angle etc. The resting bed should be properly design for clamping the motor pump unit on it in such a fashion that the motor pump set should be inclined by about 15 Degree from rear end of motor towards the delivery end of the pump unit the contractor should fabricate and provide the necessary MS bend of suitable angle to match outlet of pump to the vertical drop pipe for delivery connection while designing the MS resting bend/stool. The minimum submergence required for pump in horizontal position and the maximum silt available in the well shall be considered. best quality half inch size wire rope should be provided and fixed to the horizontal pump set, tool assembly by U clamp, nut bolt with U clamp and

nut bolts. The stem line non return valve of pump should be fixed in vertical position with vertical drop pipe near to pump. The length of rod should not be less than the total length of square frame. MS clamp and MS fabricated bed should be given three coats of black anti corrosive paint with the coat of red oxide as the primer. The design, size and material should be got approved from engg. in charge before fabrication etc comp. the pump set shall be lowered down up to the bottom of well filling with payment will not be made.

ITEM NO. 2 : L.T. PANEL

The panel board shall be box type it shall be fabricated from MS angle of 50x50x6 mm. The panel box shall be fabricated from 16 SWG. MS sheet. It shall be closed from back side and shall have hinged shutter at front side. All the switches shall be fitted in a decent manner with sufficient space. The panel board shall be given one given coat of primer and two coats of steel grey colour. The panel board shall consist of the following

- | | | |
|----|--|--------------------|
| 1 | Incoming I.C.T.P.N. switch with rewirable fuses capacity.....Amp | 1 NO. |
| 2 | Front mounted and operated T.P. change over switch of | Amp 1 NO. |
| 3 | Outgoing I.C.T.P.N. switch with rewirable fuses | |
| | i) For starters | Two Nos of.....Amp |
| | ii) For capacitor | One Nos of.....Amp |
| 4 | Following types of starter shall be used | |
| | Upto 5.00 Hp motor DOL starter | |
| | Above 5.00 HP but upto 20.00 HP star delta starter | |
| | Above 20.00 HP but upto 50.00 HP A.T. starter | |
| 5 | Motor starter with thermal overload relay, no volt coil, etc. complete. | 2.00 No. |
| 6 | Single phasing preventor cum water level guard (current sensing type) prodless
"Minilec" make PUMPGUARD model of required capacity | 2.00 No. |
| 7 | I.C.D.P. switch.....Amp for lighting | 2.00 No. |
| 8 | Voltmeter of 0-500V range, square flush type with selector switch size 100 mm | 1 No |
| 9 | Ammeter ofAmp range, square flush type with selector switch | 2.00 No |
| 10 | Capacitor..... KVAR common for both pumps, fixed on panel board connected to a separate switch. The capacitor shall be got tested from the MSEB authorities. | |
| 11 | Phase indicating neon lamps with sliding fuses | 3.00 No |
| 12 |A x 500 V kitkat. | 3.00 No |

Approved makes

1) Switches

- Iron clad stanley/ Ashok / KEW / Crompton / Standard / Nirmal
- Metal clad CPL / LT / Crompton / H Elecon / Ashok

2) Measuring instruments

AF/IMP/DIP/NSDA/MECO/RISHABH as approved by MSEB

3) S.P.P. cum water level guard Minilec make

The pressure guage shall be dial type with pressure range 0 to 10 kg/cm.sq . Its shall be provided with you tube and three way clock arrangement. The pressure guage shall be installed on the first MS bend above the girders. 3/8"size socket shall be welded to both the bends submersible pumpsets for installation of pressure guage on it.

Makes : Uday/Fiebig

Item No. 6 (a) : Providing and fixing sluice ,non return valve

The C.I. double flanged sluice valve dia,and of PN-1 rating upto 100 m head and PN 1.6 above 100 m but below 160 m head,water works quality and confirming to IS 780.The valve shall be installed in good Engineering manner with all fastners ,gaskets etc.complete as directed by Engineer in charge.The valve shall be provided with C.C.block for supporting.

Makes :IVC/Kirloskar/BSJ Sahu/Gavane Patil

Item No. 6 (b) : Reflux valve

The reflux valves shall be..... mm dia with PN 1 rating upto 100 m head and PN 1.6 above 100 m but below 160 m head.Water works type,heavy deuty,double flanged with bronze on bronze sheet.The reflux valve C.C. as per direction of the Engineer in charge.

Makes : IVC / Kirloskar/BSJ Sahu/Gavane Patil upto 300 mm

Item No. 6 (c) : Air valve

The air valves shall be single ball,single acting and as per relivent ISS,of 50 mm size and shall be erected on the vertical commen bent of delivery side, outside well.

Makes : IVC / BSJ Sahu/Hawa/ Minoti/ Balaji

Item No. 7 : Providing and fixing MS specials and MS specials And MS pipe pieces.

The MS flange pipes and specials should be hydraucally tested to with stand twice the actual head of pump or 1.5 times the shutup head whichever is more.Rubber jointing 1/8 inch with nut bolt and necessary TW masonry support shall be provided.The specials shall be supplied as per drawing or as directed at the time of actual erection work.MS specials pipe and valve shall be given two coat of black anticorrosive paint of superior quality.The work also include the dismantling and reconstruction of the portion of well to take out the delivery pipe.MS flanges of 10 mm thickness shall be provided for all MS specials , MS vertical and horizontal pipe (outside) well.

Item No. 8 : Earthing

Necessary double earthing as per IS 3043 and as per i.e. rules shall be provided with 6 SWG GI wire firmly bolted to the panel board and GI earth plate,buried 1.5 m below ground level with necessary charcoal,salt etc.complete.Earthing wire shall pass through 15 mm dia GI pipe of 5 feet length above GL outside the switch room.It shall be fixed be provided for watering approximately 1. 1/2 feet above ground level.

Earthing (plste type) shall be carried out as per IS 3043 and IE rules,act as per the the direction of Engineer-In-Charge.

Item No. 9 : Test and Trial

The contractor shall arrange with all tools and equipments for a satisfactory field testing,after a period of continuous running for one month for both pumpset and

equipments. In this trial rough period, if any abnormality is observed by the Engineer, the same shall be rectified by the contractor. Running trial of 200 Hrs. for each pump shall be arranged. The contractor shall be responsible for the satisfactory performance of the equipment supplied and installed by him for a period of 1-----/-s from the data of satisfactory test, trial and performance. Any failure or defect noted during or after performance test shall be attended by the contractor within 15 days notice period, failing which the board shall have right to carry out rectification at the cost and risk of the contractor. The discharge test (barrel test) shall be given by the contractor after commissioning of submersible pumpset for which no extra payment will be made. The necessary equipment for discharge test shall be made available by the contractor. The test shall be carried out in the presence of Junior Engineer (M) and Deputy Engineer (M). If discharge test is not found satisfactory, the pump shall be replaced by the contractor from the manufacturer at his own cost.

Item No. 10 : Electrification

The wiring shall be made of aluminium conductor 1.5 sq mm wire. PVC conductor of suitable shall be used. All switches, plug, sockets shall be approved make. Total 4 points and 1 plug wiring shall be provided. The electrical fitting shall be provided as under. Fitting shall be approved make of M.S.E.B.

- | | |
|--------------------------------------|----------|
| 1) Fluorescent tube fitting box type | 1.00 No |
| 2) Bulk head fitting with tube | 2.00 Nos |
| 3) 60 watt bilb with holder inside | 1.00 No |

Separate wooden board 16 amp kitkat fuse shall be provided.

GUIDELINES TO THE CONTRACTOR AND HIS OBELIGATORY CONDITIONS

- 1) The contractor shall be licensed electrical contractor and register with MWSS board
- 2) The pump supporting and platforms is board responsibility. All other material required for the job is contractor's responsibility.
- 3) No. RR shall be accepted. Any damages or whartage will be contractor's responsibility and liability.
- 4) A) 85 % payment will be released on receipt of material on site in good condition with manufacturer test certificate and other documents required by Engineer.
B) 5 % payment on satisfactory installation of all the equipments.
C) 10 % on satisfactory testing after a period of one month after commissioning and satisfactory test recorded.

In case the well is not ready and the contractor is directed to give delivery at departments godown, he shall be entitled to 85 % payment of material against manufacturer test certificate. The place of delivery is board choice. No payment, however, be further paid for further carting of material at the site of material.

- 5) 200 Hrs. running trial for each pump will be taken and pump will be run for a period of one month under exclusive supervision of the contractor. In case, the pumps do not give discharge indicated, it shall have to be replaced. No reduced payments should be asked for and will not be paid.

