

W-5

PROCUREMENT FOR CONSTRUCTION OF SILT
MONITORING STATION WITH ALL RELATED
WORKS IN DISTT. FATEHPUR

UNDER SHOPPING PROCEDURES

**INVITATION FOR QUOTATIONS FOR CONSTRUCTION OF
SILT MONITORING STATION WITH ALL RELATED WORKS
UNDER SHOPPING PROCEDURES**

To

Dear Sirs,

**SUB: INVITATION FOR QUOTATIONS FOR CONSTRUCTION OF SILT
MONITORING STATION: WEIR & PATHWAY AND APPARATUS ROOM WITH
STILLING WELL IN DISTT. FATEHPUR**

1. You are invited to submit your most competitive quotation for the following works:-

S.N	Brief Description of the Works	Approximate value of Works (Rs.)	Period of completion work
1.	Construction of Silt Monitoring Station Weir and Pathway with all cost of material, labour and T&P	691874	with in two month from the date of signing of the contract
2.	Construction of Silt Monitoring Station Apparatus room with Stilling well with all cost of material, labour and T&P	125468	
Total estimated cost		817342	

2. Government of India has received a credit from the International Development Association (IDA) in various currencies equivalent to **US\$ 197 million** towards the cost of the ravine pilot project under UPSLR III Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.
- 3¹. The UP Sodic Lands Reclamation Project in Uttar Pradesh state is being implemented by UP Bhumi Sudhar Nigam, which is an UP Government undertaking registered under the Indian Companies Act 1956.
4. To assist you in the preparation of your quotation, we are enclosing the following :
- i. Detail Drawings of the works;
 - ii. Structural Details;
 - iii. Detailed Bill of Quantities, with estimated rates and prices;
 - iv. Technical Specifications;
 - v. Instructions to Bidders (in two sections).
 - vi. Draft Contract Agreement format which will be used for finalizing the agreement for this Contract.

¹ Delete if inapplicable

5. You are requested to provide your offer latest by **June 23, 2015 at 15:00 hrs.** .
6. Quotations will be opened in the presence of Bidders or their representatives who choose to attend at 15:30 PM on **June 23, 2015** in the office of UP Bhumi Sudhar Nigam
7. We look forward to receiving your quotations and thank you for your interest in this project.

(Dr. Bishnu Pratap Singh)
Joint Managing Director
Uttar Pradesh Bhumi Sudhar Nigam,
TC/19 V, Vibhuti Khand, Gomti Nagar,
Lucknow-226010,
Ph. No. 0522-2720050, Fax No.0522-2720416,

Instructions to Bidders

SECTION - A

1. Scope of Works

The UP Bhumi Sudhar Nigam (Employer) invites quotations for the construction of works as detailed in the table given below

S.N.	Brief Description of the Works	Approximate value of Works (Rs.)	Period of completion work
1.	Construction of Silt Monitoring Station Weir and Pathway with all cost of material, labour and T&P	691874	with in two month from the date of signing of the contract
2.	Construction of Silt Monitoring Station Apparatus room with Stilling well with all cost of material, labour and T&P	125468	
Total estimated cost		817342	

The successful bidder will be expected to complete the works by the intended completion date specified above.

2. **Qualification of the bidder** The bidder shall provide qualification information which shall include :-

- (a) Total monetary value of construction works performed for each year of the last 3 years ((2012-13 to 2014-15):
- (b) Report on his financial standing; and
- (c) Details of any litigation, current or during the last 3 years in which the bidder is involved, the parties concerned and disputed amount in each case.

3. To qualify for award of the contract the bidder:-

- (a) should have satisfactorily completed as a prime contractor at least one similar work of value not less than Rs. 6,50,000 in the last three years;

4. **Bid Price**

- a) The contract shall be for the whole works as described in the Bill of quantities, drawings and technical specifications. Corrections, if any, shall be made by crossing out, initialing, dating and re writing.
- b) All duties, taxes and other levies payable by the contractor under the contract shall be included in the total price.

- c) The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- d) The rates should be quoted in Indian Rupees only.

5. Submission of Quotations

5.1 The bidder is advised to visit the site of works at his own expense and obtain all information that may be necessary for preparing the quotation.

5.2 Each bidder shall submit only one quotation.

5.3 The quotation submitted by the bidder shall comprise the following:-

- (a) Quotation in the format given in Section B.
- (b) Signed Bill of Quantities ; and
- (c) Qualification information form given in Section B duly completed.

5.4 The bidder shall seal the quotation in an envelope addressed to the **Joint Managing Director, UP Bhumi Sudhar Nigam TC/19 V, Vibhuti Khand Gomti Nagar Lucknow** (Purchaser). The envelope will also bear the following identification :-

- Quotation for _____ (Name of the Contract)
- Do not open before **15:30 PM on June 23, 2015**

5.5 Quotations must be received in the office of the **UP Bhumi Sudhar Nigam TC/19 V, Vibhuti Khand Gomti Nagar Lucknow** (Employer) not later than the time and date given in the letter of invitation . If the specified date is declared a holiday, quotations shall be received upto the appointed time on the next working day.

5.6 Any quotation received by the **UP Bhumi Sudhar Nigam** (Employer) after the deadline for submission of quotations will be rejected and returned unopened to the bidder.

6.1 Validity of Quotation

Quotation shall remain valid for a period not less than **90 days** after the deadline date specified for submission.

6.2 **Bid security:** The amount of the Bid Security shall be Rs 17,000. The bid security is required to protect the Purchaser against the risk of Bidder's conduct which would warrant the security's forfeiture, if bidder fails to furnish performance security for performing the work.

The bid security shall be denominated in Indian Rupees and shall:

- (a) at the bidder's option, be in the form of either a certified check, letter of credit, a demand draft, or a bank guarantee from a nationalized/Scheduled Bank located in India or by a reputable banking institution selected by the bidder and located abroad in any eligible country;

- (b) remain valid for a period of 45 days beyond the original validity period of bids, or beyond any period of extension subsequently requested .
- 6.3 Unsuccessful bidder's bid securities will be discharged/returned as promptly as possible but not later than 30 days after the expiration of the period of bid validity prescribed by the Purchaser.
- 6.4 The successful Bidder's bid security will be discharged upon the Bidder signing the Contract, and furnishing the performance security..
- 6.5 The bid security may be forfeited:
 - (a) if a Bidder (i) withdraws its bid during the period of bid validity specified by the Bidder on the Bid Form
 - (b) in case of a successful Bidder, if the Bidder fails:
 - (i) to sign the Contract
 - (ii) to furnish performance security .

