

STANDARD BIDDING DOCUMENT

PROCUREMENT OF

CIVIL WORKS

Name of Work:- Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana

Estimate Amount:- 2956230.73/-

COMPLETE BIDDING DOCUMENT



GOVERNMENT OF GUJARAT
Water Resources Department

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INVITATION FOR BID

(IFB)

NATIONAL COMPETITIVE BIDDING

- The Executive Engineer, Sujalam Suflam Division No.2, Visnagar invites bids for the construction of works detailed in the table.
The bidders may submit bids for any or all of the following works.

Package No.	Name of Work	Approximate value of works (Rs.)	Bid security (Rs.)	Cost of document	Period of completion	#Class of Registration/ Category of contractor if required
1	2	3	4	5	6	7
1	Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana	2956230.73/-	30,000/-	1500/-	6 months	Class- “E-1 & Above”

- Prospective/Interested bidder may download the Bid Documents from web site <https://tender.nprocure.com> free of cost till the Time and Date as mentioned on online NIT at website <https://tender.nprocure.com>.

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- However, Bidder who is submitting the Bid Online will have to pay the Bid Document Fee /Tender Fee through Demand Draft only of any Schedule Bank payable at Visnagar and in favour of ‘Executive Engineer, Sujalam Suflam Division No.2, Visnagar’. Once the Bid is received online, Bid Document / Tender Fee will not be refundable. As Per GoG R&B Department’s Circular No. PARACH/102/000/IB/221/(59)/CDated.24/01/2007

The Demand Draft for Bid Document / Tender fee and FDR / Bank Guarantee against Bid Security/EMD shall be submitted in electronic format through online (by scanning) while uploading the bid, this submission shall mean that bid document / tender fee and Bid Security / EMD has been received. Accordingly, the offer of only those shall be opened whose Bid Document/Tender Fee and Bid Security/EMD have been received electronically. However, for the purpose of realization of Demand Draft, and FDR / Bank Guarantee bidder shall send the same in original through R.P.A.D. so as to reach to#” Executive Engineer,, Sujalam Suflam Division No.2, Visnagar”, within 7 Days from the last day of bid submission.

Penaltative action for not submitting Demand Draft / FDR / Bank Guarantee in original to Executive Engineer / Tender Inviting Authority by bidder shall be initiated. **WRDGR No.PRC-102014-1-MICell-K.1Dated:29/10/2014**

- Bids received online, will be opened on the time, date and place as specified in the online NIT at website <https://tender.nprocure.com> in the presence of the bidders or their authorized representatives, who wish to remain present.
If the office happens to be closed on the day of opening of the bids as specified, the bids will be opened on the next working day at the same time and venue.
- A pre bid meeting will be held onathrs. at the office of..... to clarify the issues and to answer questions on any matter that may be raised at that stage as stated in clause 9.2 of ‘instructions to Bidders’ of the bidding documents.

6. #Bid Security (EMD) is equal to 1% of Estimated Amount put to bid / tender and should be rounded off to the next thousand rupees.
7. Other Information is as under:
 - A. Agencies can prepare and edit their offers a number of times before the end of the tender submission date and time. After the tender submission date and time, the bidder cannot modify / edit / withdraw their submitted offer in any case. No written or online request in this regard shall be granted.
 - B. Offers in physical form will not be accepted in any case.
 - C. Demand Draft purchased by the other than bidder and issued after the last date of submission of Bids, will not be considered or accepted.
 - D. The cost incurred by the contractor for this offer for clarification or attending discussion, conferences or site visits will not be reimbursed by the Employer or Engineer-in-Charge.
 - E. Conditional tender shall not be accepted.
 - F. Any changes, addition, alternation made in the prescribed form attached with tender are liable to be rejected.
 - G. Any change in format or conditional Bank Guarantee will not be accepted and the bidder will be considered on-responsive.
 - H. All the bidders are instructed to fill in information strictly in accordance with the format given in the checklist/qualification document/tender document.
 - I. It is mandatory for the bidders to supply each and every information as asked strictly in electronic format at appropriate places only.
 - J. Blank / insufficient information shall be treated as nil information and shall result in disqualification.
 - K. Even if the bidder has been qualified in a similar or larger size of project in the past, it shall not be deemed to be a ground / reason for not giving required information for this work/bid.
 - L. Information supplied for earlier projects shall not be considered while evaluation of this bid. The Government will not ask for any other information, unless it is found absolutely necessary by the competent authority.
 - M. If found necessary, the contract or will be intimated for negotiation,

~~#For the works costing up to Rs. 7.5 crore (WRD Works), Rs. 7.0 crore (ROAD/BRIDGE/ BUILDING WORKS), Rs. 0.5 Crore (Electrical Works) kindly refer to GoGNWRWS&K Department's Circular No. Paracha/1097/1397(11)/pa.fa./MICELL(k-1) dated 18/01/2018 and Dated 30/09/2022~~

~~For the works costing under Rs. 7.5 crore for Construction work of Water Resources Department, Rs. 7.0 crore for Roads, Bridges and Building and Rs. 0.50 crore for Electrical work following documents shall be submitted in electronic format only through online by scanning and the (i) Bid Document Fee / Tender Fee (ii) Bid Security / EMD should be sent in original to the Tender opening authority through RPAD, so as to reach the Executive Engineer within 7 days from last day of submission of Bid.~~

- (i) Bid Document Fee/Tender Fee
- (ii) Bid Security / EMD or Valid EMD Exemption Certificate of Appropriate Class of Registration of Approved Contractors
- (iii) Registration Certificate of appropriate class
- ~~(iv) Registration Certificate of special category Road/ Building and Category I/II/III, If required~~
- (v) GST Registration
- ~~(vi) Work Experience, and other details~~
- (vii) PANCRAD

- (viii) Solvency (20% of Estimate Cost)
- (ix) other necessary documents, as specified in Appendix to ITB of section 1

SECTION-1
INSTRUCTIONS TO
BIDDERS
(ITB)

Section1: Instructions to Bidders

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A. GENERAL

1. Scope of Bid

- 1.1 The Employer (Named in Appendix to ITB) invites bids for the Construction of works (as defined in these documents and referred to as ‘the works’) detailed in the table given in IFB. The bidders may submit bids for any or all of the works detailed in the table given in IFB.
- 1.2 The successful bidder will be expected to complete the works by the intended completion date specified in the Contract data.
- 1.3 Throughout these bidding documents, the terms ‘bid’ and ‘tender’ and their derivatives (bidder/tenderer, bid/tender, bidding/tendering, etc.) are synonymous.

2. Source of Funds

- 2.1 The expenditure on this project will be met from the budget of Govt. of Gujarat /Govt. of India for centrally sponsored projects.

3. Eligible Bidders

- 3.1 This Invitation for Bids is open to all eligible bidders.
- 3.2 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, statement that the Bidder is neither associated, nor has been associated, directly or indirectly, with the consultant or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the works, and any of its affiliates, shall not be eligible to bid.

4. Qualification of the Bidder

- 4.1 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary. The proposed methodology should include a program of construction backed with equipment planning and deployment duly supported with broad calculations and quality assurance procedures proposed to be adopted justifying their capability of execution and completion of work as per technical specifications, within stipulated period of completion.
- 4.2 Deleted
- 4.3 Deleted
- 4.4 Deleted

~~#4.5 — QUALIFICATION CRITERIA:~~

~~(Applicable for the works which require Pre Qualification) As Per Go GNWRWS & K Department's Circular No. Paracha/1097/1397(11)/pa.fa./MICELL(k-1) Dated 18/01/2018~~

- ~~4.5.1 Qualification will be based on Applicant's meeting all the following minimum pass/fail criteria regarding the Applicant's general and particular experience, personnel and equipment capabilities and financial positions, as demonstrated by the applicant's responses in the forms attached to the letter of application (specified requirement for joint ventures are given under para 4.6 below) Sub-contractors experience and resources shall not be taken into account in determining the applicants compliance with the qualifying criteria~~

To qualify for more than one contract, the applicant must demonstrate having experience and resources sufficient to meet the aggregate of the qualification criteria or each contract given in paragraphs 4.5.4, 4.5.5 and 4.5.9 below

4.5.2 Base year and Escalation

The base year shall be taken as Current financial year Following enhancement factors will be used for the costs of works executed and the financial figure to a common base value for works completed in India.

<u>Year</u>	<u>Financial Year</u>	<u>Multiplying factor</u>
Base year of inviting tender	20__20__	1.00
-1	20__20__	1.10
-2	20__20__	1.21
-3	20__20__	1.33
-4	20__20__	1.46
-5	20__20__	1.61

Applicant should indicate actual figures of costs and amount for the works executed by them without accounting for the above mentioned factors. In case the financial figure and value of completed works are in foreign currency the above enhanced multiplying factors will not be applied. Instead, the current market exchange rate (State Bank of India BC Selling rate as on the last date of submission of the bid) will be applied for the purpose of conversion of the amount in foreign currency into India rupees.

4.5.3. General Experience.

The Applicant shall meet with the following minimum criteria:

- (a) Achieved a minimum annual financial turnover of Rs. Crore for works in progress and completed in all classes of civil engineering construction works in any one year, over the last five financial years.
- (b) Experience in successfully completing or substantially completing at least one contract of similar work (.....) of at least 40 percent of the value of proposed contract within the last five financial years.

The works may have been executed by the applicant as prime contractor or as a member of a joint venture or as a nominated sub-contractor. As sub-contractor, he should have acquired the experience of execution of all major items of works under the proposed contract. In case a project has been executed by a joint venture, weight towards experience of the project would be given to each joint venture in proportion to their financial participation in the joint venture if work executed jointly otherwise as per the scope of work define in Joint Venture agreement.

Substantially completed works means those works which are at least 90 % completed as on the date of submission (i.e. gross value of work done up to the last date of submission is 90 % or more of the original contract price) and continuing satisfactorily.

For these, a certificate from the employers shall be submitted along with the application incorporating clearly the name of the work, contract value, billing amount, date of commencement of works, satisfactory performance of the contractor and any other relevant information. (the experience certificate should be signed by the officer not below the rank of EE)

- ~~(c) Contractor should have completed 60% of quantity of principal items of work like concrete, earthwork, pipeline, pumping station etc. within last five financial years. Certificate of competent authority of work done with detail shall be produced.~~

4.5.4. Personnel Capabilities.

Availability for his work of personnel with adequate experience as required; as per Appendix.