- 6) MSEB connection is to be obtain by department. However, test report of capacitor and complete installation is the responsibility of agency.
- 7) As per Indian electricity rules, double earthing is necessary and this is a part and parcel of tender.
- 8) Preference will be given to a costly and higher category pump, if board fill it be of superior quality.
- 9) The tender shall furnished authorisation letter of manufacturer for the authorise dealership. Also the characteristic ICS curves chart and other technical documents shall be attached with the tender otherwise the tender will be rejected.
- 10) Any tax variation and duty variation under statute will be allow and the date of receipt of tender will be taken as base. The contractor shall have to produced necessary documents incase there is statutory increase.
- 11) The tender must accompany pump characteristic, failing which tender is likely to be rejected.
- 12) The contractor should see the site prior to tendering if not, it shall be so presumed for all practical purpose.
- 13) Denger board is required to be fix as per Indian electricity rule no extra payment shall be effected.
- 14) The contractore should clearly mention what lubricant are to be used.
- 15) The arrangement is govern by Indian contract law & under no circumstances sell tax or D or AF form be issued.
- 16) Payment of item no 1 will be not be released supply is accompanied with test report & gauranty card of the manufacturer and the date from the report and a name plate are tallied and found correct as per tender condition.
- 17) Gauranty period for the moter pump set and all alied equipment should be 1-----
-----/- after giving satisfactory trial run & recorded.
- 18) The schedule for the details of submersible pumpset and other equipments must be filled by the contractor, otherwise the tender will be consider incompleted and will not be accepted.

LIST OF APPROVED MAKES (ELECT. / MECH.)

I)	PUMP	
I)	Submersible Pumps	
a)	For 100 mm(4") pumps with Polpropylene Impellers	
	Pluga	Vadodara (Upto 31-12-08)
	Shakti	UKALIPENIkaranji (31-3-1 11)
	Amrut	Visnagar(Gujrat) (31-3-1 11)
	Waterman	Ahmedabad [31-3-1 11
	Agasti	Mira (31-3-11)
	Falcon	Rajkot (upto 5 HP only) (31-3-11)
b)	For 150 mm(6") pumps with Bronze Impellers only	No limit
	Name of Pump	Manufactured at
	Category "A"	
	Agasti	Mira, Thane (31-3-11)
	Waterman	Ahmedabad (31-3-11)
	Amrit	Visnagar (Gujrat) (31-3-11)
	Shakti	UKALIPENIkaranji (31-3-11)
	Unnati (U-Neel)	Ahmedabad (31-3-11)
	Pluga	Vadodara (31-12-08)
	MBH	Ahmedabad (31-12-08)
	Lubi	Ahmedabad (31-12-11)
	Category "B"	HP 30, Q-1000 LPM, head 100 m
	Falcon	Rajkot (upto 31-3-11)
	Jyoti	Vadodara
	Unnati	Ahmedabad (Unnati Brand 31-3-11)
	Sabar	Ahmadabad (upto 31-3-11)
	Varuna (La-Gajjar)	Ahmadabad (upto 31-3-11)
	Category "C"	HP-15,Q-500 LPM, Head-80 m
	Konai	Ahemadabad (upto 31-3-11)
	Ellen	Coiminator (upto 31/12/08)
	Deccan	Coiminator (upto 31-3-11)
	Texmo	Coiminator (upto 31/12/08)
	Taro	Colmbator (Texmo) upto (31-12-08)

	Category "D"	HP-7.5 HP, 250 LPM 65 m)
	Anco	Palghar Mumbai (upto 31/12/08)
	Globe	Ahmadabad[(upto 31/3/11)
	Mahendra upto	Coimbatore (upto 31/3/11)
	SB Pump upto Aroma *Arihant Pump	Jabalpur (upto 31/3/08) Ahmedabad upto (31-3-11)
	Saguna	Coimbatore (upto 31/12/08)
c)	Pumps (Upto 50 HP)	
	MBH	Ahmadabad (upto 31/7/08)
II	Monoblock Pumps	
a)	Centrifugal Monoblock Pump	Kirloskar, Jyoti, Crompton Greaves. Texmo (upto 31/12/08) Aquatex (upto 31/12/08), MBH (Upto 50HP (31.12.08)
b)	Submersible Monoblock Horizontal	Waterman, Shakti, Aqua tex upto 31.12.08, MBH (Upto 31.12.2008), Darling.
c)	Submersible Monoblock Vertical	Other makes as Approved at local level Aquatex upto 31.12.08
d)	Submersible for dewatering	Modi MBH upto 31/12/08
III)	Centrifugal Pumps	
a)	No Limit	Kirloskar, Jyoti, WPIL, M + P, Flowmore.
b)	Up to 300 H.P	All above
IV)	Vertical Turbine Pumps	
a)	No Limit	Jyoti, M+P, FBM, Kirloskar, WPIL
b)	Up to 600 HP	All above
c)	Up to 300 HP	All above
V)	SEWAGE PUMPS	
a)	Submersible	
i)	No Limit	Kishor, Aqua, KSB
ii)	upto 250 HP	All above
iii)	Upto 100 HP	All above Pullen MBH (upto Dec-08)
iv)	Upto 50 HP	All above & Jyoti
v)	Upto 30 HP	Darling,(Indore) Modi (Thane) upto 31/05/08

b)	Dry Well Installation	
	No limit	Kirloskar, Jyoti, M+P, Kishor
	Upto 100 HP	Flowmore (upto - 31/12/08)
	Vert. Non clog	Vlowmore (upto 25 HP) (31/12/08)
VI	Vaccum Pumps	
a)	5 HP and above	Kirloskar
b)	Below 5 HP	Kirloskar &, makes approved at Local level.
2	Valves	
a)	Sluice valve	
i)	600 mm and above	Kirloskar, IVI, IVC
ii)	400mm dia to 600 mm dia	All above Durga (31/3/11), Gavane Patil upto 31-3-11 Mayur, Patson
iii)	200mm dia to 400 mm dia.	All above.
iv)	50 to 200 mm dia.	All above
b)	Reflux valve	
i)	600mm dia and above.	Kirloskar, IVI, IVC
ii)	400 mmdia to 600 mm dia	All above, Durga (31/3/11), Mayur, Patson, Gavane Patil (31-3-11)
iii)	200mm dia to 400 mm dia	All above
iv)	50 to 200 mm dia	All above
	Kinetic Air Valves	IVI, IVC, Hawa, Mayur, Durga
d)	Foot Valve up to 80 mm dia	Kirloskar &, makes approved at local level
ii)	Above 80 mm dia	Kirloskar
e)	Butterfly Valves	IVI, IVC, Hawa, Mayur, Durga
f)	Actuators	Limtorque
3)	Pipes	
a)	G.I.Pipes and special	Zenith, Tata, GST, Suryaprakash, Jindal.
	C.I. Pipe and special	Reputed makes approved at a local level.
4)	Tools	Gedore, Jhalani, Taparia
5)	Pressure/Vacuum Gauges	Feibig, Uda. H-Guru
6)	Lifting equipments	
a)	Chain pulley block monorail with travelling trolley	Elephant, W. H. Brady (5 T only)

b)	HOT, Cranes	Herculas, Anupam & Smaco
	EOT, Cranes	W.H. Brady 5 to, Anupam & Smaco, Herculas
7	Motors	
A)	L.T. Motors	
1	Horizontal Motors	Kirloskar, Jyoti, Compton, Alstom, NGEF, Siemens, BHEL
2	Vertical solid shaft motors	Kirloskar, Jyoti, Compton, Alstom, NGEF, Siemens, BHEL
3	Vertical hollow shaft motors	Kirloskar, Jyoti
B)	H.T. Motors	Kirloskar, Jyoti, Compton, Alstom, NGEF, BHEL
8	Starters	
	D.O.L.	L.&T, Siemens, SEIL, Kirloskar, MEI, Chandan, Minilec
	Star Delta	L&T] Siemens, SEIL, Bhartiya India Ltd., Minilec, Kirloskar
c)	Auto transformer starter with air brake with contactor	Locally fabricated as per M.J.P.'s specifications
d)	Power contactor for ATS	
	Upto 800 Amps Upto 600 Amps Upto 400 Amps	SEIL, L&T, Siemens All above &, BCH, Andrew Yule Havell's. Killburn, C &, S, Andrew Yule, Havell's
e)	Soft Start Starters	Instronix, Electrotech System (Sangli) upto 200HP Jayshree (PUne) Innovative (Pune), Jaguar (Miraj), Crompton Greaves (Nashik)
9	Switches & Fuse	
a)	Rotary	Kay(ee, L&T, Siemens, Chandan, Thaakur Standard
b)	iron Clad	Stanley, Ashok, KEW, Crompton, Chandan, JSL, Standard
c)	Metal Clad	CPI, L&T, Elecon, Ashok, Standard, Crompton Chandan
d)	Fuses Switch.	L&T, Crompton, Control & Switch Gear, Indoasian upto 31-7-08
e)	Change over switch on load, off load	Havell's, Standard-1250 A, Indoasian upto 31-7-08, JSL, Control & switch
	HRC Fuses	L&T, Alstom, Siemens, Standard 630A, Indoasian.(31-7-08), Control & switchgear