7. Opening of Quotations

Quotations will be opened in the presence of bidders or their representatives who choose to attend on the date and time and at the place specified in the letter of invitation.

- 8. Information relating to evaluation of quotations and recommendations for the award of contract shall not be disclosed to bidders or any other persons not officially concerned with the process until the award to the successful bidder is announced.

9. Evaluation of Quotations

The Employer will evaluate and compare the quotations determined to be substantially responsive i.e. which

- (a) meet the qualification criteria specified in clause 3 above;
- (b) are properly signed ; and
- (c) conform to the terms and conditions, specifications and drawings without material deviations.

10. Award of contract

The Employer will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price and who meets the specified qualification criteria.

- 10.1 Notwithstanding the above, the Employer reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.
- 10.2 The bidder whose bid is accepted will be notified for the award of contract by the Employer prior to expiration of the quotation validity period.

11. Performance Security

Within 07 days of receiving letter of acceptance, the successful bidder shall deliver the performance security to the **UP Bhumi Sudhar Nigam** either a bank guarantee or a bank draft in favour of the **UP Bhumi Sudhar Nigam** for an amount equivalent of **5%** of the contract price. The Performance Security shall be valid till the expiry of the period of maintenance of the work, specified in clause 12.

12. Period of Maintenance :

The “Period of Maintenance” for the work is six months from the date of taking over possession or one full monsoon season whichever occurs later. During the period of maintenance, the contractor will be responsible for rectifying any defects in construction free of cost to the Employer.

- 13.** Purchase of all construction materials including cement and steel as per the specifications (ISI certification marked goods wherever available) shall be the responsibility of the contractor.

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SECTION - B

- 1. Format for Qualification Information.**
- 2. Format for Submission of Quotation.**
- 3. Format of Letter of Acceptance.**

QUALIFICATION INFORMATION

1 For Individual Bidders

1.1 Principal place of business: _____

Power of attorney of signatory of Quotation.
[Attach copy]

1.2 Total value of Civil Engineering construction work performed in the last three years (in Rs. Lakhs)

	2012-13	
	2013-14	
	2014-15	

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

<u>Project Name</u>	<u>Name of Employer</u>	<u>Description of work</u>	<u>Contract No.</u>	<u>Value of contract (Rs.Lakhs)</u>	<u>Date of issue of work order</u>	<u>Stipulated period of completion</u>	<u>Actual date of completion</u>	<u>Remarks explaining reasons for delay and work completed</u>
1	2	3	4	5	6	7	8	9

Existing commitments and on-going works:

<u>Description of Work</u>	<u>Place & State</u>	<u>Contract No. & Date</u>	<u>Value of Contract (Rs. Lakh)</u>	<u>Stipulated period of completion</u>	<u>Value of works* remaining to be completed (Rs. Lakhs)</u>	<u>Anticipated date of completion</u>
1	2	3	4	5	6	7

* Enclose a certificate from Engineer concerned.

1.4 Proposed subcontracts and firms involved.

Sections of the works	Value of Sub-contract	Sub-contractor (name & address)	Experience in similar work

1.5 Evidence of access to financial resources to meet the requirements of working capital: cash in hand, lines of credit, etc. List them below and attach copies of support documents.

1.6 Name, address, and telephone, telex, and fax numbers of the Bidders' bankers who may provide references if contacted by the Employer.

1.7 Information on litigation history in which the Bidder is involved.

Other party(ies)	Employer	Cause of dispute	Amount involved	Remarks showing present status

**QUOTATION
DSTT. FATEHPUR**

*

Description of the Works :

S.N	Brief Description of the Works
1.	Construction of Weir and Pathway with all cost of material, labour and T&P
2.	Construction of Apparatus room with Stilling well with all cost of material, labour and T&P

To:

**UP Bhumi Sudhar Nigam
TC/19 V, Vibhuti Khand Gomti Nagar
Lucknow**

Subject : Construction of Silt Monitoring Station Weir and Pathway and Apparatus room with Stilling well in Distt. Fatehpur

.....

Reference : Letter No.....dated.....from.....

Sir,

We offer to execute the Works described in your letter referred to above in accordance with the Conditions of Contract enclosed therewith at percentage above / below the estimated rates, i.e., for a total Contract Price of –

Rs. 8,17,342

Rs. Eight lacs seventeen thousand three hundred forty two

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

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

We hereby confirm that this quotation is valid for 90 days as required in Clause 6 of the Instructions to Bidders.

Yours faithfully,

Authorized Signature : Date: _____

Name & Title of Signatory : _____

Name of Bidder : _____

Address : _____

**LETTER OF ACCEPTANCE
CUM NOTICE TO PROCEED WITH THE WORK**

(LETTERHEAD OF THE EMPLOYER)

Dated : _____

To : _____ [Name and address of the Contractor]

Dear Sirs,

This is to notify you that your Quotation dated _____ for execution of the _____ for the contract price of Rupees _____ [amount in words and figures], is hereby accepted by us.

You are hereby requested to furnish performance security for an amount of Rs. _____ (equivalent to 5% of the contract price) within 15 days of the receipt of the letter. The Performance Security in the form of Bank guarantee or a Bank draft in favour of(Employer) shall be valid till the expiry of the period of maintenance i.e. upto _____. Failure to furnish the Performance Security will entail cancellation of the award of contract.

You are also requested to sign the agreement form and proceed with the work not later than _____ under the instructions of the Engineer, _____ and ensure its completion within the contract period.

With the issuance of this acceptance letter and your furnishing the Performance Security, contract for the above said work stands concluded.