4.5.5. Equipment Capabilities

~~Based on the studies carried out by the Engineer, the minimum suggested major equipment to attain the completion of works in accordance with the prescribed constructions schedule are shown in the Appendix.~~

~~The bidders should, however, undertake their own studies and furnish with their bid, a detailed construction planning and methodology supported with layout and necessary drawings and calculations to allow the employer to review their proposals. The numbers, type and capacities of each plant/equipment shall be shown in the proposals along with the cycle time for each operation for the given production capacity to match the requirements.~~

4.5.6. Financial Position

~~The Applicant should give undertaking that he has access to, or has available, liquid assets (aggregate of working capital, cash in hand and uncommitted bank guarantees) and / or credit facilities up to 25 percent of the value of the contract/contracts applied.~~

- ~~4.5.7. The audited balance sheets for the last five year should be submitted, which must demonstrate the soundness of the applicant's financial position, showing long term profitability including an estimated financial projection for the next two years. If necessary, the employer will make inquiries with the applicant's bankers.~~

4.5.8. Litigation History

The Applicant should provide accurate information on any litigation or arbitration resulting from contracts completed or under execution by him over the last five financial years. A consistent history of awards against the Applicant or any partner of a joint venture may result in failure of the applicant.

4.5.9. Disqualification

Even though the applicants meet the above criteria, they are subject to be disqualified if they have: Made misleading or false representation in the forms, statements submitted, and / or Record of poor performance such as abandoning the work, rescinding of contract for which the reasons are attributable to the non-performance of the contractor; consistent history of litigation awarded against the applicant or financial failure due to bankruptcy. The rescinding of contract of a joint venture on account of reason so other than non-performance, such as Most Experienced partner of joint venture pulling out, court directions leading to breaking up of a joint venture before the start of work, which are not attributable to the poor performance of the contractor will, however, not affect the qualification of the individual partners.

- 4.5.10.** The bidder who have applied for corporate Debt Restructuring (CDR) / facing recovery proceedings from financial institutions/ facing winding up processing/those under BIFR in the last 5 financial year shall be considered for bid qualification. However if the bank/financial institution has accepted the proposal of debt restructuring on or before the last date of online submission, the same shall be considered for further valuation. An affidavit by bidder along with certificate from bank must be produced in such cases. In case of Joint Venture agreement, this provisions shall be applicable for both lead partner and JV partner.

**#4.6 JOINT VENTURE: (Maximum 3 Members i.e. 1 Lead & 2 Others)-
(Applicable only for estimated project cost of 50 Crore and above)**

4.6.1. Joint ventures must comply with the following requirement:

(a) Following are the minimum qualification requirements:

(i) The lead partner shall meet not less than 50 percent of all criteria given in para 4.5.3 & 4.5.6 above. The joint venture must collectively satisfy the criteria of para 4.5.3 & 4.5.6 above. The experience of the other joint venture partners shall be considered if it is not less than 30 percent of the qualifying criteria in para 4.5.3 & 4.5.6 above.

(ii) Individually each member must satisfy the requirements of para 4.5.7 & 4.5.8 above.

(b) Bid shall be signed so as to legally bind all partners, jointly and severally, and shall be submitted with a copy of the joint venture agreement providing the joint and sever all liabilities with respect to the contract.

4.6.2. Qualification of a joint venture does not necessarily qualify any of its partners individually or as a partner in any other joint venture. In case dissolution of a joint venture, each one of the constituent firms may qualify if they meet all the qualification requirements, subject to the written approval of the Employer.

4.7. Bid Capacity.

Applicants who meet the minimum qualification criteria will be qualified only if their available bid capacity at the expected time of bidding is more than the total estimated cost of the works. The available bid capacity will be calculated as under:

Assessed Available Bid Capacity = $(A * N * 2 - B)$, where

A=Maximum value of work executed in any one year during the last five years (updated to the price level of the year indicated in appendix) taking into account the completed as well as works in Progress.

B=Value at current price level of the existing commitments and ongoing works to be completed during the next (period of completion of work for which bids are invited); and

N=Number of years prescribed for completion of the works for which the bids are invited.

Note : In Case of joint venture, the available bid capacity will be applied for each partner to the extent of his proposed participation in the execution of the work.

4.8 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

- Made misleading or false representation in the forms, statements and Attachments the submitted in proof the qualification requirements; and/or

- Record of poor performance such as a abandoning the works, not properly completing the contract, in or dinat delay in completion, litigation history, or financial failures etc.; and/or
- Participated in the previous bidding for the same work and had quoted an unreasonably high bid prices and could not furnish rational justification to the employer.

5. One bid per bidder

- 5.1. Each bidder shall submit only one bid for one package. A bidder who submits or participates in more than one bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the bidder's participation to be disqualified.

6. Cost of Bidding

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

7. Site Visit

- 7.1. The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the Site of work and its surrounding and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works.
The costs of visiting the site shall be at the Bidder's own expense.

B. BIDDING DOCUMENTS

8. Content of Bidding Documents

- 8.1 The set of bidding documents comprises the documents listed below and add end a issued in accordance with Clause10:

Section	Particulars	Volume No.
-	Invitation for Bids	I
1	Instructions to Bidders	
2	Qualification Information, and other forms	
3	Conditions of Contract	
4	Contract Data	
5	Technical Specifications	II
6	Form of Bid	III
7	Bill of Quantities	
8	Securities and other forms	
9	Drawings	IV
10	Documents to be furnished by bidder	V

- 8.2. Volumes I, II, III and IV are available online and documents to be furnished by the bidder in compliance to section 2 will be prepared by him and furnished as Volume-V in two parts (refer clause 12).
- 8.3. The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms, technical specifications, bill of quantities, forms, Annexes and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. **Pursuant to clause 26 hereof**, bids which are not substantially responsive to the requirements of the Bid Documents shall be rejected.

9. Clarification Bidding Documents

- 9.1 A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing or through E-mail at the Employer's address indicated in the invitation to bid. The Employer will respond to any request for clarification which he received earlier than 15 days prior to the deadline for submission of bids. Employer's response will be published on website including a description of the enquiry but without identifying its source.

~~9.2. Pre-bid meeting~~

- ~~9.2.1. The bidder or his official representative is invited to attend a pre-bid meeting which will take place at the address, venue, time and date as indicated in the appendix.~~

~~9.2.2. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.~~

~~9.2.3. The bidder shall be required to submit any questions in writing or e mail to reach the Employer not later than 03 days before the meeting.~~

~~9.2.4 Minutes of the meeting, including the question raised (Without identifying the source of enquiry) and the responses given will be published without delay on the tender website i.e. www.nprocure.com. Any modification of the bidding documents listed in sub Clause 8.1 which may become necessary as a result of the pre bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 10 and not through the minutes of the pre bid meeting.~~

~~9.2.5. Non attendance at the pre bid meeting will not be a cause for disqualification of a bidder.~~

10. Amendment of Bidding Documents

10.1 Before the deadline for submission of bids, the Employer may modify the bidding documents by issuing addenda.

10.2. Any addendum thus issued shall be part of the bidding documents. The Employer will assume no responsibility for the same.

10.3. To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at his discretion, extend as necessary the deadline for submission of bids, in accordance with Sub-Clause 20.2 below.

C. PREPARATION OF BIDS

11. Language of the Bid

11.1 All documents relating to the bid shall be in the English language.

12. Documents Comprising the Bid

12.1. The bid be submitted by the bidder as Volume V of the bid document(refer Clause 8.1) shall be in two separate parts:

Part I shall be named “Technical Bid” and shall comprise

- (i) Bid Security in the form specified in Section 8
- (ii) Qualification Information and supporting documents as specified in Section 2
- (iii) Certificates, undertakings, affidavits as specified in Section 2
- (iv) Any other information pursuant to Clause 4.5 of these instructions
- (v) Undertaking that the bid shall remain valid for the period specified in Clause 15.1

Part II shall be named “Financial Bid” and shall comprise

- (i) Form of Bid as specified in Section 6
- (ii) Priced Bill of Quantities for items specified in Section 7

12.2. The Bidder shall submit the details/information pertaining to each part i.e. technical as well as financial and must be submitted on line only.

12.3. Following documents will be deemed to be part of the bid.

Section	Particulars	Volume No.
Invitation for Bids (IFB)		
1	Instruction to Bidders	Volume I
3	Conditions of Contract	
4	Contract Data	
5	Specifications	Volume II
9	Drawings	Volume IV

13. Bid Prices

13.1 The Contract shall be for the whole works as described in Sub-Clause 1.1, based on the priced Bill of Quantities submitted by the Bidder.

13.2 The bidder shall fill in rates and prices and line item total (both in figures and words) for all items of the Works described in the Bill of Quantities along with total bid price

(Both in figures and words). Items for which no rate or price is entered by the bidder will not be paid for by the Bill of Quantities.

13.3 All duties, taxes, and other levies except GST payable by the contractor under the contract, or for any other cause shall be included in the rates, prices and total Bid Price submitted by the Bidder.(GST will be paid extra)

13.4 Deleted

13.5 The rates and prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of Clause 47 of the Condition of Contract **(Irrespective of the time limit and Bid Amount)**

14. Currencies of Bid and Payment

14.1 The unit rates and the prices quoted by the bidder shall be entirely in Indian Rupees. All payments shall be made in Indian Rupees.

15. Bid Validity

15.1 Bids shall remain valid for a period of not less than 120 days after the deadline date for bid submission specified in Clause20.

15.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified period. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his security for a period of the extension, and in compliance with Clause-6 in all respects.

#16. Bid Security

16.1. The Bidder shall furnish, as part of his Bid, a Bid security in the amount as shown incolumn4ofthetableofIFBforthisparticularwork.This Bid security shall be in favor of Employer as named in Appendix and may be in one of the following forms;

a. Bank Guarantee from any scheduled Indian bank, in the format given in Volume III. **(Bank Guarantee is applicable only for Bid Estimated Amount of 01Croreandabove)** and Bank Guarantee of Schedule and Private Banks shall be considered as per GoG Finance Department's Circular No. FD/MSM/e-file/4/2023/0057/D.M.O.Date21/04/2023oraspertheirlatestamendment.

b. Fixed Deposit Receipt issued by any Scheduled Indian Bank or a foreign Bank approved by the Reserve Bank of India.