10	Oil Circuit Breakers	
11	Moulded Case Circuit Breaker:	
a)	No Limit	L&T, ABB, SEIL, Jyoti, Alstom, Andrew Yule, Havell's, Control & SwitchGear, Standard Electrical (upto 800 Amp) (31.3.11) Schneider, JSL
	Upto 630 AMP	All above & AEG-NGEF, Indoasi, BCH
12)	Air Circuit Breaker	
a)	No Limit.	L&T, Siemens, , Control & switch gear Schneider, Jyoti, JSL
b)	Upto 1000 Amp	All above and ABB, SGIL
c)	Upto 630 Amp	As above
13	Vacuum Circuit Breaker	
	22 Kv / 33 Kv	Crompton, MEI, Bhel, Siemens, Alstom, Jyoti
b)	11 Kv	All above & Andrew Yule, Jyoti, Megawin
14	Vacuum Contactors	
15	ELCB	Minilec
16	Water Level Guard & Single Phasing Preventor	Reputed makes to be decided at Local level.
17	Protection Relay	
i)	Motor protection relay for HT motors	ABB, English Electric. Minilec
ii)	Motor protection relay for LT motors	Reputed makes to be approved by M.J.P. at local level, Softhard (31/12/08)
iii)	Over current and earth fault relay high Speed tripping	ABB, BCH, Minilec
iv)	Static relay	Ashida Minilec
18	Transformers	
i)	No limit	Kirloskar, Bharat Bijlee, Crompton NGEF, Alstom. BHEL,
ii)	Upto 3000 Kva	All above
	Upto 1600 Kva	All above & Pactil, EMCO,
iv)	Upto 750 Kva	All above & Vivekanand Bangalore [31-3-11]
v)	Upto 315 Kva	All above and Sonali, transformers & Rectifiers (India) Pvt. Ltd., Statelec India (31-3-11)
19	Ammeters/Voltmeters	AE, DIP, IMP, MECO., Rishabh, Ecercon, Nippon

20	Capacitors	
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i)	L.T.Capacitor 25 Kvar and Above	Madhav Savin, Navi Mumbai. Upto 31/7/08
ii)	L.T.Capacitor 25 Kvar	All above and as approved by MSEB.
iii)	H.T.Capacitors	Savin capacitors, Navi Mumbai upto 31.12.08. Prabodhan, Madhav
21	Sub-station equipment	
i)	Outdoor CT/ PT	Transdelta, Madhav, AE
ii)	A.B.Switch (GOD)/Isolators	Pactil, Kiran, Southern-Switchgear, Atlas, Universal-switchgear.
iii)	D.O.Fuse Unit/Horn Gap Fuse Unit	Pactil, Kiran, Southern-Switchgear Atlas, Universal-switchgear.
iv)	Lightening arrestor	Elpro
22	Cables	
i)	PVC Submersible/Copper Conductor) Cable	Finolex, Perfect,
ii)	1.1 kV armored and unarmored cable	Tropodur, Finolex, Asian, Gloster, Incab, Universal, Polycab, Primecab, Vardhaman,
iii)	1.1 kV XLPE cable	Primecab upto 550 single core/multi Core).Vardhaman 1.5 core upto 630 Mm &, multicore upto 400 sq. mm.
iv)	3.3 kV/6.6 kV/ 11 kV/ 22 kV/ 33 kV XLPE cable	Tropodur, Asian, Gloster, universal Bharat Cab, Primecab
v)	Control Cable	Tropodur, Finolex, Asian, Gloster, Incab, Universal, Polycab, Marco (HMT brand)
23	Automatic Control Unit for Submersible Pump	Bamo, Minilec(upto 31-12-08). Vidyut Control (upto 150HP)
24	Voltage Stabilizers	
i)	Upto 800 kVA	Automatic Electric Ltd. (Mumbai)
ii)	Upto 300 kVA	AE
iii)	Upto 150 kVA	11 above &, Statlec 131-3-1 1]
iv)	Upto 50 kVA	All above API (Indore) upto 30.12.08
v)	Upto 12.5 kVA	All above & Protovolt (31.3.11)
25	Air Blowers	Kulkami blowers, Usha (31-3-11)
26	Worm. Helical Gear	Shanti Gears, Coimbatore, CPEC Mumbai
	Boxes & Geared Motors	Essenpro

27	Sunrise to Sunset time limit switches for Street Light	Bamo (Pune)
28	H.T. & L.T.Panel	Electro-tech (31/12/08)Vidyut Control [31.12.08]as per MJ.P.'s Specification and approved equipment's only
29	Cubical metering with CT/PT	Huphen
30	P.F. Correction Panel LT/HT	Elctrotech upto 750 K-VAR (31/12/08) (HT up to 3.3 Kv)
31	Multimeter/Megger Tongtester	Nippen
32	EEC approved Water Meters	
	Original company	Registered authoris Dealer
	A)Actaric Ltd-Europe.	A)Actaric Ind.Mumbai.
	B)Water Tech.s.r.l.Italy.	B)Chetas controll system Pvt Ltd-P'une.
	C) 'B' Metcr s.r.l.Italy	C) Acord Marketing &. Services,Mumbai.
	D) Elster metering Ltd-UK.	D) HI-Tech System & Services Ltd-Kolkutta.
	E) Miriol messtechnic Gernany	E) Keyces ind.Ltd-Mumbai.
	F)Contor Zenner-Romania.	F] Progressive Thermal controls Ltd-Faridabad.
	[All above valid upto 31-10-2009 for 100 mm to 80mm size only.]	[All above valid upto 31-10-2009 for 15 mm to 80mm size only)
	G) Sappel SA	G) Rajasthan Ind.&, scintific Corporation jaipur.
	H) Baylan -Turkey.	H) Capstan meter (I) ltd,Delhi.
	I) Elster, U.K.	I] J.V.Gokal &, Co,Mumbal.
	J) Arad Ltd Isreal	J] Technochem agencies (India) pvt ltd.
	[G to H -valid upto 31-3-081	[G to H valid upto 31-3-08]
	WTP Process Equipment	H.N. Bhatt Pvt.Ltd., Pune (31-3-11)

**SCHEDULE OF THIRD PARTY INSPECTION OF ELECTRICAL / MECHANICAL
EQUIPMENT USED IN WATER SUPPLY SCHEME**

S.No	Equipment	Limits	Scope of inspection
1	a) Submersible Pumps.	20 HP & Above	i) Review of Raw Materials test certificates & quality control procedures. ii) Hydrostatic test iii) Performance Test. iv) Strip inspection for one random pump after performance test to check Rubbing if any Wearing ring clearance High voltage test Insulation test (before and after performance test) Dynamic balancing of impeller.
	b) Vertical Turbine Pumps. Oil /Water lubricated.	30 HP & Above	i) Review of Raw Materials test certificates & quality control procedures. ii) Hydrostatic test on bowl assembly, discharge head, hydrostatic test on 20% quantity of shaft enclosing tubes and column pipes. iii) Performance Test. iv) Strip inspection for one random pump after performance test to check Rubbing if any Wearing ring clearance Dynamic balancing of impeller.
	c) Centrifugal Pump coupled.	50 HP & Above	i) Review of Raw Materials test certificates & quality control procedures. ii) Hydrostatic test on casing. iii) Performance Test. iv) Strip inspection after performance test for one random pump to check Rubbing if any Wearing ring clearance Dynamic balancing of impeller.
	c) Centrifugal monoblock Pump	15 HP & Above	i) Review of Raw Materials test certificates & quality control procedures. ii) Performance Test.
2	Electric Motor	100 H.P Above	i) Review of Raw Materials test certificates & quality control procedures. ii) Routine test for all. iii) Type test for one no random motor for 300 HP and above including vibration & noise level
	STARTERS		
3	a) Auto transformer starters	ALL	i) Review of Raw Materials test certificates & quality control procedures. ii) High voltage test. iii) Insulation Resistance Test. iv) Full load test of Auto transformer winding. v) Die Electric strength of oil. vi) Fault simulation for testing protecting