Yours faithfully,

**Authorized Signature
Name and title of Signatory**

Draft Agreement form for Construction through National Shopping

ARTICLES OF AGREEMENT

This deed of agreement is made in the form of agreement on _____ day _____ month _____ 20 ____, between the _____ (Employer) or his authorized representative (hereinafter referred to as the first party) and _____ (Name of the Contractor), S/O _____ resident of _____ (hereinafter referred to as the second party), to execute the work of construction of _____ (hereinafter referred to as works) on the following terms and conditions.

2. Cost of the Contract

The total cost of the works (hereinafter referred to as the “total cost”) is Rs. ____ as reflected in Annexure - 1.

3.1 Payments under its contract:

Payments to the second party for the construction work will be released by the first party in the following manner:-

On signing of agreement and completing 20% work	:	10% of total cost
On reaching plinth level (first stage)	:	20% of the total cost
On reaching lintel level (second stage)	:	20% of the total cost
On reaching roof level (third stage)	:	30% of the total cost
Plastering and completion of whole work (fourth stage)	:	10% of the total cost
Rest of the payment will be made after completion of Maintenance Period given ITB clause 12	:	10% of the total cost

3.2 Payments at each stage will be made by the first party:

- (a) on the second party submitting an invoice for an equivalent amount ;
- (b) on certification of the invoice (except for the first installment) by the engineer nominated by the first party with respect to quality of works in the format in Annexure - 2; and
- (c) upon proper and justified utilization of at least 50 % of the previous installment and 100 % of any prior installment.

4. Notice by Contractor to Engineer

The second party, on the works reaching each stage of construction, issue a notice to the first party or the Engineer nominated by the first party (who is responsible for supervising the contractor, administering the contract, certifying the payments due to the contractor, issuing and valuing variations to the contract, awarding extensions of time etc.), to visit the site for certification of stage completion. Within 15 days of the receipt of such notice, the first party or the engineer nominated by it, will ensure issue of stage completion certificate after due verification.

5. Completion time

The works should be completed in two months from the date of this Agreement. In exceptional circumstances, the time period stated in this clause may be extended in writing by mutual consent of both the parties.

6. If any of the compensation events mentioned below would prevent the work being completed by the intended completion date, the first party will decide on the intended completion date being extended by a suitable period :

- a) The first party does not give access to the site or a part thereof by the agreed period.
- b) The first party orders a delay or does not issue completed drawings, specifications or instructions for execution of the work on time.
- c) Ground conditions are substantially more adverse than could reasonably have been assumed before issue of letter of acceptance and from information provided to second party or from visual inspection of the site.
- d) Payments due to the second party are delayed without reason.
- e) Certification for stage completion of the work is delayed unreasonably.

7. Any willful delay on the part of the second party in completing the construction within the stipulated period will render him liable to pay liquidated damages. @ **Rs 500 per day** which will be deducted from payments due to him. The first party may cancel the contract and take recourse to such other action as deemed appropriate once the total amount of liquidated damages exceeds 2 % of the contract amount.

8. Duties and responsibilities of the first party

8.1 The first party shall be responsible for providing regular and frequent supervision and guidance to the second party for carrying out the works as per specifications. This will include written guidelines and regular site visit of the authorized personnel of the first party, for checking quality of material and construction to ensure that it is as per the norms.

- 8.2** The first party shall supply 3 sets of drawings, specifications and guidelines to the second party for the proposed works.
- 8.3** Possession of the site will be handed over to the second party within 10 days of signing of the agreement.
- 8.4** The Engineer or such other person as may be authorized by the first party shall hold meeting once in a month where the second party or his representative at site will submit the latest information including progress report and difficulties if any, in the execution of the work. The whole team may jointly inspect the site on a particular day to take stock of activities.
- 8.5** The Engineer shall record his observations/instructions at the time of his site visit in a site register maintained by the second party. The second party will carry out the instructions and promptly rectify any deviations pointed out by the engineer. If the deviations are not rectified, within the time specified in the Engineer's notice, the first party as well as the engineer nominated by it, may instruct stoppage or suspension of the construction. It shall thereupon be open to the first party or the engineer to have the deviations rectified at the cost of the second party.

9. Duties and responsibilities of the second party

9.1 The second party shall :

- a) take up the works and arrange for its completion within the time period stipulated in clause 5;
- b) employ suitable skilled persons to carry out the works ;
- c) regularly supervise and monitor the progress of work ;
- d) abide by the technical suggestions / direction of supervisory personnel including engineers etc. regarding building construction ;
- e) be responsible for bringing any discrepancy to the notice of the representative of the first party and seek necessary clarification ;
- f) ensure that the work is carried out in accordance with specifications, drawings and within the total of the contract amount without any cost escalation ;
- g) keep the first party informed about the progress of work ;
- h) be responsible for all security and watch and ward arrangements at site till handing over of the Silt Monitoring Station to the first party ; and
- i) maintain necessary insurance against loss of materials/cash, etc. or workman disability compensation claims of the personnel deployed on the works as well as third party claims.

- f) Pay all duties, taxes and other levies payable by construction agencies as per law under the contract (First party will effect deduction from running bills in respect of such taxes as may be imposed under the law).

10. Variations / Extra Items

The works shall be carried out by the second party in accordance with the approved drawings and specifications. However, if, on account of site conditions or any other factors, variations are considered necessary, the following procedure shall be followed:-

- a) The second party shall provide the Engineer/ In charge of the work with a quotation for carrying out the Variation when requested to do so by the Engineer. The Engineer shall assess the quotation, which shall be given within seven days of the request before the Variation is ordered.
- b) If the quotation given by the second party is unreasonable, the Engineer/ In charge of the work may order the Variation and make a change to the Contract Price which shall be based on Engineer's own forecast of the effects of the Variation on the Contractor's costs.
- c) The second party shall not be entitled to additional payment for costs which could have been avoided by giving early warning.

11. Securities

The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer. The Performance Security shall be valid until a date 28 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee.

12. Termination

- 12.1 The Employer may terminate the Contract if the other party causes a fundamental breach of the Contract.
- 12.2 Fundamental breaches of Contract include, but shall not be limited to the following:
 - (a) the contractor stops work for 28 days and the stoppage has not been authorized by the Engineer;
 - (b) the Contractor has become bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - (c) the Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer;
 - (d) the Contractor does not maintain a security which is required;

- (e) If the Contractor, in the judgment of the Employer or the Bank, has engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices (as defined in the prevailing Bank's sanctions procedures) in competing for or in performing the Contract.