OR

A Valid Bid Security / EMD Exemption Certificate issued by (1) Road & Building Department or (2) Narmada Water Resources, Water Supply and Kalpsar Department of Govt of Gujarat. **Exemption Certificate is applicable only when Registration Certificate of Appropriate Class and Category of Approved Contractors is required as eligible criteria of bidder.**

- 16.2. Bank guarantees (and other instruments having fixed validity) issued as surety for the bid shall be valid for 45 days beyond the validity of the bid i.e. total validity of 120+45=165 Days
- 16.3. Any bid not accompanied by an acceptable Bid Security and not secured as indicated in Sub-Clauses 16.1 and 16.2 above shall be rejected by the Employer as non-responsive.
- 16.4. The Bid Security of unsuccessful bidders will be returned within 28 days of the end of the bid validity periods specified in Sub-Clause 15.1
- 16.5 The Bid Security of the successful bidder will be discharged when the bidder has signed the Agreement and furnished the required Performance Security.

16.6. The bid Security may be forfeited

- (a) If the Bidder withdraws the bid after Bid opening during the period of Bid validity.
- (b) If the Bidder does not accept the correction of the Bid Price, if any or
- (c) In the case of a successful Bidders, if the Bidder fails the specified time limit to
 - (i) Sign the Agreement; or
 - (ii) Furnish the requirement Performance Security.
- (d) #If found necessary, the bidder will be intimated for negotiation, He will be intimated maximum three times within the validity period for negotiation, If contractor does not respond in time, his Bid Security (EMD) will be forfeited and his tender will be rejected. Punitive action will be taken on such contractors. (As per GoG R&B Dept's Gr. No. S/22/2017/639/D, Dt.08/06/2018)

17. Alternative Proposals by Bidders.

- 17.1. Bidders shall submit offers that fully comply with the requirements of the bidding documents, including the conditions of contract (including mobilization advance or time for completion), basic technical design as indicated in the drawing and specifications. Conditional offers or alternative offers will not be considered further in the process of tender evaluation.

18. Format and Signing of Bid

- 18.1. The Bidder shall prepare documents comprising the bid as described in Clause 12 of these Instructions to bidder as the "Technical Bid" and "Financial Bid" in separate parts to be uploaded.

D. SUBMISSION OF BIDS

19. Deleted

20. Dead line for Submission of the Bids

- 20.1. Complete Bids must be received online by the Employer at the tender website specified above not later than the date indicated in appendix.
- 20.2. The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

21. Deleted

22. Modification and Withdrawal of Bids

- 22.1. Bidders may modify or withdraw their bids online before the deadline prescribed in Clause 20 or pursuant to Clause 23.
- 22.2. Deleted
- 22.3. No bid shall be modified or withdrawn after the deadline for submission of Bid.
- 22.4. Withdrawal or modification of a bid between the deadline for submission of bids and the expiration of the original period of bid validity specified in Clause 15.1 above or as extended pursuant to Clause 15.2 may result in the forfeiture of the Bid security pursuant to Clause 16.

E. BID OPENING AND EVALUATION

23. Bid Opening

- 23.1 The Employer will open all the Bids received including modifications made pursuant to Clause 22, in the presence of the Bidders or their representatives who choose to attend at time, date and the place specified in Appendix in the manner specified in Clauses 20 and 23.3. In the event of the specified date of Bid opening declared a holiday for the Employer, the Bids will be opened at the appointed time and location on the next working day.
- 23.2 Deleted.
- 23.3 The “Technical Bid” shall be opened. The amount, form and validity of the bid security furnished with each bid will be announced. If the bid security furnished does not conform to the amount and validity period as specified in the invitation for bid (ref. Column 4 and paragraph 3), and has not been furnished in the form specified in Clause 16, the technical bid will not be opened.
- 23.4 (i) Subject to confirmation of the bid security by the issuing Bank, the bids accompanied with valid bid security will be taken up for evaluation with respect to the Qualification information and other information furnished in part I of the bid pursuant to Clause 12.1.
- (ii) If required, the bidder will be asked in writing to clarify his Qualification Documents with respect to any required clarification.
- (iii) The bidders will respond in not more than 7 days of issue of the clarification Letter.
- (iv) Immediately (usually within 3 or 4 days), on receipt of these clarification the Evaluation Committee will finalize the list of responsive bidders whose financial bids are eligible for consideration.
- 23.5 Deleted
- 23.6 At the time of opening of “Financial Bid”, the names of the bidders were found responsive in accordance with Clause 23.4(iv) will be announced. The bids of only these bidders will be opened. The responsive Bidders’ names, the Bid prices, the total amount of each bid, any discount and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening.
- 23.7 The time of opening of “Financial Bid”, the names of the bidders were found responsive in accordance with Clause 23.4(iv) will be announced. The bids of only these bidders will be opened. The responsive Bidders’ names, the Bid prices, the total amount of each bid, any discount, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening.
- 23.8 In case bids are invited for more than one package, the order for opening of the “Financial Bid” shall be in order of estimated amount of Bids from highest to lowest.
- 23.9 The Employer shall prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub- Clause 23.6.

24 Process to be Confidential

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

25. Clarification of Financial Bids

- 25.1. To assist in the examination, evaluation, and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his Bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by e-mail, but no change in the price or substances of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids.
- 25.2 Subject to sub-clause 25.1, no Bidder shall contact the Employer on any matter relating to his Bid opening to the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, it should do so in writing.
- 25.3. Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decision may result in the rejection of the Bidders' bid.

26. Examinations of Bids and Determination of Responsiveness

- 26.1 During the detail evaluation of "Technical Bid", the Employer will determine whether reach Bid (a) meets the eligibility criteria defined in Clause 3 and 4; (b) has been properly signed; (c) is accompanied by the required securities and; (d) is substantially responsive to the requirements of the Bidding document. During the detailed evaluation of the "Financial Bid", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e., priced bill of quantities, technical specifications, and drawings.
- 26.2 A substantially responsive "Financial Bid" is one which confirms the terms, conditions and specifications of bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.
- 26.3 If a "Financial Bid" is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

27. Deleted

28. Deleted

29. Evaluation and Comparison of Financial Bids

- 29.1. The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Sub-Clause 26.2.
- 29.2. Deleted.
- 29.3. The Employer reserves the right to accept or reject any variation or deviation. Variation and deviations and other factors, which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer, shall not be taken into account in Bid evaluation.
- 29.4. The estimate defect of the price adjustment conditions under Clause 47 of the Conditions of Contract, during the period of implementation of the Contract, will not be taken into account in Bid evaluation.
- 29.5. If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract the Employer may require the Bidder to produce detailed consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause 34 be increased at the expense of the successful bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.
- 29.6. A bid which contains several items in the bill of Quantities which are unrealistically priced low and which cannot be substantiated satisfactorily by the bidder may be rejected as non-responsive.

30. Deleted

F. AWARD OF CONTRACT

31. Award Criteria

- 31.1. Subject to Clause 32, the Employer will award the contract to the Bidder whose Bid has been determined.
- (i) to be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid Price; and
 - (ii) to be within the available bid capacity adjusted to account for his bid price which is the lowest evaluation in any of the packages opened earlier than the one consideration.
- In no case, the contract shall be awarded to any bidder whose available bid capacity is less than the evaluated bid price, even if the said bid is the lowest evaluated bid. The contract will in such cases be awarded to the next lowest bidder at this evaluation bid price.

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

- 32.1. Notwithstanding Clause 31, the Employer reserves the right to accept or reject any Bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of contract, without thereby incurring any liability to the affected bidder or Bidder or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

33. Notification of Award and Signing of Agreement

- 33.1. The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter. This letter (here in after and in the condition of contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").
- 33.2. The notification of award will constitute the formation of the contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause.
- 33.3. The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and to the successful Bidder, within 28 days following the notification of award along with the Letter of Acceptance. Within 21 days of receipt, the successful Bidder will sign the Agreement and deliver it to the Employer.
- 33.4. Upon the furnishing by the successful Bidder of the Performance Security, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

34. Performance Security

- 34.1. (A) Within 10 (Ten) days of receipt of Letter of Acceptance, the successful Bidder shall furnish to the Employer an irrevocable and unconditional guarantee from a Bank in the form set for thin Section 8 (the "Performance Security") for an amount equal to 5% (five percent) of its Contract Price. In case of bids mentioned below, the successful Bidder, along with the Performance Security,

shall also furnish to the Authority an irrevocable and unconditional guarantee from a Bank in the same form given at Section 8 towards an Additional Performance Security (The “Additional Performance Security”) for an amount calculated as under:

- (a) If the Contract Price offered by the Selected Bidder is lower than 10% but up to 20% of the Estimated Project Cost, then the Additional Performance Security shall be calculated @ 20% of the difference in the (i) Estimated Project Cost(as mentioned in Bid Document)-Minus 10% of the Estimated Project Cost and (ii) Contract Price offered by the selected Bidder.
 - (b) If the Contract Price offered by the Selected Bidder is lower than 20% of the Estimated Project Cost, then the Additional Performance Security shall be calculated @ 30% of the difference in the (i) Estimated Project Cost(as mentioned in Bid Document)-Minus 10% of the Estimated Project Cost and (ii) Contract Price offered by the selected Bidder.
 - (c) ThisAdditionalPerformanceSecurityshallbetreatedaspartofthePerformanceSecurity.
- 34.1 (B) The Performance Security shall be valid beyond 60 (Sixty) days **from the stipulated date of completion of the project** and the Additional Performance Security shall be valid beyond 28 (twenty-eight) days of Project Completion Date.

Performance Security shall become refundable/releasable within 15 days After certified project completion date subject to Fulfillment of contractual Obligation and settlement of all dues and claims.

- 34.2. If the performance security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued either (a) at the Bidder’s option, by a Nationalized/Scheduled Indian bank or (b) by a foreign bank located in India and acceptable to the Employer. As per GoG Finance Department’s Circular No. FD/MSM/e-file/4/2023/0057/D.M.O.Date21/04/2023 or as per their latest amendment.
- 34.3. Failure of the successful Bidder to comply with the requirement of Sub-Clause 34.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

~~35 — Advance Payment and Security~~

- 35.1 ~~The Employer will provide an Advance payment on the Contract Price as stipulated in the Conditions of Contract, subject to maximum amount, as stated in the Contract Data.~~

36. Deleted

37. Corrupt or Fraudulent Practices

- 37.1 The Employer will reject a proposal if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in completing for the contract in question and will declare the firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract with National Highways Authority of India/ State PWD and any other agencies, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in completing for the contractor, or in execution.
- 37.2 Furthermore, Bidders shall be aware of the provision stated in Sub- Clause 59.2 of the Conditions of Contract.