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			relays except short circuit and earth fault.
	b) Soft /Gentle starters	ALL	<p>i) Review of Raw Materials test certificates & quality control procedures.</p> <p>ii) High voltage test.</p> <p>iii) Insulation Resistance Test.</p> <p>vi) Fault simulation for testing protecting relays except short circuit and earth fault.</p>
4	L.T. Panel and L.T.Breaker Isolating load break switch Panel	Connected load of 100 HP & Above	<p>i) Review of Raw Materials test certificates & quality control procedures.</p> <p>ii) High voltage test.</p> <p>iii) Insulation Resistance Test.</p> <p>iv) Routine test.</p> <p>v) Checking phase and earth clearance of bus- bars.</p> <p>vi) Checking wiring diagram and contact circuit and operating of panel.</p> <p>vii) Fault simulation for testing protecting relays except short circuit and earth fault.</p>
	Transformer		
5	Transformer.	315 KVA & Above	<p>i) Review of Raw Materials test certificates & quality control procedures.</p> <p>ii) Routine test for all.</p> <p>iii) Temperature rise for one number up to and including 3000 kVA and all transformers above 3000 kVA.</p> <p>iv) Type test excluding impulse test for random one transformer above 1000 kVA and up to 3000 kVA</p> <p>v) Type test including impulse test for transformer of 3000 kVA and above.</p>
6	H.T.Panel /H.T.breaker/ Vacuum contractors.		<p>i) Review of Raw Materials test certificates & quality control procedures.</p> <p>ii) High voltage test.</p> <p>iii) Insulation Resistance Test.</p> <p>Power frequency test.</p> <p>iv) Routine test.</p> <p>v) Checking phase and earth clearance of bus- bars.</p> <p>vi) Checking components and wiring diagram and control circuit and operation of panel.</p> <p>Fault simulation.</p> <p>vii) Review of type test certificate of breaker</p>
7	Relay & Metering Panel	All	<p>i) Review of Raw Materials test certificates & quality control procedures.</p> <p>ii) High voltage and insulation test.</p> <p>iii) Checking wiring diagram.</p> <p>iv) Relay operation test for over current, earth fault by D.C. injection.</p> <p>High voltage test.</p> <p>vii)Reviewing test certificate of relays.</p>
8	Scanner Panel	All	<p>i) Review of Raw Materials test certificates & quality control procedures.</p> <p>ii) Operation test for indication of lamp of</p>

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			bearing ,windings and oil iii) Hooter test with respective setting of alarm and tripping circuit. v) H.V and I.R. test. vi) Checking wiring diagram and control circuit.
9	D.C. Battery and Battery charger and distribution panel.	All	I) Review of Raw Materials test certificates & quality control procedures. ii) Checking components. vi) Checking wiring diagram and control circuit. v) H.V and I.R. test.
10	Cables LT	300Sqmm & above & if length is 300 mtr or above	I) Review of Raw Materials test certificates & quality control procedures. ii) Routine test. iii) Overload test. iv) High voltage test. v) Insulation Resistance Test.
11	Cable H.T.	95 Sqmm & above & if length is 300 mtr or above	I) Review of Raw Materials test certificates & quality control procedures. ii) Routine test. iii) Overload test. iv) High voltage test. v) Insulation Resistance Test.
	CRANE		
12	E.O.T.Crane / Monorail.	3 MT and above	I) Review of Raw Materials test certificates & quality control procedures. ii) Operation test. iii) Deflection test. iv) Load test.
13	Sluice Valve / Butterfly Valve	350mm and above	I) Review of Raw Materials test certificates & quality control procedures. ii) Body and seat test. iii) Test with operation of actuator and reduction gear box fully assembled with valve opening and closing (in case actuators are provided) with synchronizing. iv) Checking wear travel for sluice valve only.
14	Non return valve.	350 mm and above with by pass fitted if specified.	i) Review of Raw Materials test certificates & quality control procedures. ii) Body and seat test.
15	Air valve	150 mm and above	I) Review of Raw Materials test certificates & quality control procedures. ii) Body and seat test. iii) Operation test for functioning of small orifice and large orifice.
16	Valve actuator	All	I) Review of Raw Materials test certificates & quality control procedures.

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			ii) High voltage test. iii) Insulation Resistance Test. iv) Routine test and operation test. v) Operation test with limit switches. vi) Checking components diagram circuit.
	Capacitors		
17	Capacitors	50 KVAR bank or above	I) Review of Raw Materials test certificates & quality control procedures. ii) High voltage test. iii) Insulation resistance test. iv) Routine test.
18	Multi programmable automatic control unit/ Motor protection relay	All	I) Review of Raw Materials test certificates & quality control procedures. ii) High voltage test. iii) Insulation Resistance Test. iv) Fault simulation v) Operation test. vi) Checking wiring.
	Voltage Stabilizer.		
19	Voltage Stabilizer.	Above 25 above	I) Review of Raw Materials test certificates & quality control procedures. ii) High voltage test. iii) Insulation resistance test. iv) Routine test. v) Ratio test. vi) Temperature rise test.
20	Water hammer control devices.	All	I) Review of Raw Materials test certificates & quality control procedures. ii) Hydrostatic test. iii) Radiographic test for welding(for Air vessel).
21	Water meters /Flow meters	150 mm dia above	I) Review of Raw Materials test certificates & quality control procedures. ii) Hydrostatic pressure test. iii) Calibration test.
22	Wireless communication equipment.	All	i) Review of Raw Materials test certificates & quality control procedures. ii) operation test for all equipment.

It must be carefully noted by the contractor that it is the responsibility of the contractor to organize the third party inspection (by approved agency of Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. .) and the contractor has to bear all expenses including inspection charges. The contractor should furnish the details of specifications / test etc. to the inspection agency and the inspection agency shall furnish the copy of inspection report to the Department and copy to the contractor.

Specifications for Civil Engineering Works

C.E.S. 1 General :

The following specification shall be applicable to all the Civil Engineering works under this contract. Items which are not covered under the following description shall be carried out as per relevant specification in ISS or Book of standard specification 1972 (Government of Maharashtra Publication) and as mentioned in the proceeding pages.

C.E.S. 2 Materials

1. All the materials shall be of best and standard type as laid down in P.W.D. hand book volume I and II.
2. Red book of Public works Department, I.S. specifications and shall have to be approved by Engineer-in-charge.
3. **Labour** : All skilled and unskilled labour, supervisors site Engineers etc. shall be provided as directed by the Engineer-in-charge.

C.E.S. 3. General Requirements

1. **P.C.C. Course** : All structures shall be provided with 10 cms thick levelling course of P.C.C. M 100 preceding the floor slabs or foundation slabs. This course shall have an offset of 15 cms. on all sides and it shall rest on strata of appropriate bearing capacity as per design.
2. **Refilling of Excavated Stuff** : Sides of the structure below G.L. shall be refilled wherever necessary with selected murum from the excavated stuff duly watered and rammed in 15 cms layers.
3. **Plinth Fillings** : The plinth shall be filled up with hard murum in 15 cms layers duly watered and rammed properly.
4. **Superstructure** : The walls shall be in second class T.M. brick masonry in C.M. 1:6 in a framed structure, unless otherwise specifically mentioned panel wall shall be 23 cms. thick while partition wall shall be 12 cms thick.
5. **Plaster** : All the faces of structure shall be provided with 20 mm thick cement plaster with neeru finish. External surface shall be in C.M. 1:4 while internal in C.M. 1:5. All water retaining faces shall however be in cement plaster in C.M. 1:3.
6. **Flooring** : All floors of building except chemical store and chlorine rooms shall be provided with thick marble mosaic tiles flooring of approved quality and shade. Risers, trader, of all R.C.C. stair cases shall also be provided with mosaic or chequered tiles. Tiles shall be laid on 12 cms. thick P.C.C. in M 100 grade for ground floor. At upper floor it may directly laid on R.C.C. slabs skirting of mosaic tiles of one height for all in side faces of walls of the building.
7. **Doors and Windows** : All building shall be provided with adequate numbers of doors and windows and ventilators as under.
 - a) The total shutter area of all external doors, windows, ventilators shall not be less than 20% of the carpet area of structure. All external doors shall

be provided with C.C. ramps steps for access inside or exit outside the buildings.

- b) All the external and internal windows, ventilators and doors except the central main door of the filter house shall be of steel and as per I.S. specification. External door shall have a fan light of 45 cms height. Width of the main door shall not be less than 1.2 M and that of others shall not be less than 0.90 M.
- c) The door shall be half paneled and half glazed. Windows and ventilator shall be fully glazed. The glass fitted shall not weigh less than 3305 grams/sqm.
- d) All fastening and fixtures shall be strong and of heavy oxidized brass. Proper locking arrangement shall provided for each unit.
- e) All exterior doors, windows, ventilators shall be provided with 75 cms. wide R.C.C. chajja in a box type or any other suitable architectural form.
- f) All window sills shall consist of approved polished kadappa stone of 40 mm thick.
- g) The central main external teak wood door of the chemical house shall be fully panelled and having shutter thickness not less than 40 mm and shall be of decorative type. The size and type should be provided suitably as would prove to be a decorative feature. This door shall have a beautiful R.C.C. canopy. This door shall be provided with best quality of three coats of French polish of approved shade.
- h) All steel doors, windows and ventilators shall be painted with 2 coats of synthetic enamel paint of approved colour and shade as per standard specifications.
- i) All windows and ventilators shall be provided with M.S. grill of approved design from the Engineer-in-charge.