12.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.

12.4 If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

13. Payment upon Termination

13.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done less advance payments received up to the date of the issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law.

13.2 If the Contract is terminated at the Employer's convenience, the Engineer shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to be deducted at source as per applicable law.

14. Dispute settlement

If over the works, any dispute arises between the two parties, relating to any aspects of this Agreement, the parties shall first attempt to settle the dispute through mutual and amicable consultation.

In the event of agreement not being reached, the matter will be referred for arbitration by a Sole Arbitrator not below the level of retired Superintending Engineer, PWD to be appointed by the first party. The Arbitration will be conducted in accordance with the Arbitration and Conciliation Act, 1996. The decision of the Arbitrator shall be final and binding on both the parties.

15. Inspections and Auditing

The Contractor shall permit, and shall cause its Sub-Contractors to permit, the Bank and/or persons or auditors appointed by the Bank to inspect and/or audit its accounts and records and other documents relating to the submission of the Quotation and performance of the Contract. Any failure to comply with this obligation may constitute a prohibited practice subject to contract termination and/or the imposition of sanctions by the Bank (including without limitations determination of ineligibility) in accordance with prevailing Bank's sanctions procedures.

ABSTRACT OF BILL OF QUANTITIES FOR DSTT. FATEHPUR

Sl. No.	Description of Work	Qty.	Unit	Estimated Cost		Amount
				In figure (Rs.)	In Words	In (Rs.)
1.	Construction of Silt Monitoring Station Weir and Pathway with all cost of material, labour and T&P	job	Number	691874	Six lac ninety one thousand eight hundred seventy four only	691874
2.	Construction of Silt Monitoring Station Apparatus room including Stilling well with all cost of material, labour and T&P	job	Number	125468	One lac twenty five thousand four hundred sixty eight only	125468
				817342		817342

Gross Total Cost : Rs.

We agree to execute the works in accordance with the approved drawings and technical specifications at percentage above/below the estimated rates, i.e., for a total contract price of Rs.(amount in figures) (Rs. amount in words).

Signature of Contractor

DETAILED BILL OF QUANTITIES FOR DSTT. FATEHPUR

**A- DETAILED BILL OF QUANTITY FOR CONSTRUCTION OF WEIR AND
PATHWAY OF
SILT MONITORING STATION ON NALA DISTT FATEHPUR**

SN	Name of Work	Unit	Quantity	Rate	Amount (Rs.)
1	Clearance of site, removing, uprooting vegetation with proper disposal	Sq. m	6.25	130	812.5
2	Earth work in excavation in foundation	Cub. m	320.20	57	22182.69
3	Cement Concrete 1:4:8 in cement course sand and stone ballast mixing and laying in foundation with all cost of material and labour	Cub. m	31.55	2550	80452.50
4	Ist class brick work 1:4 cement, sand of 1.25 f.m. mortar	Cub. m	123.2	3280	404096
5	Cement plaster in 1:3 cement and sand mortar, 12 mm thick with all cost of material and labour T & P	Sq. m	167.77	105	17615.85
6	Reinforced concrete 1:2:4 in cement course sand and stone grit 20 mm gauge mixing and laying in slab with all cost of material and labour, centering shuttering required	Cub. m	3.2	6100	19520
7	MS or iron work in plain reinforce concrete cost of steel bars and labour in cutting , bending, placing and winding with wire	Kg.	341	55	18755
8	Cement Concrete 1:2:4 sand and stone grit 20 mm gauge mixing and laying on weir top and floor bearing with all cost of material tools & plants	Cub. m	6.24	4900	30576
9	Supplying MS 'L' Iron and fabricated steel pathway on nala with all labour in cutting, molding including grinding and cost of material	Kg.	689.56	61	42063.16
10	Supplying Sal wood planks 75 mm thick for laying in pathway	Cub. m	1.02	40000	40800
11	Transportation of material from market to workshop for fabrication and then workshop to site of pathway including loading and unloading at workshop to site		Job	15000	15000

	Total				691873.70
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**B- DETAILED BILL OF QUANTITY FOR CONSTRUCTION OF APPRATUS ROOM
DSTT. FATEHPUR**

1. APPRATUS ROOM

S. No.	Name of work	Unit	Quantity	Rate	Amount (Rs.)
1	Earth work and excavation of foundation in foundation in ordinary soil lead of 30 mtr lift 1.50 mtr	Cub. m	8.99	62	557.38
2	Cement concrete 1:6:12 In cement sand and brick ballast 40 mm. gauge mixing and laying in foundation width all cost	Cub. m	2.3	2230	5129.00
3	M 150 class brick work in 1:6 cement sand mortar in foundation with all cost of material and labour	Cub. m	4.77	3100	14787.00
4	Laying DPC 25mm thick cc 1:2:4 and sealing powder	Sq. m	4.67	110	513.70
5	M 150 brick work in 1:6 cement sand 1.25 P.M. mortar in super structure one brick thick wall with all cost of material and labour	Cub. m	7.03	3280	23058.40
6	Supplying and M.S.L. iron door window chaukhat with all cost of fabrication material and labour T & P	Kg.	123	58	7134.00
7	Fixing door and window chaukhat frame in proper place labour only	Sq. m	4.76	30	142.80
8	Supplying and fixing MS iron grill on open mouth of window and ventilator	Kg.	30	56	1680.00
9	MS iron work in plain RCC cost of steel bar and labour in cutting binding with wire and placing	Kg.	115	55	6325.00
10	RCC 1:2:4 cement course sand and stone grit 20 mm gauge mixing and laying in slab	Cub. m	1.74	6100	10614.00
11	Cement plaster In 1:4 cement sand mortar 12 mm thick item with all cost of material and labour	Sq. m	90.13	90	8111.70
12	Earth work in filling in room with dressing and ramming	Cub. m	13	57	741.00
13	Cement concrete 1:4:8 in cement sand and brick ballast 40 mm gauge mixing and laying in base of floor	Cub. m	0.72	2550	1836.00
14	Laying cc floor 25 mm thick with cc 1:2:4 and glass strip item with all cost of material and labour	Sq. m	12.89	340	4382.60
15	Fixing glass strip and cc floor 22 mm width 3mm thick item	meter	32	11	352.00
16	Supplying door window flash shutter commercial quality is mark including wooden and fitting excluding their supply	meter	4.76	1100	5236.00
17	Supplying iron oxide fitting for door window shutter with nut bolt	Sq. m	4.46	170	758.20
18	Finishing of walls with water proof cement in 2 coat on new surface	Sq. m	103.5 2	35	3623.20
19	Painting door window shutter both side in two coat	Sq. m	13.38	58	776.04
20	Supplying 10 cm dia down rain water pipe with clamp	Rmt	6	102	612.00
21	Roof toping with 20 mm thick cement plaster in 1:3 cement coarse sand and mortar	Sq. m	12.89	105	1353.45
	Total				97723.47