APPENDIX TO ITB

Clause Reference

With respect to

Section –I

1.	The Name of the Employer is Executive Engineer, Sujalam Suflam Division No.2, Visanagar	[Cl.1.1.1]
2.	The last five financial years.	
	2022-23	
	2021-22	
	2020-21	
	2019-20	
	2018-19	
3.	This Annual Financial Turnover Amount is Rs.	[Cl.4.5.3(a)]
4.	Value of Work is Rs. 2956230.73/-	
5.	Deleted	
6.	The cost of electric work is Rs.	
7.	The cost of water supply/sanitary works is Rs.	
8.	Liquid assets and/or availability of credit facilities is Rs.	[Cl.4.5.6]
9.	Price level of the financial year 2023-24	[Cl.4.5.2]
10.	The pre-bid meeting will take place at	[Cl.9.2.1]
11.	The technical Bid will be opened at the office of the Superintending Engineer, Sujalam Suflam Circle No-2, Mahesana on dt. atAM/PM	
12.	Address of the Employer: Executive Engineer, Sujalam Suflam Division No.2, Visanagar , Mahesana-kheralu Road, visanagar,384315	
13.	Deleted	
14.	The bid should be submitted latest by As stated on online NIT	[Cl.20.1&20.2]
15.	The bid will be opened at..... As stated on online NIT	[Cl.23.1]
16.	The Bank Draft in favor of Executive Engineer, Sujalam Suflam Division No.2, Visanagar	
17.	Deleted	
18.	Escalation factors (for the cost of works executed and financial figure to a common base value) for works completed	[Cl.4.5.2]

<u>Year</u>	<u>Financial Year</u>	<u>Multiplying factor</u> <u>or</u>
Base year of inviting tender	20__-20__	1.00
+1	20__-20__	1.10
+5	20__-20__	1.61

**#LIST OF KEY PLANT & EQUIPMENT TO BE DEPLOYED ON CONTRACT
WORK**

[Reference CL.4.5.5]

**The contractor shall also give a list of machineries in his possession and which they propose to
use on the work.**

Sr. No.	Plant or Machinery	Location	Age of Machinery (maximum 15 years)	Make	Capacity	Approximate Value	Remark
1	2(a)	2(b)	3	4	5	6	7

List of Key Personnel to be deployed on Contract Work

(Reference Cl.4.5.4)

Employment of a qualified site Engineer by the Contractor.

The Contractor shall employ full-time technically qualified staff during the execution of this work as under:-

1. Two graduate Civil Engineers and three diploma Civil Engineers when cost of the work to be executed is more than Rs.50 lakhs.
2. **One graduate & two Diploma, Civil Engineers when the cost of the work to be executed is more than Rs.15 lakhs but less than Rs.50lakhs.**
3. Minimum Two Diploma Civil Engineer when the cost of work is less than Rs.15 lakhs but more than Rs.5 lakhs.
4. Minimum One Diploma Civil Engineers for the work when the cost of work to be executed is less than Rs. 5 lakhs. The Engineer so employed for the Government work must have sufficient experience to handle the work independently. Such an Engineer shall have to stay at the site of work and he shall not be entrusted with other duty except this work.

In case the contractor or partner of the contractor firm is a Civil Graduate Engineer, Employment of a separate Engineer will not be necessary provided that the Engineer partner himself attends the execution of the work on the site.

Within 15 days of issue of work-order the Contractor will have to furnish to the Deputy Executive Engineer-in-charge of the work the Name, Qualifications, copy of mark sheet, Color Photograph and the appointment order issued such engineers engaged for this contract work. If 15 days after issue of work order such designated Site Engineers do not resume or do not remain present on site of work, the recovery at the rate of Rs.15,000-00 per month per Engineer will be made from the bills/deposit/dues of the contractor. Such recovery shall be non-refundable.

SECTION-2
QUALIFICATION IN FORMATION

QUALIFICATION INFORMATION

~~The information to be filled in by the Bidder in the following pages will be used for the purpose of post qualification as provided for in Clause 4 of the Instruction to Bidders. This information will not be incorporated in the Contract.~~

1. For Individual Bidders

~~1.1 Constitution or legal status of Bidder~~

~~(Attach Copy)~~

Place of registration _____

Principal place of business _____

~~Power of attorney of signatory of Bid~~

~~(Attach)~~

~~1.2 Total value of Civil engineering constructions 2 020 Work performed in the last five years 20 20(in Rs. Lakhs) 2020~~

20 20
20 20

~~15.2.1 Work performed as prime contractor, work performed in the past as a nominated sub-contractor will also be considered the sub-contract involved execution of all main items of work described in the bid documents, provided further that all other qualification criteria are satisfied (in the same name) on works of a similar nature over the last five years** and in current year before the submission of the bid.~~

Project Name	Name of the Employer	Description of work	Contract No.	Value of contract(Rs. Crore)	Date of issue of work order	Stipulated period of completion	Actual date of completion*	Remark explaining reasons for delay & work Completed

~~*Attach certificate(s) from the Engineer(s) in charge~~

~~**Immediately preceding the financial year in which bids are received.~~

~~#1.3.2 Quantities of work executed as prime contractor, work performed, in the past as anominatedsub-contractor,willalsobeconsideredprovidedthesub-contractinvolvedexecutionofallmainitemsofworkdescribedinthebiddocument,provided,further that all other qualification criteria are called (in the same name andstyle) in the last five years**and in current year before the submission of the bid.~~

*To be modified as per the nature and scope of work

Year	Name of the work	Name of the Employer	Quantity of work performed(Cum/MT)				Remarks* (indicate Contract Ref)
			Cement Concrete(Including RCC& PCC)ITEM1	Masonry ITEM2	Earth Works ITEM3	Bituminous WorkITEM4	
<u>20-20</u>							
<u>20-20</u>							
<u>20-20</u>							
<u>20-20</u>							
<u>20-20</u>							

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

~~(A) Existing commitments and on-going works:~~

Description of works	Place & State	Contract No.	Name & Address of Employer	Value-Contract (Rs. Cr)	Stipulated-Period of Completion	Value of Works* remaining to be completed(Rs .Cr)	Anticipated of completion
1	2	3	4	5	6	7	8

~~*Attach certificate(s) from the Engineer(s) in charge~~

~~**Immediately preceding the financially ear in which bids are received.~~

~~1.5 Availability of key items of Contractors Equipment for carrying out the works (Ref.Clause4.5.5). The Bidders should list all the information requested below.~~

Item of Equipment	Requirement		Availability Proposals			Remarks (from whom to be purchased
	NO	Capacity	Owned/ Leased to be procured	Nos./Capacity	Age/Conditions	

- ~~1.6 Qualifications and experience of key personnel required for administration and execution of the contract. Attach biographical data. Refer also to Sub-Clause 9.1 of the Conditions of Contract.~~

Position	Name	Qualification	Year of Experience(General)	Year of experience in the proposed position
Project Manager				
Etc.				

- ~~1.7 Proposed sub contract and firms involved~~

Sections of the works	Value of Sub-Contractor	Sub-Contractor(Name & Address)	Experience in similar work

~~Attach copies of certificates on possession of valid license for executing water supply/sanitary work/building electrification works.~~

- ~~1.8 Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports (incase of companies/ corporations), etc. List them below and attach copies.~~
- ~~1.9 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List them below and attach copied documents.~~
- ~~1.10 Name, address, and telephone, telex, and fax numbers of the Bidders bankers who may provide references if contacted by the Employer.~~
- ~~1.11 Information on Litigation history in which the Bidder is involved.~~

Other Party (ies)	Employer	Cause of Dispute	Amount Involved	Remarks showing Present Status

- ~~1.12. Statement of compliance under the requirements of Sub Clause 3.2 of the instruction to Bidders. (Name of Consultant engaged for project preparations is*)~~

- ~~1.13 Proposed work method and schedule. The Bidders should attached descriptions, drawings and charts as necessary to comply with the requirements of the Bidding documents. (Refer ITB Clause 4.1)~~

- ~~1.14 Programme~~

~~2. Deleted~~

~~3. Additional Requirements~~

- ~~3.1 Bidders should provide any additional information required _____ to _____ fulfill _____ there requirement _____ of Clause 4 of the Instruction to the Bidders, if applicable.~~

- ~~(i) Affidavit~~
~~(ii) Undertaking~~

~~* _____ Fill the name of Consultant~~

**~~SAMPLE FORMAT FOR EVIDENCE OF ACCESS-
TOOR AVAILABILITY OF CREDIT FACILITIES~~**

~~(CLAUSE 4.5.6 OF ITB)~~

~~BANK CERTIFICATE~~

This is to certify that M/s. _____ is are puted company
with a good financial standing.

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

~~(Signature)~~

~~Name of Bank~~

~~Senior Bank Manager~~

~~Address of the Bank~~

AFFIDAVIT

1. I, the undersigned, do hereby certify that all the statements made in the required attachments are true and correct.
2. The undersigned also here by certifies that neither our firm M /s. _____
_____ have not abandoned any work of Government of Gujarat/Government of India/any Board or Corporation under Government of Gujarat/Government of India nor any contract awarded to us for such work have been rescinded, during last five years prior to the date of this bid.
3. The undersigned hereby authorize(s) and request (s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Department to verify this statement or regarding any (our) competence and general reputation.
4. The Under signed under stands and agrees that further qualifying information may be requested, and agrees to furnish any such information at the request of the Department/Project implementing agency.

(Signed by an Authorized Officer of the Firm)

Title of Officer

Name of Firm

Date

UNDERTAKING

I, the under signed do hereby under take..... that our firm M/s
..... would invest a minimum cash
Up to 25% of the value of the work during implementation of the contract.

(Signed by an Authorized officer of the firm)

Title of officer

Name of firm

DATE

SECTION-3
CONDITIONS OF CONTRACT

Conditions of Contract

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CONDITIONS OF CONTRACT

A. GENERAL.

1. Definitions

- 1.1 Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meaning.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid

Compensation Events are those defined in Clause 44 here under

The **Completion Date** is the date of completion of the Works as certified by the Engineer in accordance with Sub Clause 55.1

The Contract is the contract between the Employer and Contractor to execute, complete and maintain the Works **till the completion of Defects Liability Period**. It consists of the documents listed in Clause 2.3 below.