8. Colour Snowcem Painting and Distempering

- a) All internal plastered and finished faces of the walls, columns, etc. shall be given three coats of oil bound distemper of approved quality and shade. The ceiling shall be given 3 coats of white cement paint.
- b) All external plastered and finished faces of wall columns, etc. shall be given 2 coats of cement paint of approved shade. The finish of exterior face shall give an aesthetic appearance to the buildings.
- c) The colour scheme shall be got approved from the Engineer-in-charge.

- 9.** PVC/AC rain water pipe lines shall be provided to all the building of required diameters and lengths so as to carry rain water to the side drains of the approach roads.

APPENDIX "A-I"
ABSTRACT OF SPECIFICATION

Sr. No.	Item	Std. Spec. No.	Page No.	Reference
1.	Excavation	B-1 & B-2 BdA-1 to A-13	24,25,26 27,28 257 to 265	Volume - I Volume - II
2.	Materials Lime, Cement Neeru Water, Fine and coarse aggregate Coarse, Stone Bricks, HT steel Wires, stainless steel, cast steel CI/WI/MS wire timber, oil paints	A-I, A-2 A-4, A-5 A-6, A-7, A-8 A-9, A-10,a,b,c A-II, A-I2, A-13, A-I4 A-I5, A-I6, A-I7 a,b and c	5 to 18	Volume - I
3.	Structural steel	BdC2 B-I9.1	273	Volume-II and -I
4.	Plane cement concrete	BdE1 to E7	287 to 291	Volume -II
5.	Reinforced cement	Bd F2 to Bd F16	297 to 306	Volume-II
6.	Steel	Bd F17	306 to 307	Volume-II
7.	Brick masonry	b8(a) 40 to 45 b 8(b), Bd G1 BdG2 G3, G4, G5, G6, G7	Vohime-1 313 to 317	Volume-II
8.	Stone masonry	B9 (i)	57	Volume-1
9.	Cement plaster	B 11 (i)	65 to 66	Volume-1
10.	Cement Pointing	B13	67	Volume-I
11.	General wood work	B20	82,83,84	Volume -I
12.	Oil painting	B21	84,85,86 and 87	Volume -I
13.	Water proofing	Bd J(3)355,356		Volume-II
14.	Paving	Bd MI, M2, M3 M4,M5,M6,M7	379 to 383	Volume -II
15.	Glazed tiles	Bd MI2, Bd-M13	385,386	Volume -II
16.	Marble mozaic	BdMI4, Bd MI5	386,387	Volume -II

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Sr. No.	Item	Std. Spec. No.	Page No.	Reference
17.	Chequered tiles for stairs	Bd M33 (a) & (b)	392	Volume-II
18.	Wood finishes french polish	BdN	399, 400	Volume-II
19.	Wooden Door	Dn T1	477	Volume -II
20.	Glass & Glazing	Bd.S	465 to 467	Volume -II
21.	Iron Grill Work	Bd UI	537	Volume -II
22.	Laying of CI pipes GI pipes	Bd VI to V3 Bd V5	547 555	Volume -II
23.	Water meter	Bd V6 & V7	553 to 554	Volume -II
24.	Taps	Bd V8	555	Volume -II
25.	Gunmetal brass tap	Bd V10 & V11	555	Volume -II
26.	Rolling shutter	Bd T56	511	Volume -II
27.	MS Ladder	Bd VI9	559	Volume -II
28.	Water closet	Bd V20	559 to 560	Volume-II
29.	Urinals	Bd V25	562 to 563	Volume-II
30.	Hand Basin	Bd V30	565 to 566	Volume -II
31.	Sink	Bd V31	566 to 567	Volume -I
32.	CI / AC rain water pipes	Bd V33 & V34	567 to 568	Volume-II
33.	C1 soil pipes	Bd V35	570 to 571	Volume-II
34.	AC soil pipes	Bd V36	570 to 571	Volume-II
35.	Stone ware soil pipe	Bd V39	573	Volume-II
36.	Concrete soil pipes	Bd V41	574	Volume-II
37.	Septic tank	Bd V45 2-3	575	Volume-II
38.	Colour washing, white washing & distemper	Bd P1 to Bd P6	411 to 414	Volume-II
39.	Welding	B 18 78 to 81	Volume-II	
40.	Cement based paint	Bd 0.8.1	406	Volume-II

ANNEXURE B

Specifications for Mechanical Engineering Works

General

The following specifications shall be applicable to all the mechanical and miscellaneous engineering works under this contract. Items which are not covered under the following description shall be carried out as per the relevant ISS specification code of practice. In addition to the specifications given below or elsewhere the material shall comply with relevant IS specifications.

M.E.S. 1. Pipes and Specials

All pipes and specials unless stated and except for sludge drainage arrangement shall be of M.S. or CI. 'LA' class pipes. For sludge drainage arrangement R.C.C. NP2 class pipes shall be used. Diameter below 150 mm of R.C.C. pipes shall not be used anywhere.

The filter control piping in pipe gallery shall be double flanged, fastened with nut, bolts and washers of good quality. Mild steel pipes and specials shall be made out of 8 mm thick plates. All M.S. pipes and specials shall be epoxy painted from outside surface. 3mm thick ply rubber packing with hubcock shall be used in between the flanged joints.

The material shall be as per respective I.S.S. M.S. or C.I. pipe inserts with crippling flanged for insertion in concrete for sleeves, outlets, etc. shall be provided by the contractor. All pipes and specials which shall be laid below the floors, walls, foundations, etc. of plant structures shall be specifically of cast iron and shall be embedded in C.C. 1:2:4 (M:150).

M.E.S. 2: Valves / Pen Stocks / Sluice Gates

All the valves shall be C.I.D.F. type. Valves shall be of Kirloskar / IVC/ BSJ Sahu or such other reputed and approved make. Valves shall have the certificate of I.S.I. and shall be as per the relevant IS codes. All valves having diameter 300 mm and above shall have spur gear arrangement for manual operations. Dia. below 300 mm shall be with hand wheel for operation.

All sluice gates shall be of approved make and with brass lining. It shall be provided with spur gear arrangement and hand wheel for easy manual operation.

All pen stocks shall be brass lined and provided with suitable arrangement for easy and smooth manual operation.

M.E.S. 3 Pipe Railing

The railing shall consist of 25 mm dia. G.I. (medium) pipes in two number of row. The vertical posts shall be of M.S. angle 50 x 50 x 6 having attractive appearance placed at 2 M centre to centre. Its height shall be 90 cm. It shall be painted in 2 coat of anticorrosive paint of approved quality and shade.

M.E.S. 4 M.S. Staircase

The M.S. stair case shall be fabricated out of 30 cms. wide stringers of 12 mm thick plates. The steps shall 1.2 M wide of chequered plate or C.I. standard type. The tread shall not be less than 30 cms and rise not more than 20 cms .32 mm dia. single row G.I. pipe railing 0.80 M height shall be provided on both sides. The entire assembly shall be provided with 2 coats of anticorrosive paint of approved quality and shade.

M.E.S. 5 : M.S. Ladder

The M.S. ladder shall be 0.45 M. wide consisting of 65 mm x 12 mm M.S. flat stringers with 16 mm dia. M.S. bars in double row at 30 mm c/c. The items shall include all fixtures and painting with 2 coats of anticorrosive paint.

M.E.S. 6 : Water Level Indicator

The indicator shall be of 15 cms wide brass plate mounted on C.T. wood frame with necessary graduation. All allied fixtures such as copper float, guide chain pulleys, counter weight, indicating arrow, etc. shall be provided. The entire unit shall be got approved from the Engineer-in-charge. The water level indicator shall be able to read water depth upto 3.0 M.

M.E.S. 7 : Rolling Shutters

The rolling shutters shall be fabricated from 16 gauge steel lath with side guide, bottom rails, bracket, door suspension, shaft housing box at top, including mechanical gear operation arrangements. Locking arrangement shall be provided at bottom at both ends. The shutters shall be painted with 3 coats of anticorrosive paint of approved quality and shade.

M.E.S. 8 : Cowl Ventilators

The roof slab of wash water tank shall be provided with five C.I. cowl type ventilators. C.I. Cowl ventilators shall be of 100 mm dia. and of suitable height. It shall give attractive appearance. It shall be painted with 2 coats of anticorrosive paint of approved quality and shade.