C- DETAILED BILL OF QUANTITY CONSTRUCTION OF STILLING WELL

SN	Name of Work	Unit	Quantity	Rate	Amount
1	Earth work in excavation of well foundation in all types of soil including 2 Nos. lift extra beyond lift of 1.5 meter	Cub. m	29.23	86	2514.00
2	Cement Concrete 1:4:8 in cement sand and brick ballast 40 mm gauge mixing and laying in foundation with all cost of material and labour	Cub. m	2.12	2550	5406.00
3	Ist class brick work 1:4 cement and course sand mortar	Cub. m	5.16	3280	16925.00
4	Supplying/Fixing 10 cm dia. PVC pipe for inlet water in well	Meter	2.10	120	252.00
5	Cement plaster in 1:3 cement and sand mortar, 12 mm thick with all cost of material and labour T & P	Sq. m	15.00	105	1575.00
6	Supplying molding fixing iron bar step for going down the well	Kg.	18.50	58	1073
	Total				27745.00

Annexure - 2

Format of certificate

Certified that the works upto ----- level in respect of construction of ----- at ----- have been executed in accordance with the approved drawing and technical specifications.

Signature
Name & Designation (Official

address)
Place :
Date :

Office seal

TECHNICAL SPECIFICATION FOR CONSTRUCTION OF SILT MONITORING STATION

Earth Work

(a) General

All works shall be carried out according to the relevant Indian Standard Code of practice and IRC code and standard for earth work, UPID specification for earth work as far as applicable, and as directed by Engineer-in-charge, where necessary. All work shall be carried out as per design and drawings and as per instruction of Engineer-in-charge.

(b) Setting Out

- Before start of the work centre line of the proposed structures and its layout shall be marked by suitable and firm pegs or by dagbelling on site.
- All levels shall be referred to a specified and established firm bench mark not subject to subsidence or interference. Temporary bench mark pillars shall be constructed at suitable locations for reference of levels during construction.
- Dagsbells should be laid down on the ground. The contractor shall provide all facilities and assistance as may be required by the Engineer-in-Charge for the checking of the dagbel lines etc. The line/dagbells shall be preserved carefully by the contractor until they have served their purpose. Work shall be suspended at such points and for such reasonable time as may be required for checking layout. No compensation will be granted to the contractor for the required assistance in the checking of levels for loss of time on account of such suspensions of works.

(c) Clearing of Land

Before starting earthwork, the area demarcated for excavation, construction of structures shall be cleared off bushes, vegetation, rubbish, roots and any other objectionable material. All timber, logs of trees and fuel wood inside the demarcated land shall be the property of Government burnt, used or removed by the contractor or his labour without prior written permission of the Engineer-in-Charge. The land so cleared shall be maintained free from any growth and vegetation during progress of construction.

(d) Drawings

All works shall be carried out in accordance with the drawings to be supplied by the Engineer-in-Charge duly signed by Engineer from time to time. Construction drawings will be issued in stages, by the department before the start of actual construction of the structures. After careful study of the drawings issued by the Employer, Contractor shall prepare where necessary supplementary drawings and fabrication drawings with field/construction information and shall submit the same to the Engineer for approval prior to construction. If some drawings are not available at the start of execution, the contractor shall make the construction programme so that work on drawings available will be taken up first.

(e) Jungle Clearance

- The work consists of removing Jungle namely Behaya and Gondi Grass. Before removing jungle, its area shall be measured and be recorded in measurement book in presence of contractor or its authorized representative, separately. Contractor or his representative shall give his acceptance of measurements taken by putting his sign on measurement book. This item shall be paid only in the reaches and places where either excavation of earth is done manually or where no excavation is done but only Jungle clearance is involved. If the contractor prefers to do earthwork in excavation by machines, then in such reaches and places this item shall not be paid.
- Before start of earthwork manually, beheds and gondi grass shall be cut and disposed off as per direction of Engineer-in-Charge.
- Its quantity shall be measured in square metre.

(f) Excavation

- Before commencement of the excavation in any reach the contractor shall obtain in writing from the Engineer-in-Charge instruction and schedule of quantities in regard to the disposal and utilization of the excavated materials.
- The contractor shall excavate whatever material may be encountered up to the depth of excavation shown on the Cross-section of the escape.
- Excavation to be carried out shall strictly conform to the plans, dimensions and level shown on the profile of excavation in the Cross-sections and Longitudinal section. The bed of the escape will have a longitudinal gradient as given in L-section and will be kept level transversely. The side slope shall also conform to those

given in the drawings and shall be neatly finished. Any excavation below the prescribed bed level shall not be paid.

- The tendered rate shall include excavation and disposal of any type of soil like sand, silt, clay, kankar, chhari, moist or wet earth including cost of dewatering. No claim on account of the nature of the strata or on account of difficulties met with in excavation and disposal of the excavated material shall be entertained. The contractor is advised to see the site conditions thoroughly and make preliminary investigations in the manner he likes. This shall also include all leads, lifts, removal of tattis, matams and labour charges occurring in measurement and checking of the work during construction of escape.
- Earth work in filling shall be done in a layer of 15-20 cm. thickness. After proper compaction additional layer shall be laid on this if required.