The **Contract Data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body whose Bid to carry out the Work has been accepted by the Employer.

The **Contractor's Bid** is the completed Bidding document submitted by the Contractor to the Employer and includes Technical and Financial Bids.

The **Contract Price** is the price stated in the Letter of Acceptance and there after as adjusted in accordance with the provisions of the Contract.

Days are calendar days; **months** are calendar months.

The **Defects Liability Period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the party who will employ the Contractor to carry out the Works.

The **Engineer** is the person named in the Contract Data (or any other competent person appointed and notified to the contractor to act in replacement of the Engineer) who is responsible for supervising the Contractor, administering the Contract, certifying payments due to the Contractor, issuing and valuing Variations to the Contract, awarding extensions of time, and valuing the Compensation Events.

Equipment is Contractor's machinery and vehicles brought temporarily to the site to construct the Works.

The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Engineer by issuing an extension of time.

Materials are all supplies, including consumables, used by the contractor for incorporation in the works.

Plant is any integral part of the work which is to have mechanical, electrical, electronic or chemical or biological functions.

The **Site** is the area defined as such in the Contract Data.

Site Investigation Reports are those which were included in the Bidding documents and are factual interpretive reports about the surface and subsurface conditions at the site.

Specifications means the Specifications of the works included in the Contract and any modification or addition made or approved by the Engineer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

Temporary Works are works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.

A **Variation** is an instruction given by the Engineer, which varies the Works. The

Works are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

2. Interpretation

- 2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer will provide instructions clarifying queries about Conditions of Contract.
- 2.2 If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion date, and Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion date for the whole works)
- 2.3 The documents forming the Contract shall be interpreted in the following order of priority
 - (1) Agreement
 - (2) Letter of Acceptance, notice to proceed with works
 - (3) Contractor's Bid
 - (4) Contract Data
 - (5) Conditions of Contract including Conditions of Contract

- (6) Specifications
- (7) Drawings
- (8) Bills of quantities and
- (9) Any other document listed in the Contract Data as forming part of the Contract.

3. Language and Law

- 3.1 The language of the Contract and the law governing the Contract are stated in the Contract Data.

4. Engineers Decisions

- 4.1 Except where otherwise specifically stated, the Engineer will decide contractual matters between the Employer and the Contractor in the role representing the Employer.

5. Delegation

- 5.1 The Engineer may delegate any of his duties and responsibilities to other people after notifying the Contractor or and may cancel any delegation after notifying the Contractor.

6. Communications

- 6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

~~7. Sub Contracting~~

- ~~7.1 The Contractor may subcontract any portion of work, up to a limit specified in contract data, with the approval of the Engineer but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations. Sub-contracting of supply of specific items of work is not allowed.~~

- ~~7.2 The sub-contractor must be registered in appropriate class and category for the part of work to be subcontracted.~~

8. Other Contractors

- 8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities and the Employer between the dates given in the Schedule of other Contractor. The Contractors shall as refer to in the Contract Data, also provide facilities and services for them as described in the Schedule. The employer may modify the schedule of other contractors and shall notify the contractor of any such modifications.

9. Personnel

- 9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.
- 9.2 If the engineer asks the Contractor to remove a person who is a member of the Contractor Staff or his work force stating the reasons the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

10. Employer's and Contractors Risks

- 10.1 The Employer carries the risk which these Contract states are Employer's risks, and the Contractor carries the risks which these Contracts states are Contractors risk.

11. Employer's Risks

- 11.1 The employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive.

12. Contractor's Risks

- 12.1 All risks of loss of or damages to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

13. Insurance

- 13.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract data for the following events which are due to the Contractor's risks:
- (a) Loss of or damage to the works, Plant and materials,
 - (b) Loss of or damage to Equipment
 - (c) Loss of or damages of property (except the Works, Plant, Materials and Equipment) in connection with the Contract; and
 - (d) Personal injury or death.
- 13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

13.3 If the Contract or does not provide any of the policies and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments other wise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

13.4 Alterations to the terms of an insurance shall not be made without the approval of the Engineer.

13.5 Both parties shall comply with any conditions of the insurance policies.

14. Site Investigation Report

14.1 The Contract or in preparing the Bid shall relyon any site Investigation reports referred to in the Contract Data, supplemented by any information available to the Bidder.

15. Queries about the Contract data

15.1 The engineer will clarify queries on the Contract Data

16. Contractor to Construct the Works

16.1 The Contractor shall construct and install the works in accordance with the specification and Drawings.

17. The Works to be completed by the Intended Completion Date

17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the programme submitted by the Contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion date

18. Approval by the Engineer

18.1 The Contract or shall submit Specifications and Drawings showing the proposed Temporary works to the Engineer, who is to approve them if they comply with the Specifications and Drawings.

18.2 The Contractor shall be responsible for design of temporary works.

18.3 The Engineer's approval shall not alter the contractor responsibility for design of the Temporary works.

18.4 The Contractor shall obtain approval of third parties to the design of the Temporary works where required.

18.5 All Drawings prepared by the Contractors for the execution of the temporary or permanent work are subject to prior approval by the Engineer before their use.

19. Safety

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

20. Discoveries

- 20.1 Anything of historical or other interest or of significant value unexpectedly discovered on the site is the property of the Employer. The contractor is to notify the engineer of such discoveries and carry out the Engineer's instructions for dealing with them.

21. Possession of the Site

- 21.1 The Employer shall give possession of all parts of the site to the Contractor. If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be a Compensation Event.
- 21.2 If within 25% of the time limit of the project, 80% of possession of the site is not handed over to the Contractor, then contractor/ Employer may fore-close the contract. Contractor/Employer has to foreclose the work within 30 days after lapse of 25%-time limit and after 30 days foreclosure option will be closed.

22. Access to the Site

- 22.1 The Contractor shall allow the Engineer and any person authorized by the Engineer access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plants are being manufactured/ fabricated/ assembled for the works.

23. Instructions

- 23.1 The Contractor shall carry out all instructions of the Engineer pertaining to works which comply with the applicable laws where the site is located.
- 23.2 The Contractor shall permit the Employer to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Employer, if so required by the Employer.

24. Disputes

- 24.1 If the Contractor is of the view that a decision taken by the Engineer was either outside the authority given to the Engineer by the Contract or that the decision was wrongly taken, the decision shall be referred to **# Superintending Engineer** (Sujlam Suflam Circle No.2, Mehsana) within 14 days of the notification of the Engineer's decision. If the issue is not resolved, any party can refer the matter for conciliation within 15 days from the decision given by the **# Superintending Engineer** (Sujlam Suflam Circle No.2, Mehsana).

24.2

- (a) For the work up to Rs.100Cr., if any of the parties is not satisfied with the decision of the **#Superintending Engineer** (Sujlam Suflam Circle No.2, Mehsana), both the parties have to refer to the Chief Engineer concern for the conciliation process.

- ~~(b) For the work more than Rs.100 Cr., if any of the parties is not satisfied with the decision of the #Superintending Engineer (Sujlam Suflam Circle No.2, Mehsana), both the parties have to refer to the #Secretary, Water Resources Department, Government of Gujarat for the conciliation process.~~

If the dispute is not resolved through the conciliation process, he may refer the dispute to Gujarat Public Works Contract Dispute Arbitration Tribunal. If the Contractor fails to refer a claim / dispute to the Higher Authority within 14 days of the notification of the Engineer's decision, the Contractor shall not be entitled to any additional payment/claim if he doesn't follow the above sequence in stipulated time and he should not stop the work.

25. Procedure for Disputes

- 25.1 The arbitration shall be conducted in accordance with the arbitration procedure stated in the Special Conditions of Contract.

26. Deleted

B.TIME CONTROL

27. Programme

- 27.1 Within the time stated in the Contract Data the Contractor shall submit to the Engineer for approval a Programme showing the general methods, arrangements orders, and timing for all the activities in the works along with monthly cash flow forecast.
- 27.2 An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.
- 27.3 The Contractor shall submit to the Engineer, for approval an updated programme at intervals no longer than the period stated in the Contract data. If the Contractor does not submit an updated programme within this period, the Engineer may withhold the amount stated in the Contract data from the next payment after the date on which the overdue programme has been submitted.
- 27.4 The Engineer's approval of the programme shall not alter the Contractor's obligations. The Contractor may revise the programme and submit it to the Engineer again at any time. A revised programme is to show the effect of Variations and Compensations events.

28. Extension of the Intended Completion Date

- 28.1 The Engineer shall extend the Intended Completion Date if a compensation Event occurs or a Variation is issued which makes it impossible for completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost.
- 28.2 The Engineer shall decide whether and by how much to extend the Intended Completion Date within 35 days of the Contractor asking the Engineer for a decision upon the effect of a compensation event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.
- 28.3 The Engineer shall within 14 days of receiving full justification from the contractor for extension of Intended Completion Date refer to the Employer his decision. The employer shall in not more than 21 days communicate to the engineer the acceptance or other wise of the Engineer's decision. If the employer fails to give his acceptance, the Engineer shall not grant the extension and the contractor may refer the matter under Clause 24.1

29. Deleted

30. Delays Ordered by the Engineer

- 30.1 The Engineer may instruct the Contractor to delay the start or progress of any activity within the works.

31. Management Meetings

- 31.1 Either the Engineer or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.
- 31.2 The Engineer shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken is to be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

32. Early Warning

- 32.1 The Contractor is to warn the Engineer at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract price or delay the execution of works. The Engineer may require the contractor to provide an estimate of the expected effect of the future event or circumstance on the contract price and completion date. The estimate is to be provided by the Contractor as soon as reasonably possible.
- 32.2 The Contractor shall cooperate with the Engineer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer.

C. QUALITY CONTROL

33. Identifying Defects/Defect liability period

33.1 **Defect liability period:** The contractor shall be responsible to make good and remedy at his own expense any defect which may develop or may be noticed before the period mentioned hereunder from the certified date of completion. The Engineer in charge shall give the contractor a notice in writing about the defects and the contractor shall make good the same within 15 days of receipt of the notice. In the case of failure on the part of the contractor, the Engineer-in-charge may rectify or remove or re-execute the work at the risk & cost of the contractor. The Engineer-in-charge shall be entitled to appropriate the whole or any part of the amount of security deposit towards the expenses, if any, Incurred by him in rectification, removal or re-execution. The Defects Liability period shall be asunder....