M.E.S. 9 : Finishing

After entire completion of the plant, all the mechanical equipment, fixtures, fastenings shall be first thoroughly scrapped and cleaned and then shall be applied with 2 coats of anticorrosive paint of approved quality and colour and shade.

M.E.S. 10: Lightning Conductor

1 No. of lightning conductor at the highest elevation shall be provided suitably for the entire plant area. It shall consist of :

1. Solid copper rod super terminal 25 mm dia. 1.5 M long with a knob at the end and with conical spikes on top.
2. Suitable clamps to fix the conductor to the walls.
3. Aluminum tape conductor 25 mm x 3mm
4. G.I. earth plate 1 sqm in area and 1.5 mm thick.
5. Charcoal commercial salt and sand for filling.
6. G.I. pipe of 50 mm dia. upto 3 M height above G.L.
7. There should be no contact between the conducting media and the R.C.C. structure for the entire length.

It shall include excavation for the trench to the required depth, filling with charcoal, salt, sand excavated stuff, all the labours, necessary fixtures, etc. as per instructions of Engineer-in-charge and as per ISS 2309-1969, code of practice.

M.E.S. 11 : Fire Extinguishers

Two numbers of fire extinguishers shall be provided one each in panel board room and laboratory. Each unit shall have capacity of 10 litres. It shall be of reputed make and as per I.E. Rules and shall have to be approved by the department.

M.E.S. 12 : Manhole Covers

C.I. manhole covers and frame shall be 900 mm x 450 mm rectangular as per IS 1726-1991.

M.E.S. 13 : Reduction Gear Box

The speed reduction gear box for agitators shall be of Radicon. Elecon or Shakti make only. It shall be as per the relevant IS specifications.

APPENDIX 'C'

MANUFACTURING AND PAINTING OF THE PLANT AND EQUIPMENT

1.1 Scope

The section specifies the general requirements and standards for plant and equipment to be supplied and commissioned by the Contractor along with protection and painting of the equipment and plant. Irrespective of whether a particular standard or Code of Practice issued by the Indian Standard Institution or their equivalent, has been mentioned or not the Contractor is required to be familiar with all the codes and standards required for procuring the best materials and maintaining the highest quality in the plant erection. Only standards amended to date shall be used for reference.

1.2 Standard & Codes

The design, workmanship, materials, strength and dimensions of all parts shall comply with one or more of the latest standards regulations and codes issued by the following:

- a) The Indian Standards Institution (I. S.)
- b) American Water Works Association.
- c) Technically equal standards subject to the approval of the Engineer.

The Contractor shall submit a list of standards he proposes to adopt with his tender.

1.3 Testing & Storage

All materials required for the execution of the works and the cost of this shall be included in the Schedule of prices. The materials used shall in every case be of first grade quality. Any material rejected by the Engineer shall not be allowed to remain in the site premises.

All material shall be stocked, stored, protected to preserve the quality of the material until such time as they are to be installed into the permanent works. The contractor shall also arrange the necessary facilities for Sub-Contractors, supplies or manufacturers regarding the safety and storage of such equipment.

The Contractor shall submit test certificates and samples of all materials which he proposes to use, to the Engineer.

All materials, etc. for use in the works shall comply with the requirements of the latest revision of the appropriate Indian Standards specified or their equivalent.

1.4 Installation Of Machinery

The machinery shall be mounted on the flooring with flat steel packing of thickness selected for leveling.

One packing only of selected thickness shall be used at each location which shall be adjacent to each holding down bolt. The number of shims shall not exceed two at each location and the thickness of each shim shall not exceed 3 millimeters.

The machinery shall be aligned, leveled and fixed by the nuts of the holding down bolts with a spanner of normal length.

All cover flanges and joints shall be properly faced, bored, fitted, hollowed, moulded or chamfered as the case may be, according to the best practice and all working parts of the plant and equipment shall be accurately fitted, finished, fixed and

adjusted.

1.5 Bolts, Nuts, Stud & Washers

Nuts, Bolts, Studs and Washers shall conform to appropriate Indian approved standards.

All fastenings for galvanized components or aluminum alloy components shall be galvanized.

All holding down and anchor bolts, nuts, washers and anchor plates for use internally in areas where there is no corrosive atmosphere shall be galvanized and all exposed surfaces shall be painted after assembly and tightening.

Drilled anchor fixings for use on concrete or other structures shall be approved by the Engineer.

1.6 Bearings & Lubricators.

All bearings shall be rated and sized to ensure satisfactory and smooth running without vibration under all conditions of operation for a minimum life of 50, 000 hours. They shall be sufficiently lubricated and adequately protected from ingress of moisture and stand the particular climatic condition prevalent at the site.

The type of lubricant and intervals of lubrication for each individual item of plant shall be suggested in the Operation and Maintenance Instructions.

A list of recommended lubricants shall be a part of the Operation and Maintenance Instructions. .

1.7 Positioning & Alignment Of Equipment

In case where number of components such as motors, couplings, gearboxes, etc. are from an integrated equipment or plant then each and every item shall be positively located in its correct operational position by means of dowels, locating pins, fitted bolts or other approved means to ensure that correct realignment can be easily achieved when reassembling the item after complete overhauling.

1.8 Welding, Casting & Forging

1.8.1 Welding

The Contractor shall supply to the Engineer, before fabrication, detailed drawings of all welds and its procedure. No welding shall commence unless Engineer approves the same. The welders shall be qualified in accordance with requirements of Indian Standards that all the welded joints shall be stress relieved.

1.8.2 Casting

All casting shall be standard gray close grained quality to the specified Indian Standards. The structure of the casting shall be free from non metallic and injurious impurities.

1.8.3 Forging

All the forging shall be made as per standard specifications to be approved by the Engineer. They shall be subjected to internal examinations and non destructive tests for detection of flaws. The Engineer may ask for shop inspection and testing which the Contractor shall arrange at his own cost.

1.9 Pipe Work

The Contractor shall include for the supply, delivery and erection all the necessary

pipe work and fitting within the building, sumps and valve chambers.

All pipe work shall be adequately supported with purpose made fixings and when passing through wall, shall incorporate a puddle flange or other suitable sealing device.

Flanged joints shall be made with 3 millimeters thick, full face rubber gaskets pierced to take the bolts.

The hydraulic test pressure applied at the manufacturer's works shall be twice the working head or one and a half times the maximum working head, whichever is the greater.

Site test shall be conducted after installation at one and a half times the maximum working head.

All pipe diameters shall be selected to maintain velocity to a maximum of 2.00 meters per second subject to other criteria and particular use in the construction.

The Contractor shall be responsible for cleaning pipe work before and during commissioning. This includes removing dirt, rust, scales, etc.

1.9.1 Cast Iron Pipe work

Cast Iron flanged pipe work shall conform to IS : 1536 and IS ; 1537

Cast Iron fittings and specials shall comply with the Indian Standards (IS: 1538) and non-standard specials shall be avoided.

Cast Iron flexibly jointed pipes and, fittings shall be as per relevant Indian Standards.

Steel pipe work shall be to appropriate Indian or other approved standard and all pipe assemblies shall be made from piping to this specification.

1.9.2 Plastic Pipes

Unplasticised PVC pipes shall only be used with the approval of the Engineer and shall comply with IS : 4985 PVC pipe work, shall be as per IS : 7634.

1.9.3 Copper Pipes

Copper pipes shall be to IS : 1545.

1.9.4 Galvanized steel pipes

Galvanized steel pipes shall be to IS : 1239.

1.9.5 Pipe work Identification

The Contractor shall include for painting identification markings on all pipe work within buildings and other structures for easy reference. All identification markings shall conform with the standard recommendations.

1.9.6 Laying of Pipelines

The Contractor shall accept full responsibility for laying and fixing of all pipe work included whether specifically shown in the Contract Drawings or not.

Pipe work laid in trenches shall be laid to a uniform grade and supported on a bed of approved granular material.

The whole of the jointing work and materials necessary to fix and connect the pipes shall be included in the Contract.

1.10 Valves & Penstocks

All Valves shall be flanged as per appropriate Indian Standards.

All Valves shall be tested hydraulically to pressures as specified in the above standards.

All Valves shall satisfy the requirements of the open and close test as specified in the relevant standards.

1.10.1 Sluice Valves

Sluice valves shall be :

- a. Waterworks standards to IS : 780(non - rising stem) upto 300 mm. diameter and
- b. General purpose to IS : 2906 (non - rising stem) for the valve over 300 mm. diameter bore.
- c. Sluice valves below 300 mm. diameter shall be of Kirloskar or IVC make only.
- d. Kirloskar Brothers
- e. Indian Valve Company

However, the sluice valves above 300 mm. dia shall be of Kirloskar or IVC make only.

Extension spindles, headstocks and foot brackets installations shall include all necessary brackets, intermediate support, etc.