(g) Disposal of Excavated Earth

Contractor shall be responsible that no unwanted disposal is being made in the work area. Any such disposal shall be removed at his own cost to the satisfaction of Engineer-in-Charge. If anything found contrary, the contractor shall arrange to rectify at his own cost within the environmental regulations.

(h) Measurements

The measurement shall be taken correct to a cm. Before commencement of earthwork initial levels and measurements shall be taken jointly by the department and authorized representative of the contractor, which shall be recorded in M.B. Contractor or his authorized representative shall have to record his acceptance of levels and measurements on the M.B. Similarly after completion of earthwork, as per design / drawing, final cross sections shall be taken at the same locations. The final quantity of earthwork shall be calculated by these levels and measurements.

All measurers for facilitating recording of cross sections such as setting out of works, arrangement of necessary equipments and labour shall be provided by the contractor at his own cost.

4.3.2 RCC Works

(a) Earthwork in Foundation

Foundation trenches for fall shall be dug to the exact length & width of the foundation concrete. The sides shall be left plumb where the nature of the soil permits it, but the sides must be sloped back or shored up carefully when the soil appears likely to fall in or the depth of trench exceeds 1.5m. The disposal of excavated material shall be as per direction of Engineer-in-charge. The bottom of the foundation trenches must be perfectly leveled both longitudinally and transversely. The bottom of the trenches shall be slightly watered and well rammed. If excavation is done deeper than shown in the drawing, the contractor shall fill the extra depth with concrete at his own expense and grade of concrete will be same as foundation concrete, Roots of all trees and plants encountered in digging trenches shall be removed carefully, if possible. Otherwise, they shall be cut up to a distance of 30cm. on sides and bottom of trench and shall then be burnt and smeared with boiling coal tar at the expense of contractor. If boulders are found in bed they shall be removed at contractor's own cost. The extra depth done by removal of roots of trees or removal of boulders from the trench shall be filled with concrete of the same grade as that of foundation concrete at contractor's own cost.

(b) Cement Concrete

(i) General

All works shall be carried out in accordance with IS codes, UPID Specification and as directed by Engineer-in-charge. The works shall be carried out in a workman like manner to the lines, grades and dimensions shown on drawings.

(ii) Composition

The cement concrete shall be composed of cement, coarse aggregate, fine aggregate, water and, if considered necessary by Engineer-in-Charge, an air entraining admixture. The ingredient shall conform to IS Specification/UPID Specification and as per directions of Engineer-in-charge. The design of each concrete mix will be based on the water cement ratio necessary to secure a plastic workable mix for the specific condition of placement and when properly cured shall give a product having durability and strength in accordance with the requirement of these specification.

(iii) Materials

1. Cement - Cement to be used in the works shall be ordinary Portland cement, 33 grade conforming to IS : 269, or 43 grade (IS 8112) or 53 grade (IS 12269)

2. Coarse aggregate – Coarse aggregate shall consist of clean hard, strong, dense, non-porous and durable pieces of crushed stone, crushed gravel, natural gravel or a combination thereof. The aggregate shall not consist of pieces of disintegrated stones, soft, flaky, elongated particles, alkali vegetable matter of other deleterious material. Coarse aggregate shall conform to IS: 383 and tests for conformity shall be carried out as per IS: 2386 Part-I and VIII. The gradation of the coarse aggregate shall be as follows:

Table 4.3.1

IS Sieve Size	Percent by Weight Passing the Sieve
40mm	100
20mm	95-100
10mm	25-55
4.75mm	0-10

3. Fine aggregate - Fine aggregate shall consist of clean, hard, strong and durable pieces of crushed stone, crushed gravel or a suitable combination of natural sand, crushed stone or gravel. They shall not contain dust, lumps, soft or flaky, materials, mica or organic impurities other deleterious materials, fine aggregate having positive alkali-silica reaction shall not be used. Sand of fineness modulus of not less than 2.0 may be used as fine aggregate. Grading of fine aggregate to be used in concrete, masonry and plaster is outlined in table 4.3..2.

Table : Gradation of sand to be used in concrete, Masonry and Plaster

IS Sieve Size	For Concrete works		For Masonry work	For Plaster work
	Zone I	Zone II	Zone III	Zone IV
	% age passing by weight			
10mm	100	100	100	100
4.75mm	90-100	90-100	100	95-100
2.38mm	60-95	75-100	90-100	95-100
1.18 mm	30-70	55-90	70-100	90-100
600 micron	15-34	35-59	40-100	80-100
300 micron	5-20	8-30	5-70	20-65
150 micron	0-10	0-10	0-15	0-50

Note: - Sand conforming to grading for zones III & IV (as per IS 383) can also be used for concrete works except that the sand conforming to grading for zone IV shall not be used for reinforced concrete work.

Water used for mixing and curing shall be clean and free from injurious amount of oils, acids, alkies, salt, sugar organic materials. Potable water is generally considered satisfactory for mixing concrete.

(iv) Proportioning of Concrete

The proportion of all materials entering into the concrete shall be as directed by Engineer-in-charge. The contractor shall provide all necessary equipment and plant to determine and control the actual amount of material entering into each batch. The coarse & fine aggregates, water and cement shall be batched and measured by weight. Specified air entraining agent or water proofing compound shall be batched or added separately to the mix as and if directed by Engineer-in-charge.

The design of concrete mix shall be done only for the specified materials to be procured for works at site in accordance with the relevant specifications.

(v) Batching of concrete by weight & mixing

- (a) The plant should be able to handle all the coarse aggregate, fine aggregate, water and cement. Air entraining agent and water proofing compound (if directed to be used by the Engineer-in-Charge) can be batched by weight separately and added direct to concrete mixer. The weigh batchers should be capable of weighing, controlling and determining accurately the prescribed amount of various materials for each mix. Facility should be available to obtain sample of each ingredient entering the mixer. The contractor shall maintain a record of the number of batches mixed and other details required for checking the correctness of the mix as per directions of the Engineer-in-charge.
- (b) Suitable hopper type mixers so as to mix uniformly the various ingredients and discharging the mix without segregation should be used. No hand mixing shall be allowed.