A. For works of WRD Except Building

(a) (1) For all works costing up to Rs. 50,000 (amount put to tender), the period shall be 3 Months from the certified date of completion.

(b) (1) For WRD works likes /Canal / Drainage / Road Structure tender amount from RS. 50,000 to 10,00,000, the defect liability period shall be 12months from the certified date of completion.

(2)For WRD work except likes /Canal/Drainage/Road Structure tender amount from RS. 50,000 to 10,00,000, the defect liability period shall be 6 months from the certified date of completion.

(c) (1) For WRD works likes /Canal / Drainage / Road Structure tender amount more than RS. 10,00,000, the defect liability period shall be 3 Years from the certified date of completion.

(2)For WRD work except likes /Canal/Drainage/Road Structure tender amount from RS. 10,00,000 to 1 Crore, the defect liability period shall be 12 months from the certified date of completion.

(d) (1) For all WRD works of tender amount more than RS. 1 Crore, the defect liability period shall be 3 Years from the certified date of completion

B. For Building works of WRD:-

For Building works of WRD, Follow the R&B Circular dated.03/12/2009

For original building works the defect liability period will be 4 years or elapse of 4 monsoon period following date of possession of building taken over by user agency following the certified date of completion, which ever is later.

For the purpose of deciding the monsoon period, the 30th September shall be treated as the last date.

WRD Circular No. Matas/102013/MICELL(K-1)Dated13/12/2013

33.2 For Road works:

~~Free maintenance guarantee period for works of Road/Bridge construction~~

~~(1) For resurfacing work of road free maintenance guarantee period one year from the date of completion.~~

~~(2) In case of widening of the road/strengthening of the road/bridge, the contractor shall have to give four years free maintenance guarantee from the certified date of completion. During this period the contractor shall visit the site every six months along with the concerned Section Officer /Deputy Executive Engineer and will examine the work already carried out in this contract like road work, jungle cutting, side shoulders, side gutter, road furniture, patta etc. and will prepare Km. wise inspection report duly signed by all concerned and any defect observed shall be done within 15days by the contractor at his risk and cost as per the direction of Engineer in charge. The contract or need stood videography of these visits and require to submit at the time of release of FMG. If B.T. the surface during~~

~~the maintenance period of 4 years is worn out then agency shall have to provide renewal coating as per tender item as directed by the Engineer in charge. The amount equivalent to 5% of each running bill shall be withheld and will be released after the free maintenance guarantee period (i.e. 4 years) is over.~~

~~However, this amount shall be released against fixed deposit or bank guarantee pledged in the name of Executive Engineer after completion certificate of work is issued.~~

~~(1) The flakiness and elongation index (combined) for coarse aggregates under no circumstances shall exceed the allowable limit set forth in the relevant clause for the material in question.~~

~~(2) 2% of the amount eligible for the payment of bituminous items shall be withheld till the miscellaneous items like earth work in embankment/cutting for side shoulders, side gutters, kilometer/indicator/guard stones, sign board etc. are completed in all respect by the contractor. After completion of the miscellaneous items, the above said 2% withheld amount shall be released. (Govt. of Gujarat's G.R.No.: TNC 10 2013 3 (Part 3)/C, Dtd. 13/12/2013).~~

~~(3) Videography for the surface under Maintenance Guarantee is to be done as per Govt. letter No.: SSR/10/2015 16/26/C, Dtd. 26/11/15 for the work costing more than Rs.5.00 Crore.~~

~~(4) Setting up of adequate laboratory & deployment of quality engineers. The contract or shall have to setup the laboratory with adequate equipment. Till the setting up of adequate laboratory is completed & reported of this to the engineer (subject to due verification by engineer's representative) by contractor in writing, Rs.2,00,000/- shall be withheld. The qualified quality Engineer shall be deployed exclusively for this contract by the contractors. If quality Engineer is not deployed by contractor within one month after the date of work order, the amount equivalent to Rs.20,000 per month shall be recovered till the actual deployment of quality engineer. The amount so recovered towards the deployment of quality engineers shall not be refunded.~~

~~(5) Asphalt work will have to be crosschecked as per G.R.No.: RGN/60/2006/35/C, dtd. 31/05/07 before final bill is paid.~~

~~(6) Maintenance during Construction Period~~

~~During the Construction Period, the Contractor shall maintain, at his own risk and cost, the existing lane(s) of the road so that the traffic worthiness and safety thereof are at no time materially inferior as compared to their condition 10 (ten) days prior to the date of the Agreement, and shall undertake the necessary repair and maintenance works for this purpose; provided that the Contractor may, at his cost, interrupt and divert the flow of traffic if such interruption and diversion is necessary for the efficient progress of works and conforms to Good Industry Practice; provided further that such interruption and diversion shall be undertaken by the Contractor only with the prior written approval of the Executive Engineer which approval shall not be unreasonably withheld. For the avoidance of doubt, it is agreed that the Contractor shall at all times be responsible for ensuring safe operation of the road.~~

~~33.3 The Engineer shall check the Contractor's work and notify the Contractor of any defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.~~

- 34.1 If the engineer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no defect the test shall be a Compensation Event.
- 34.2 # 1% of amount of work done for works up to 10 crores of estimated cost should be deducted from R.A. Bill of the Contractor for testing for the quality for testing of materials and workmanship. For works of Estimated cost more than 10 crores, the charges for testing of quality of material workmanship shall be deducted from R.A. Bill of contractor as per actual charges.
- 34.3 Agency has to establish testing laboratory on site for the various test to be carried out in the work for this purpose agency shall construct a pukka laboratory building with all facility on site at location specified by the engineer in charge.

35. Correction of defects

- 35.1 The engineer shall give notice to the Contractor of any defects before the end of the defects Liability Period, which begins at Completion and is defined in the contract data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 35.2 Every time notice of a Defect is given, the Contractor shall correct the notified defect within the length of time specified by the Engineer's notice.

36. Uncorrected Defects

- 36.1 If the Contractor has not corrected a defect within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

D. COST CONTROL

37. Bill of Quantities

- 37.1 The bill of Quantities shall contain items for the constructions, installation, testing and commissioning work to be done by the Contractor.
- 37.2 The bill of Quantities is used to calculate the Contract price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.

38. Change in the Quantities

- 38.1 The Engineer shall have power to make any alterations in or addition to the original specifications , drawings, designs and instructions that 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 instruction in this connection which may be given to him in writing signed by the Engineer 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 are specified in the tender for the main work.

Except that when the quantity of any item exceeds the quantity as in the tender by more than 130%, the contractor will be paid for the quantity in excess of 130%, at the rate entered in the SOR of the year during which the excess in quantity is first executed.

39. Variations

- 39.1 All Variations shall be included in updated programmes produced by the Contractor.

40. Payments for Variations

- 40.1 If the additional or 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 asunder.
- (1) At the rate derived from the item within the contract which is comparable to the one involving additional or altered class of work; where there are more than one comparable items, the item of the contract which is nearest in comparison with regard to class or classes of the work involved shall be selected and the decision of the Superintending Engineer as to the nearest comparable item shall be final and binding on the contractor.
- (2) If the rate cannot be derived in accordance with (I) above, such class of works shall be carried out at the rate entered in the Schedule of Rates of the division

for the year in which the tender was received, increased or decreased by the percentage by which the tender amount is more or less as compared to the amount arrived at the rates in the “Schedule of Rates” of the Division in the year in which the tender was received. If the Schedule of rates of the Division does not contain all the items, the percentage increase or decrease of the tender shall be calculated considering such items which were included in the “Scheduled Rates” of the division for the year and for materials consumed on such item the rate to be charged would be the basic rate taken in to account for fixing the rate in S.O.R referred to above.

- (3) If it is not possible to arrive at the rate from (i) and ii) above, such class of work shall be carried out at the rate decided by the competent on the basis of detailed rate analysis after hearing the contractor before a Committee of two superintending Engineers stationed at the same place or the nearest place.

- 40.2 If the additional or altered work, for which no rate is entered in the “Schedule of Rates” of the Division is ordered to be carried out before the rate is 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 it is his intention to charge for such class of work and if the Engineer in charge does not agree to this rates, he shall by notice in writing 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 it advisable, provided always that if the contractor shall commence work or incur any expenditure in regard there of before the rates shall have been determined as lastly here in before mentioned, then in such cases 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 the dispute, the decision of the Superintending Engineer of the Circle shall be final.

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 alternation 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 the cost occasioned by alterations bears to the cost of the original work and the certificate of the Engineer-in-charge as to such proportion shall be final and conclusive.

41. Cash Flow Forecasts

- 41.1 When the programme is updated, the contractor is to provide the engineer with an updated cash flow forecast.

42. Payment certificates.

- 42.1 The Contractor shall submit to the Engineer monthly statements of the estimated value of the work completed less the cumulative amount certified previously.
- 42.2 The Engineer shall check the Contractor's monthly statement within 14 days and certify the amount to be paid to the Contractor after taking in to account any credit or debit for the month in question in respect of materials for the works in there levant amounts and under conditions set for thin sub-clause 32.3 of the Contract Data (secured Advance).
- 42.3 The value of work executed shall be determined by the Engineer.
- 42.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.
- 42.5 The value of work executed shall include the valuation of variations and compensation events.
- 42.6 The Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information

43. Payments

- 43.1 Payments shall be adjusted for deductions for advance payments, retention, other recoveries in terms of the contract and taxes at source, as applicable under the law. The Employer shall pay the Contractor the amounts certified by the Engineer within 28 days of the date of each certificate.
- 43.2 Payment of GST (prevailing rates) on the amount payable under the contract to the Contractor will be made by the Employer. Hence, it is the responsibility of the contractor to pay the GST to the concerned Authority.
- 43.3 Items of the works for which no rate or price has been entered in will not be paid by the Employer and shall be deemed covered by other rates and prices in the Contract.

44. Compensation events

- 44.1 The following are compensation Event sunless they are caused by the Contractor:
 - (a) The Employer does not give access to a part of the Site by the site Possession date stated in Contract data to the Contractor
- 44.2 In case of compensation event occur sand it prevents the work being completed beyond the Intended Completion Date then Authority will approve EOT with eligible contractual price escalation.