Headstocks for non-rising spindle installations shall incorporate a valve position indicator.

All hand wheels, headstocks, foot brackets and guide brackets shall be of cast iron.

All valves shall carry identification marks and/or plates in accordance with the Indian Standards, stating the valve identification and a brief description of its function. All valves shall be sized such that the velocity through the valve when fully open does not exceed 2.00 meter per second at the maximum design flow. All valves shall be works tested hydraulically as per provisions of standard specifications.

1.10.2 Reflux Valves

Reflux valves shall comply with IS ; 5312, and be double flanged cast iron unless otherwise specified. They shall be of the quick acting non-slam single or multi door type, designed to minimize time of closure.

All valves shall carry identification marks and/or plates in accordance with IS . 5312.

All valves shall be sized such that the velocity through the valve when fully open does not exceed 2.00 meters per second at the design flow.

1.10.3 Air Relief Valves

Air relief valves shall be of the double orifice pattern with gray or ductile cast iron bodies. The inlet flange shall be faced and drilled in accordance with standard specifications.

The valves shall be capable of releasing gas from the pipeline without diminishing of flow due to back pressure and also to allow admission of air during pipeline emptying at a rate to prevent very low pressure in the pipe line.

Air valves shall be fitted with an isolating gate/sluice valve.

1.10.4 Penstocks

Penstocks shall be of cast iron with scraped non-ferrous sealing

Each penstock shall be provided with a suitable hand wheel of adequate diameter for the easy operation and gearing shall be supplied where necessary.

Hand wheels shall have engraved on it the direction of closing which shall be "Clockwise".

Spindles shall have machine cut trapezoidal or square form threads. They shall be of stainless steel or manganese steel with the exception of non-threaded sections of extended spindle installations which may be of mild steel.

Headstocks and foot brackets shall be provided for non-rising spindle penstocks where necessary. Guide brackets shall be provided where necessary.

Headstocks with non-rising spindle installations shall have a penstock position indicator.

Penstocks shall be watertight under the conditions of head and direction of maximum design flow.

The frames and doors of cast iron penstocks shall be made from close grained grey iron. The penstocks shall be designed so as to ensure tight closure while maintaining freedom of door movement during operation and minimizing sliding wear of the sealing faces.

1.11 Testing Of Pumps

Each pump shall be tested at the manufacturer's works in accordance with standard practice. The tests shall cover the whole range of duties to which the pumps will be required to handle, from which characteristic curves (including NPSHR) must be produced .

The pump casing shall be hydraulically tested to twice the maximum probable working static pressure.

1.12 Inspection & Testing Of The Plant

The acceptance by the Engineer of the plant after testing shall in no way relieve the Contractor of his responsibility for the performance of the plant after erection. The plant as a whole shall be tested for assessing the overall performance of the plant under the design conditions and this must be achieved to the complete satisfaction.

The Contractor shall submit test certificates with each item showing clearly the performance of the equipment, the test conditions and the duration of the test and other details.

1.13 Name Plates

Each equipment shall have a metal nameplate fixed in an approved manner with the make's name, type and serial numbers and full details of the design parameters such as power input, speed pressure, etc. date of manufacture all clearly marked. Brass plates shall be used for this purpose.

1.14 Painting & Protective Coatings

- 1.14.1** This part of the specification enlists the general requirements and standard of painting and applying anti-corrosive protection for the machinery, plant, equipment and installations supplied for the Contractor. The Contractor shall be responsible for the appropriate cleaning, preparation, priming, painting, plating and complete protection of the items supplied by him. All coating shall be finally suitable for the long term protection of the plant under operational conditions. The Contractors shall pay particular attention to both the extremes of temperatures and the various corrosive environments within the works buildings and structures or due to splashing

action of machinery or any leakages or minor defects which could occur in time at or around the chemical works.

1.14.2 Application of paint

The contents of all cans and containers of all materials shall be properly and thoroughly stirred as per instructions of the manufacturer, before and during use and shall be suitably strained as and when necessary.

All brushes, tools and other equipment shall be in a clean condition and surfaces shall be clean and free from deleterious matter and dust during painting.

All materials shall be used strictly in accordance with the instructions issued by the manufacturers concerned.

All surface fittings, except hinges shall be removed before painting and re-fixed on completion.

All coatings shall be allowed to dry thoroughly before succeeding coats are applied. All under coats for oil paints and clear finishes shall be rubbed with abrasive paper and all dust removed before the succeeding coat is applied.

1.14.3 Preparation and Painting of Plant

The Contractor shall prepare scheme-for painting and providing protective coatings with basic considerations as to environment in which a particular equipment is likely to function. Special care shall be taken for corrosive atmosphere in vicinity of various chemical work functioning in the plant.

The steel work placed in non-aggressive atmosphere and location shall be hot dip galvanized.

Priming and first finishing paint system for galvanized surfaces in aggressive conditions shall consist of the following:

- i. All surfaces of galvanized fabricated steel work (except those on which an adequate protective patina has not formed and/or those surfaces which have received initial protection) shall receive a priming coat immediately following erection at site and prior to immersion in or exposure to aggressive solutions or atmospheres.
- ii. All surfaces shall be lightly wire-brushed and all traces of grease and other contaminants removed.
- iii. All loose particles shall be removed and immediately thereafter all surfaces including those of fastenings shall be given a priming coat of an approved epoxy corrosion resistant primer. All surfaces of galvanized fabricated steel work on which an adequate protective paint has not formed shall be treated and given a priming coat immediately following erection at the site and prior to immersion in or exposure to aggressive solution coat of approved epoxy coal tar primer.

The final finishing paint system for surfaces other than galvanized surfaces shall be given with appropriate epoxy paint in two coats.

For finishing coat to surfaces in corrosive atmosphere appropriate epoxy coal, tar paint shall be used.

The epoxy resin content together with its cuttings agent shall not be less than 40% by weight of the solid binder. The ratio of pigment to binder shall not exceed 10% by weight.

External surfaces of exposed steel pipes shall be given two coats of approved

aluminum paint.

All mild steel stairways, ladders, railings pillars, etc. shall be hot dip galvanized and/or be provided with oil paint coats of approved type and shade. All machine parts such as motors, control panels, starters, shall be given 3 coats of approved enamel paint.

APPENDIX 'D'

PLANT ERECTION, TESTING AND COMMISSIONING

1.1 Programme Of Work Implementation Schedule

The programme of work to be executed by the Contractor shall be as under:

a) Equipment

This includes Design and manufacture of all equipment to be supplied under the contract including inspection and manufacturers work testing, storage, erection, testing, commissioning and maintenance.

b) Civil Works

This includes construction of all buildings, plant tanks, foundation, stairs, access ways, ducts, etc.

The implementation programme for the civil and equipment shall be given by the Contractor in the form of CPM/Pie Chart. The Contractor shall follow well co-ordinated programme for completing the works in respects of both the civil works and equipments.

1.2 Detailed Calculations & Drawings

The Contractor shall throughout the Contract provide the design details, documents and drawings specified and shall accept and meet as an integral part of the Contract the obligation to provide such additional details and information as is required by the Engineer relating to the works.

1.3 Inspection In Works

The Contractor shall give the Engineer advance information, notification of his works manufacturing and testing programme for all mechanical and electrical plant. This shall include the inspecting and testing of the plant at the Sub-Contractor's works.

All advance notification to the Engineer under this shall give the full postal address of the works or factory concerned and the name, telex and telephone number of the individual responsible for arranging the tests and inspections with the Engineer or his representatives.

1.4 Dispatch of Plant

Before dispatch from the manufacturer's works all the equipment and plant shall be adequately protected during transit, storage and erection against corrosion and accidental damage. The Contractor shall be fully responsible for the plant being so packed and/or protected. The plant shall be packed to withstand rough handling in transit and all packages shall be suitable for storage including at site/so as to remain in excellent condition until it is taken out for erection. The Contractor shall arrange for payment of all taxes, duties, insurance and freight charges, Municipal taxes, and all other fees and charges to transport, insurance and storage of the plant and equipment.

The Contractor shall send advice of dispatch to the Engineer so that this information is received well in advance.

1.5 Storage of Plant

The Contractor shall arrange for the Insured storage of all materials. The store for the materials shall be secured and the store and plant shall be guarded, maintained and inspected as necessary by the Contractor or his agent.

1.6 Equipment to be Installed in Civil Works

All interconnecting pipe work and other items of plant required to be "built-in" or fixed in advance of the main mechanical/electrical erection shall be supplied and delivered to the site of the works.

Items of plant and equipment to be "built-in" shall be identified by paint markings cross referenced to pipe work and plant drawings and schedules to ensure that it can easily be located and identified before building into the structure. The detailed construction drawings submitted to the Engineer shall include full reference to this aspect.