- (c) The time for obtaining uniform mix for a particular type of job shall be initially prescribed by the Engineer-in-Charge and the same time shall thereafter be adhered to for mixing all subsequent batches of that concrete, unless revised by the Engineer-in-Charge. The material shall be mixed for a period of not less than 2 minutes and until a uniform colour and consistency are obtained. The time shall be counted from the moment all the materials have been put into the drum.

- Note: - 1.** In case the quantity of concrete is small, the Engineer-in-Charge may allow nominal mix concrete instead of design mix concrete as per clause 9.3 of IS 456-2000
- 2.** Cement level to be used in concrete mixes of various grades is given in table as below:
This is for reference for working out unit costs while quoting:

Table

Grade of Concrete	Cement level (Kg/M ³ concrete) with coarse aggregate of maximum size of 20 mm
M 10	221
M 15	288
M 20	366

If the actual cement level used is more than that given in the above Table, as warranted by the 'Mix Design', the Contractor will be paid for the extra cost of Cement used in the Concrete Mix. In case the actual cement used is less, as per the 'Mix Design' requirement, the cost of cement used less will be deducted from the Contractors bill. The Engineer-in-Charge will intimate the cement level to be used (in the relevant grades of Concrete) to the Contractor from time to time. Cost of cement will be decided by the Engineer-in-Charge.

(vi) Consistency

The quantity of water shall be regulated by carrying out regular slump tests. The slump required for profile bed bars using vibrator shall be restricted to 25 mm.

(vii) Placing & Curing

- (i) Wooden / metal shuttering of suitable thickness and properly strengthened, cut in shape and size of the concrete profile of the structure having smooth surface finish shall be used for placement of concrete.
- (ii) The entire concrete used in the work shall be laid gently (not thrown) in layers not exceeding 15cm thick and shall be thoroughly vibrated by means of mechanical vibrators till a dense concrete is obtained. The thickness may vary as per direction of Engineer – in – charge. The layers of concrete shall be so placed that the bottom layer does not finally set before the top layer is placed. During cold weather concreting shall not be done when temperature falls below 4.5^o C.
- (iii) Curing of CC, RCC and masonry work shall be suitably protected with moist gunny bags, or any other methodology approved by Engineer-in-Charge against quick drying. The curing shall be done for a minimum period of 14 days.

(viii) Quality

Regular mandatory tests on consistency & workability of the fresh concrete shall be done to achieve the specified compressive strength of concrete. These tests shall be carried out as per IS: 516. The required compressive strength of the concrete is given below:

M- 20

Min. compressive strength at 7 days – 13.5 N/mm²

Min. compressive strength at 28 days – 20 N/mm²

M- 15

Min. compressive strength at 28 days – 15 N/mm²

A Sampling and acceptance criterion of concrete mix as given in points 15 and 16 of IS 456-2000 shall be adopted. Some of its parts are reproduced below:

worked out to nearest 0.01 cubic meter.

(c) Brick Masonry in 1:4 Cement and sand

I. Material

(i) Quality of bricks

a) (IS 3495) Bricks shall be made of from good brick earth and shall be either machine moulded or table moulded with sand. The brick earth shall be free from all traces of gravel, kankar or ash or other alkaline deposits. Bricks shall have a uniform deep cherry red or copper colour, shall be thoroughly burnt but not over burnt and regular in shape. These edges must be straight, square and the bricks must emit a clear ringing sound on being struck. They must be free from cracks, chips, flaws and stones or lumps of any kind. They should not absorb water more than 14 percent by weight after immersion in cold water for 24 hours & show

no efflorescence. Minimum compressive strength shall not be less than 150kg per Sq. Cm. for average of 5 specimens.

Size of Bricks shall be 230x 110x 70 mm .Tolerance of ± 5 percent may be allowed.

Before the starting brick work at site, they shall be got approved at the site by the Engineer-in-charge of the work. Any sub standard brick carried to site shall be rejected and the contractor shall have to remove the rejected bricks at his own cost within 24 hours of their rejection.

b) Cement: Same as given in above item no. 2 for Cement Concrete.

c) Sand: Sand shall consist of natural sand, crushed stone or crushed gravel or a combination of any of these. It shall be hard, durable, clean and free from adherent coating and organic matter and shall not contain clay balls, harmful impurities such as iron pyrites, alkalis, salts, coal, mica, or other materials in such form or in such quantities to affect adversely the hardening, the strength, durability etc.

(ii) Proportioning & Mixing of Mortar

For preparation of mortar, cement & sand shall be mixed in proportion of 1:4/1:3 (as the case may be). Cement shall be proportioned by weight taking the unit weight of cement as 1.44 tones per cubic metre and sand shall be proportioned by volume taking into account due allowance for bulking. All mortar shall be mixed with a minimum quantity of water to produce desired workability consistent with maximum density of mortar.

The mortar shall be mixed in a mechanical mixer. No hand mixing shall be allowed unless otherwise permitted by the Engineer-in-charge in an exceptional case. The mortar on mixing shall be consumed preferably, within 30 minutes. In case the initial setting has begun, the re-tempered, partially set or lumpy mortar shall not be allowed to be used and shall be rejected and removed from the site by the contractor at his own cost.

Control shall be exercised on water content and it shall be ensured that the slump is kept between 4 cm. to 5 cm. The quantity of water to be added shall not exceed 46 liter per bag of cement.

(iii) Curing

The mortar is likely to dry up before it has attained its final set and may crumble. This shall be prevented by keeping the brickwork constantly wet for at least seven days.

(iv) Measurement

Measurement of brickwork will be made only to the neat lines of the structures as indicated on the drawing or as established by the Engineer-in-charge. Dimensions shall be measured nearest to 1 cm. The areas shall be worked out to nearest 0.01 square meters. The cubic contents shall be worked out to nearest 0.01 cubic meter.

(d) Pointing

Cement and Sand in the mortar shall be in a proportion as specified in the drawing. The preparation of mortar shall be done as specified in paragraph above.