45. Tax

- 45.1 The rates quoted by the Contractor must be inclusive of all taxes prevailing on due date of bid submission except GST. However, any subsequent changes in the tax structure by Government after due date of bid submission will be compensated (+/-) on availability or submission of actual documentation. Contractor will have to intimate Engineer regarding changes occurred in the tax structure after bid submission. If the contractor fails to provide such information and if any financial obligation may arise due to change in tax structure, same will be recovered from the contractor.
- 45.2 GST will be paid separately on the bills. Hence, it is the responsibility of the contractor to pay the GST to the concerned Authority.

46. Currencies.

- 46.1 All payment shall be made in Indian Rupees.

47. Price Adjustment

- 47.1 Contract price shall be adjusted for increase or decrease in rates and price of labour, materials, fuel and lubricants in accordance with the following principles and procedures and as per formula given in the contract data:
- (a) The price adjustment shall apply for the work done from the start date given in the contract data up to end of the initial intended completion date or extensions granted by the Engineer and shall not apply to the work carried out beyond the stipulated time for reasons attributable to the contractor.
 - (b) The price adjustment shall be determined during each month from the formula given in the contract data.
 - (c) Following expressions and meanings during to the work done during each month
R=Total value of work done during the month. It would include the amount of secured advance granted, if any, during the month less the amount of secured advance recovered, if any during the month. It will exclude value for works executed under variations for which price adjustment will be worked separately based on the terms mutually agreed.
- 47.2 To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other clause in the contract, the unit rates and prices included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs.

48. Retention

- 48.1 The Employer shall retain from each payment due to Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.

- 48.2 On Completion of the whole of the Works half the total amount retained is repaid to the Contractor and half when the Defects Liability Period has passed and the Engineer has certified that all Defects notified by the Engineer to the Contractor before the end of this period have been corrected.
- 48.3 On completion of the whole works, the contractor may substitute retention money with an “on demand” Bank guarantee.

In case, Contractor requests for refund of the Retention Money deducted by the Employer under the provision of this clause, Employer shall consider the said request of the Contractor provided that the refund hereunder shall be made in tranches of not less than 1% (One Percent) of the Contract Price and Contract or furnishes an irrevocable and unconditional Bank guarantee for an equal amount sub statically in the format of Bank Guarantee for Performance Guarantee enclosed with SBD and valid up to 60day beyond the scheduled / extended Defects Liability Period. On completion of the whole works, the contractor has however an option to submit a fresh irrevocable and unconditional Bank Guarantee for an amount equal to 5% of the total value of work executed substantially in the format of Bank Guarantee for Performance Guarantee enclosed with SBD and valid up to 60 days beyond the Defect Liability Period and yet refund the Retention Money Bank Guarantee submitted for refund of Retention Money.

49. Liquidated Damages

- 49.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole works or the milestone as stated in the contract data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payment due to the Contractor. Payment of liquidated damages does not affect the Contractor’s liabilities.
- 49.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall not be entitled for any interest on the over payment calculated from the date of payment to the date of repayment.
- 49.3 If the contractor fails to comply with the time for completion as stipulated in the tender, then the contractor shall pay to the employer the relevant sum stated in the Contract Data as Liquidated damages for such default and not as penalty for everyday or part of day which shall elapse between relevant time for completion and the date stated in the taking over certificate of the whole of the works on the relevant section, subject to the limit stated in the contract data.

The employer may, without prejudice to any other method of recovery deduct the amount of such damages from any monies due or to become due to the contractor. The payment or deduction of such damages shall not relieve

the contractor from his obligation to complete the works on from any other of his obligations and liabilities under the contract.

- 49.4 If, before the Time for Completion of the whole of the Works or, if applicable any Section, a Taking Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over-Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the Works or Section, as applicable. The provisions of this Sub-clause shall only apply to the rate of liquidated damages and shall not affect the limit there of.

50. Bonus

- 50.1 ~~If the contractor achieves completion of the whole of the works prior to the intended Completion Date prescribed in Contract Data the Employer shall pay to the contractor a sum stated in Contract Data as bonus for every completed month but subjected to maximum amount as stated in Contract Data; which shall elapse between the date of completion of all items of works as stipulated in the contract, including variations ordered by the Engineer and the time prescribed in Clause 17.~~

- 50.2 ~~Bonus shall be paid only to works amounting to above INR 5 crore with time limit of the works is equal or more than 6 months. The bonus would be paid as under~~

% of Time Saved	% of Initial Contract Price entitled for Bonus
50%	5%
40%	4%
30%	3%
20%	2%
10%	1%
Less than 10%	0%

51. Advance Payment.

- 51.1 ~~The Employer shall make advance payment (not to be paid less than two installments except in special circumstances for which the reason to be Recorded in writing) to the Contractor of the amounts stated in the Contract Data by the date stated in the Contract Data, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to be at least 110% of the advance payment. The guarantee shall remain effective until the~~

~~advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. The Mobilization advance would be deemed as interest bearing advance at an interest rate of 10% to be compounded, quarterly.~~

~~51.2 The Contractor is to use the advance payment only to pay for Equipment, plant and Mobilization expenses required specifically for execution of the Works. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the engineer.~~

~~51.3 The advance payment shall be repaid by deduction proportionate amount from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuation of work done, variations, price adjustments, Compensation Events, or Liquidated damages.~~

51.4 Deleted

52. Securities

52.1 The performance Security (including additional security for unbalanced bids) 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, and denominated in Indian Rupees. The performance Security shall be valid until a date 60 days from the certified date of completion of the project and the additional security for unbalanced bids shall be valid until a date 28 days from the date of issue of the certificate of completion of the work. **Performance and Additional Performance Security shall become refundable/releasable within 15 days after project certified completion date subject to fulfillment of contractual obligation and settlement of all dues and claims.**

53. Deleted

54. Cost of Repairs.

54.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start date and the end of Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damages arises from the Contractor's acts or omissions.

E. FINISHING THE CONTRACT

55. Completion

- 55.1 The Contractor shall request the Engineer to issue a Certificate of Completion of the works and the Engineer will do so upon deciding that the work is completed.

56. Taking Over

- 56.1 The Employer shall take over the Site and the Works within seven days of the Engineer issuing a certificate of Completion.

57. Final Account

- 57.1 The Contractor shall supply to the Engineer a detailed final account of the total amount that the Contractor considers payable as full and final settlement of all claims under the Contract for items before the end of the Defects Liability Period. The Engineer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the Contractor and issue a payment certificate, within 56 days of receiving the Contractor's revised account.
- 57.2 If reversal in characteristic of tender (L1 becoming L2) on account of excesses and savings in final account is observed, the Engineer/Employer shall be at liberty to restrict the final payment of BOQ items to the lowest amount evaluated of the bids considering the final quantities and the rates quoted including therebates if any. Payment of variation items shall however be made at the rates approved by the Employer, within 90 days from the physical completion of work.

~~58. Operating and Maintenance Manuals~~

- ~~58.1 If "as built" drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract data.~~
- ~~58.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract data, or they do not receive the Engineer's approval, the Engineer shall withhold the amount stated in the Contract Data from payments due to the Contractor.~~

59. Termination

- 59.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

59.2 Fundamental breaches of Contract include, but shall not be limited to the following:

- (1) The contractor stops work for 28 days when no stoppage of work is shown on the current programme and the stoppage has not been authorized by the Engineer
- (2) The Engineer instructs the Contractor to delay the progress of the Works and the instructions is not withdrawn within 28 days;
- (3) The Employer or the Contractor is made bankrupt or goes into liquidation other than for are constructions or amalgamation
- (4) A payment certified by the Engineer is not paid by the Employer to the Contractor within 56 days of the date of the Engineer's certificate
- (5) The Engineer gives Notice that failure to correct a particular Defect is a fundament albreach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer;
- (6) The Contractor does not maintain a security which is required;
- (7) The Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract data; and
- (8) If the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this paragraph: "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive level sand to deprive the Borrower of the benefits off reeand open competition.

59.3 When either party to the Contract gives notice of a breach of contract to the Engineer for a cause other than those listed under Sub Clause 59.2 above, the Engineer shall decide whether the breach is fundamental or not.

59.4 Notwithstanding the above, the employer may terminate the Contract for convenience.

60. Payment upon Termination

60.1 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 de ducted at source as per applicable law and less the percentage to apply totheworknotcompletedasindicatedintheContractdata.AdditionalLiquidated Damages shall not apply. If the total amount due to the Employer exceeds any

payment due to the Contractor the difference shall be a debt payable to the Employer.

- 60.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Engineer shall issue a certificate for the value of the work done, the cost of balance material brought by the contractor and available at site, the reasonable cost of removal of equipment, repatriation of the Contractor's personnel employed solely on the works, and the Contractor's cost of protecting and securing the Works and less advance payment received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to deducted at source as per applicable law.

61. Property

- 61.1 All materials on the Site, Plant Equipments, Temporary Works and Works are deemed to be property of the Employer, if the Contract is terminated because of a Contractor's default.

62. Release from Performance

- 62.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor or the Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

F. SPECIAL CONDITIONS OF CONTRACT

63. LABOUR

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment of housing, feeding and transport.

The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the site and such other information as the Engineer may require.

64. COMPLIANCE WITH LABOUR REGULATIONS

During continuance of the contract, the Contractor and his sub-contractor shall abide at all times by all existing labour enactments and rules made there under, regulations, notification and bye laws of the State or central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notifications that may be issued under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to the construction industry are given below. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for observance of the provisions stipulated in the notifications/by e laws/ Acts/ Rules/ regulations including amendments, if any, on the part of the Contractor, the Engineer/employer shall have the right to deduct any money due to the Contract or including his amount of performance security. The Employer/Engineer shall also have the right to recover from the Contract or any sum required or estimated to be required for making good the loss or damage suffered by the Employer. The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point to time.

SALIENT FEATURES OF SOME MAJOR LABOUR AND OTHER LAWS
APPLICABLE
TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK

- A) **Workmen Compensation Act 1923**:- The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- B) **Payment of Gratuity Act. 1972**:- Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more on death, the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments' employing 10 or more employees.
- C) **Employees P.F. and Miscellaneous Provision Act 1952**:- The Act Provides for monthly contributions by the employer plus workers @10% or 8.33% The benefits payable under the Act are:
1. Pension or family pension on retirement or death, as the case maybe.
 2. Deposit linked insurance on the death in harness of the worker.
 3. Payment of P.F. accumulation on retirement/death etc.
- D) **Maternity Benefit Act 1951**:- The Act provides for leave and some other benefits to women employees in case of confinement or is carriage etc.
- E) **Contract Labour (Regulation & Abolition) Act 1970**: The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer, if they employ 20 or more contract labour.
- F) **Minimum Wages Act 1948** :- The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act, if the employment is a scheduled employment. Construction of Building, Roads, Runways are scheduled employment.
- G) **Payments of wages Act 1936**:- It lays down as to by what date the wages are to be paid, when it will be paid and what deduction can be made from the wages of the workers.
- H) **Equal remunerations Act 1979**:- The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against female employees in the matter of transfer, training and promotion etc.
- I) **Payments of Bonus Act 1965**:- The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20 % of wages to employees drawing Rs. 3500/- per month or less. The bonus to be paid to employees getting Rs. 2500/- per month or above Rs. 3500/- per month shall be worked out by taking wages as Rs. 2500/- per month only. The Act does not

apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.