1.7 Site Store & Office

The Contractor shall construct at his own expense, satisfactory temporary office and residential accommodation required for proper execution of the works. The accommodation and its surrounding shall be maintained by the Contractor in a neat orderly manner, and returned by him in good shape, to the satisfaction of the Engineer.

1.8 Plant Erection

In addition to conditions of Contract the Contractor shall provide only skilled persons for the work of plant erection and testing.

The Contractor shall provide all erection equipment, tools, cranes and tackle necessary for the erection of the plant.

Any special access requirements for mobile cranes or other equipment shall be provided with prior approval of the Engineer.

1.9 Damage to the Existing Works

The Contractor shall protect the plant and equipment from damage and shall immediately rectify any deterioration or damage occasioned to the structures or any plant, equipment or other things which may result due to his occupation of the structures. The protection and any repairs shall be done to the satisfaction of the Engineer.

The Contractor shall take special precautions during execution by blasting which may be resorted to in a highly controlled manner to prevent damage to the existing shutters and nearby localities. Similarly, the sanitation wastes shall be directed in such a way that it shall not mix with any natural flows without proper treatment.

1.10 Completion of Erection Work

The Contractor shall be deemed to have completed erection when the entire plant is ready for the Final Site Testing by the Engineer. The Contractor shall inform the Engineer in writing, and in the opinion of the Engineer the plant is in position and complete in accordance with the requirements of the specifications and other relevant documents.

1.11 Inspection After Erection

On completion of erection or at such later period as may be required by the Contractor and approved by the Engineer as necessary to complete the works, another joint inspection shall be carried out and the Engineer shall provide the necessary instructions for keeping the plant ready for testing.

1.12 Testing the Plant

All testing of the plant shall be at the expense of the Contractor who shall provide all labour material and any instruments required. Testing shall be carried out until the

Engineer is satisfied that each of the processes is satisfactory, reliable and all components are satisfactory and to the standards specified in this documents and the Contractor's Tender specifications.

Any defects or shortcoming in performance -of standards shall be made good at entirely the Contractor's expense and minimum time and in an approved manner.

Any item of plant is irreparable or insufficient for its function the Contractor shall, without . delay, replace the item with another satisfactory item or better unit all at his own cost.

1.12.1 Hydraulic Testing

On completion of installation, laying, jointing and cleaning, all tanks, structures and pipelines supplied or laid by the Contractor shall be tested for water tightness as directed by the Engineer.

Pipe shall be tested to a pressure 50% in excess of the maximum working pressure and this must be maintained without loss of water for such period as specified in the relevant standard or code. Tests shall be repeated if the Engineer may consider' this necessary to satisfy himself that water tightness has been achieved.

Also chemical solution tanks, vessels, etc; shall also be tested for water tightness.

1.12.2 Test on Flow Instruments

The Contractor shall carry out calibration tests to demonstrate the accuracy of all rate of flow instruments, recorders, and integrators incorporated in the works over a range of flows from the minimum to the maximum anticipated design rates in the plant as required by the Specifications.

1.13 Commissioning of the Plant

The Contractor shall after consultation with the Engineer and following the testing of the components and systems of the works, receive permission from the Engineer for the commencement of the commissioning period.

1.13.1 Duration of Commissioning Period

The Contractor shall carry out the commissioning and provides trials of the plant under actual working conditions for a period of not less than 6 months.

1.13.2 Chemicals for Commissioning

The owner will provide the chemicals and the bulk water supplies for the commissioning of the works and setting to work of the plant.

1.14 Contractor's Representative

During the commissioning and trial period the treatment works shall be supervised on a full time basis by the Contractors Commissioning Representative who shall be a qualified Engineer or Chemist and who shall fully instruct the Owner's permanent staff on all aspects of the operating procedure. The Contractor will be required to devote the minimum of one month full time instruction to the Owner's staff.

1.15 Disinfection of Plant

Immediately before any section of the works is commissioned the Contractor shall disinfect the section by means of sodium hypochlorite solution or other approved chlorinating agent with water containing 50 mg/lit. of chlorine to the satisfaction of the Engineer.

1.16 Surplus Materials & Site Clearance

On Completion of the work, the Contractor shall hand over any surplus material that the Engineer may consider will be useful for the Owner to have as a reserve for which payment will be made in accordance with Contact. Surplus materials not so selected shall be removed from site by the Contractor.

STATEMENT NO. V
UNDERTAKING AND GUARANTEE

I / We guarantee that :-

- 1) I / We will replace, repair and adjust free of all charges, to the employer, any part of the work which fails to comply with the specifications or amendment to such specifications as referred to in our specifications attached to tender, fair wear and tear expected until the completion and for period of 0----- /-s from the date of Acceptance Certificate issued under respective clause of Conditions of Contract.
- 2) All the work will be reliable
- 3) All the work will be of a type which has been proved in service, to be suitable for the duty required by the specifications and will be manufactured and tested in accordance with the appropriate standard specifications approved by the Engineer-In-Charge.
- 4) I / We accept and abide by the clause relating to quality and guarantee of work for complete defect liability of twelve month from the date of submission.

Contractor's Signature.

**STATEMENT NO. VI
DECLARATION**

- 1) I / We hereby declare that I / We have made my self thoroughly conversant with the local conditions regarding all materials such as stones, murum, sand, availability of water etc. and labour, on which I have based my rates for this work. The specifications and requirements of lead for this work have been carefully studies and understood by me before submitting the tender. I undertake to use only the best material, to be approved by the Engineer-In-Charge of the work and also abide by his decision.
- 2) I / We hereby undertake to pay the labour engaged on the work as per Minimum Wages Act 1984 applicable to the zone concerned.
- 3) I / We hereby undertake to supply the material / equipment only as per makes mentioned in the tender wherever such makes are specified.

Contractor's Signature.

MODEL FORM OF BANK GUARANTEE BOND

1. This deed of Guarantee is made on theby having his head office at
.....hereinafter called the said Contractor(s) from
the demand under the terms and conditions of Agreement dates
made between and
.....
for (hereinafter called 'the
Agreement') of additional security deposit for the due fulfillment by the said
Contractor of the terms and conditions contained in the said Agreement on
production of a Bank Guarantee for Rs.(Rs.
.....only) We, request of
.....(contractor) do
hereby undertake to pay to the,Executive Engineer Rural Water Supply Division Zilla
Parishad Washim,. hereinafter referred to as Executive Engineer Rural Water
Supply Division Zilla Parishad Washim,. , an amount not exceeding Rs.
.....against any loss or damage caused to or suffered by the
Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. by reasons
of any breach by the said Contractor of any of the terms or conditions contained in
the said Agreement.
2. We,(indicate the name of bank) do
hereby undertake to pay the amount due and payable under this guarantee without
any demur, merely on a demand from the Executive Engineer Rural Water Supply
Division Zilla Parishad Washim stating that the amount claimed is due by way of loss
or damage caused to or would be caused to or suffered by the Executive Engineer
Rural Water Supply Division Zilla Parishad Washim,. by reason of breach by the said
Contractor (s) of any of the terms of conditions contained in the said Agreement or
any reason of the Contract(s) failure to perform the said agreement. Any such
demand made on the bank shall be conclusive as regards the amount due and
payable under this guarantee shall be restricted to an amount not exceeding Rs.
3. We undertake to pay to the Executive Engineer Rural Water Supply Division Zilla
Parishad Washim,. any money so demanded not with standing any dispute or dispute
raised by the Contractor(s)/Supplier (s) in any suit or proceeding pending before any
court or tribunal retaining there to our liability under this present being absolute and
unequivocal. The payment so made by us under this pond shall be valid discharge of
our liability for payment thereunder and the Contractor(s) / Supplier (s) shall have no claim
against us for making such payment.

4. We, (indicate the name of Bank) further agree 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 Agreement and that it shall continue to be forcible till all the dues of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till of Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. certifies 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.

5. We, (indicate the name of Bank) further agree with the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. that Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. shall have the fullest liberty without our consent and without affecting in any manner our obligations here under to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor from time to time or postpone for any time or from time to time any of the powers exercisable by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. against the said Contractor(s), and to forth or enforce any of the terms and conditions relating to the said Agreement, or extension being granted to the said Contractor(s) or for any forbearance act or commission on the part of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. or any indulgence by the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. to the said Contractor or by any such matter or thing whatever which under the law relating to surety would, but for this provision, have effect of so relieving us.

6. The guarantee will not be discharged due to the change in the constitution of the Bank or thechange in constitution of the Contractor/ Suppliers.

7. We, (indicate the name of Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Executive Engineer Rural Water Supply Division Zilla Parishad Washim,. in writing.

Dated the..... day of..... 19

for
(indicate the name of bank)