(i) Struck Pointing

Pointing shall be done while the mortar in the joints is still green. The edge of the original mortar shall be struck to a slope, recessing it to about 6 mm or as specified in the drawing from the upper edge of the horizontal joint and slopping it to meet the edge of the brick on lower edge of the joint. The vertical joints shall be struck semi circular by means of an iron tool 6mm in diameter.

After pointing is completed, all mortar shall be washed from the face of the wall which shall be kept wet for 7 days.

(ii) Measurement

Pointing shall be measured in length and width of the surface pointed.

Dimension shall be measured nearest to 1.0 cm. The area shall be worked out nearest to 0.01 sq.m.

(c) Specification of repairs of RCC Works

4.3.6 QUALITY CHECKING OF WORK ACTIVITIES

- (i) The tests shall be carried out in construction of RCC work. The quality checking of work activities shall be done by the contractor as per requirement, and third party technical checking by consultancy services. Second party checking shall be done by the department to the frequency considered necessary by the Department. Contractor shall keep the records of all tests as required by various IS Codes and as per instructions of Engineer-in-charge. All tools, men and materials, testing kits etc. needed for works shall be arranged by contractor for which no extra payment shall be made. The Department shall also keep permanent record of quality control tests.
- (ii) In all works it is desired to control the quality and standard of materials and control of confirmation that the required shape, dimension, strength etc. of the works are achieved.

(iii) The tests shall be carried out as per relevant Indian Standard Codes and other Standard Codes. The frequency of testing is defined in the codes. Some of the tests (but not limited to these tests) to be performed for quality checks are given below:

a) Cement: (Initial / final setting time, Compressive strength, Specific gravity, Soundness. Fineness Chemical analysis)

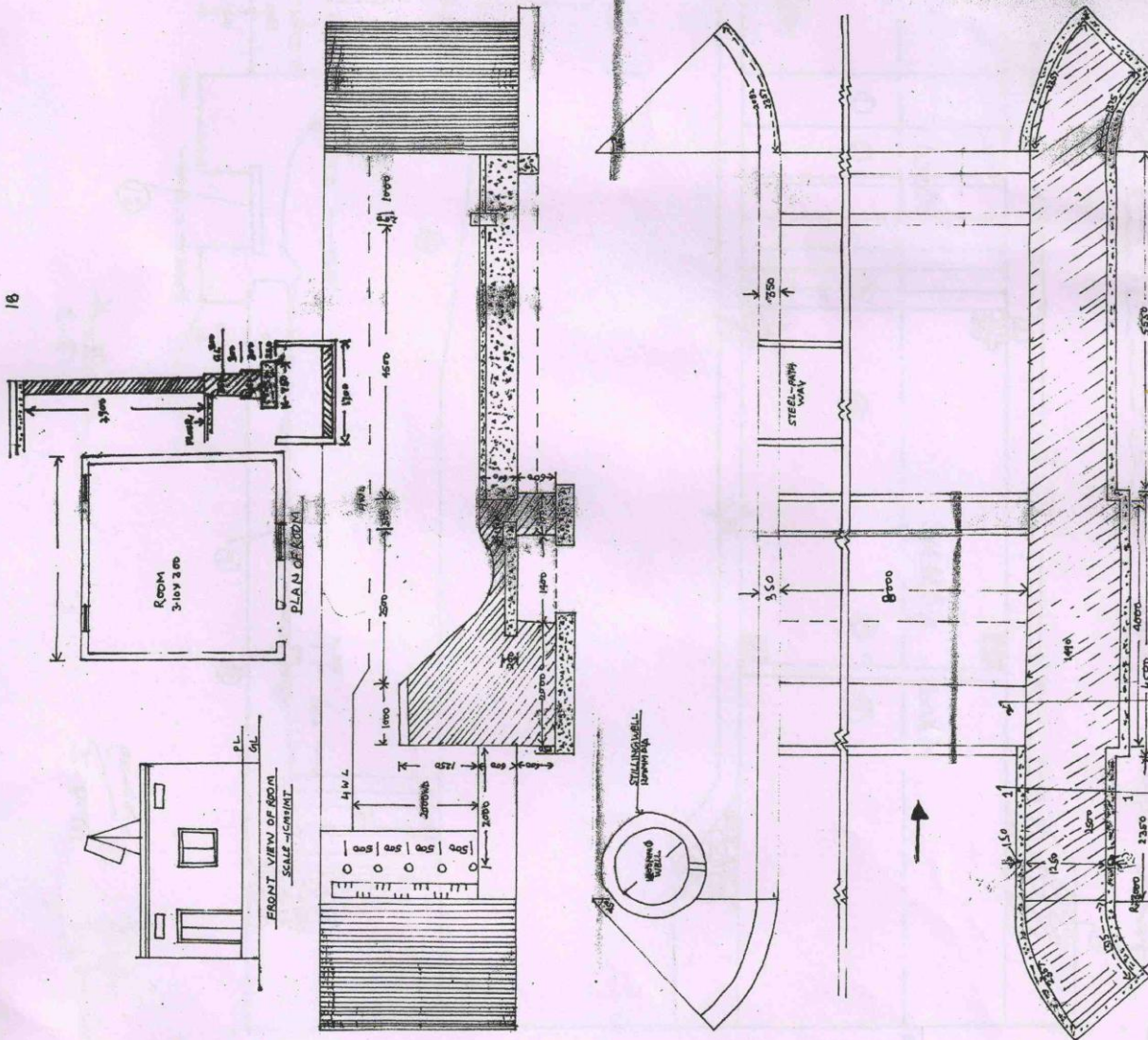
b) Aggregates: (Sieve Analysis/ Fineness modulus Moisture Absorption, Bulkage. Flakiness/ Elongation Index, Impact Value, Los Angeles Abrasion Value, Crushing Value, Soundness, Organic impurities)

c) Concrete: (W.C. Ratio, Slump test, Compressive strength, Moisture content, Water absorption, Density, Drying shrinkage, Non-Destructive testing (NDT), Mix Design, Compression testing of cubes/ cylinders, Air content of concrete, Accelerated Curing Test)

d) Bricks: (Water absorption, Density, Size, compressive strength, Efflorescence)

Design of Silt Monitoring Station
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