- J) **Industrial Disputes Act 1947:-**The Act lays down the machinery and procedure for resolutions of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- K) **Industrial employment (standing Orders) Act 1946 :-** It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the State and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.
- L) **Trade Unions Act 1926:-**The Act lays the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have given certain immunities from civil and criminal liabilities.
- M) **Child Labour (Prohibition & Regulation Act 1986:-**The Act prohibits employment of children below 14 years of age in certain occupations and process and provides for regulation of employment of children in all other occupations and processes. Employment of Child labour is prohibited in Building and Construction Industry.
- N) **Inter – State Migrant workmen’s (Regulation of Employment & Conditions of service) Act 1979:-**The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state).The inter-state migrant workmen, is an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home upto the establishment and back, etc.
- O) **The Building and Other Construction workers (Regulation of employment and Conditions of Service) Act 1996 and the Cess Act of 1996:-**All the establishments who carry on any building or other constructions work and employ 10 or more workers are covered under this Act.
All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as canteens, First Aid facilities, Ambulance, Housing accommodations for workers near the workplace etc.The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officers appointed by the Government.

P) **Factories Act 1948 :-**The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in the manufacturing process.

Q) **Royalty charges-**The contractor shall pay the royalty to the competent authority as per rule. The **royalty** charges paid shall be borne by the contractor and shall not be reimbursed by the Employer.

R) **Following Pollution control Acts and amendments made there of from time to time shall be applicable.**

1. Water (Preservation and control of Pollution) Act, 1974
2. Air (Prevention and Control of Pollution Act 1981
3. Environmental (Protection) Act 1986

The contractor must commit to adopting Environmental management plan for best energy use, waste management, the reduction of pollution as in EMS (Environmental Management system) ISO-14001-2015

65. **ARBITRATION (GCC Clause 24)**

The procedure for arbitration will be as follows:-

24.1 If the Contractor is of the view that a decision taken by the Engineer was either outside the authority given to the Engineer by the Contract or that the decision was wrongly taken, the decision shall be referred to # **Superintending Engineer** (Higher Authority) (Sujlam Suflam Circle No, 2, Mehsana) within 14 days of the notification of the Engineer's decision. If the issue is not resolved, any party can refer the matter for conciliation within 15 days from the decision given by the # Superintending Engineer.

24.2

- (a) For the work up to Rs.100 Cr., if any of the parties is not satisfied with the decision of the # Superintending Engineer ((Sujlam Suflam Circle No, 2, Mehsana), both the parties have to refer to the #Chief Engineer concerned for the conciliation process.
- (b) For the work more than Rs.100 Cr., if any of the parties is not satisfied with the decision of the Superintending Engineer, both parties have to refer to the #Secretary, Water Resources Department, Government of Gujarat for the conciliation process.

If the dispute is not resolved through the conciliation process, contractor may refer the dispute to Gujarat Public Works Contract Dispute Arbitration Tribunal. If the Contractor fails to refer a claim / dispute to the Higher Authority within 14 days of the notification of the Engineer's decision, the Contract or shall not be entitled to any additional payment/claim if he doesn't follow the above sequence in stipulated time. However, during such period, he would not stop the work in any case.

SECTION-4
CONTRACT DATA

#CONTRACT DATA

Clause Reference With respect to section 3

Item marked "N/A" do not apply to this Contract.

1. The Employers is [CL.1.1]
Name:- Executive Engineer, Sujalam Suflam Division No.2, Visanagar
Address:- KHERALU ROAD, Dharoi Colony, Visnagar
Name of authorized Representative(will be intimated later)
2. The Engineer is Executive Engineer
Name of Authorized Representative: Executive Engineer ,Sujalam Suflam Division No.2, Visanagar
3. **The Defects Liability Period is 1 (one) Years from the date of completion.** [CL.1.1&33]
4. The Start Date shall be 1st days for the date of issue of the Notice to proceed with the work. [CL.1.1]
5. The Intended Completion Date for the whole of the works is [CL.1.1,17&2]
6(Six) Months after start of work with the following milestones:
Milestone dates: [CL.2.2&49.1]
Physical works to be completed Period from the start date
Milestone1 i.e. 33% 60 days.
Milestone2 i.e. 66% 120 days.
Milestone3 i.e. 100% 180 days.
6. The Site is located at **Dela Ta. Di :- Mehsana.** [CL.1.1]
7. The name and identification number of the Contract is: [CL.1.1]
Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana
8. The works consist of Constructing a Directed Location for Increase Ground Water Recharge with items as per B.O.Q. The works shall, inter alia, include the following, as Specified or as directed: [CL.1.1]

(A) WRD Works

Site clearance ;setting- out and layout; Construction and Maintenance of all types of dams and its component, earthen dam; spillway; installation of gate; excavation and earth work, approach road, Inspection Bunglows, s, bandhara, T.R., weir, barrages, Flood Protection & Anti Sea Erosion work, canal lining and structures, , CD Works, structure repairing, Jungale cutting, Desilting, etc. other WRD works.

(B) Road Works:

~~Site clearance; setting out and layout widening of existing carriageway and strengthening including camber corrections; construction of new road/ Parallel service road; bituminous pavements remodeling/ construction of Junctions, intersections, bus bays, lay bays; supplying and placing of drainage Channels, flumes, guard posts and guard other related items; construction/extension of cross drainage works, bridge, approaches and the related stones; protective works for roads/bridge; all aspects of quality assurance of various components of the works; rectification of The defects in the completed works during the Defects Liability Period; submission of "As built" drawings and any other related documents; and other item of work as may be required to be carried out for completing the work in accordance with the drawings And the provisions of the contract and to ensure safety.~~

(C) Bridge Works

~~Provision of foundations, piers abutments and bearing; pre stressed/ reinforced cement concrete superstructure; wearing coat ,hand railings; expansion joints, approach slabs, drainages spouts/ down take pipes; arrangements for fixing light posts, water mains, utilities etc; provision of suitably designed protective works; providing wing/return walls; provision of road markings, road signs etc.; all aspects of quality assurance; clearing the site and handing over the work son completion; rectification of the defects during the Defects Liability Period and submission of “As built” drawings and other related documents; and other items of work as may be required to be carried out for completing the works in accordance with the drawings and the provisions of the contract and to Insure safety~~

(D) Other Items

[CL.1.1]

Any Other Items as required to fulfill all contractual obligations as per the Bid documents.

10. The following documents also form part of the Contract: [CL.2.3(9)]
_____As per clause2-3_____
11. The law which applies the Contract is the law of Union of India [CL.3.1]
12. The language of the Contract document s is English [CL.3.1]
13. ~~Limit of sub contracting 25% of the Initial Contract Price~~ [CL.7.1]
14. The Schedule of Other Contractors [CL.8]
15. The Schedule of Key Personnel As per Annex–II to Section I [CL.9]
16. The minimum insurance cover for physical property, injury and deat his Rs.5 lakhs per occurrence with the number of occurrences limited to four. [CL.13]
After each occurrence, the contractor will pay an additional premium necessary to make insurance valid for four occurrences always.
17. Site Investigation report [CL.14]
18. The Site Possession dates shall be From the Date of Issue of Work order [CL.21]
19. The period for submission of programme for approval of the engineer shall be 21 days from the issue of Letter of Acceptance. [CL.28.1]
20. The period between program updates will bedays. [CL.28.2]
21. ~~The amount to be with held for late submission of an updated programme shall be Rslakhs~~ [CL.28.3]
22. The following events shall also be Compensation Events [CL.45]
Substantially adverse ground conditions encountered during the course of execution of work not provided for in the bidding document.
 - (i) Removal of underground utilities detected subsequently
 - (ii) Significant changes in classification of soil requiring additional mobilization by the contractor, e.g. ordinary soil to rock excavation,
 - (iii) Removal of unsuitable material like marsh, debris dumps, etc.not caused by the contractor.

- (iv) Artesian conditions
 - (v) Seepage, erosion and slide
 - (vi) CANAL/RIVER training requiring protection of permanent work
 - (vii) Presence of historical, archeological or religious structures, monuments interfering with the works
 - (viii) Restriction of access to ground imposed by civil, judicial, or Military authority
23. The currency of the Contract is Indian Rupees [CL.47]
24. **The formula(e) for adjustment of prices are as under:** [CL.48]
- If any of the commodities like Cement, Steel or Bitumen are not found applicable in a work, the weight component of that commodities {i.e. 'Cement' (Pc), 'Steel' (Ps) or 'Bitumen' (Pb) as indicated in SBD for the purpose of Price Adjustment} shall be clubbed with the weight component of 'Other Material' (Pm), such that the gross % weight of the components shall remain as 100%.
- R=value of work as defined in Clause 47.1 of Conditions of Contract

Adjustment for labour component

- (i) Price adjustment for increase or decrease in the cost due to labour shall be paid in accordance with the following formula:

$$V_L = 0.85 \times (P_l/100) \times R \times (L_i - L_0)/L_0$$

V_L = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local labour

L_0 = The consumer price index for industrial workers for the State on 28 days preceding the scheduled date of opening of technical Bids as published by Labour Bureau, Ministry of Labour, Government of India

L_i = The consumer price index for industrial workers for the State for the month under consideration as published by the Labour Bureau, Ministry of Labour, Government of India.

P_l = Percentage of labor component of the work.

Adjustment for cement component.

- (ii) Prices adjustment for increase or decrease in the cost of cement procured by the contractor

$$V_c = 0.85 \times (P_c/100) \times R \times (C_i - C_0)/C_0$$

V_c = Increase or decrease in the cost of work during the month under consideration due to changes in rates for cement.

C_0 = The all India wholesale price index for Ordinary Portland Cement on 28 days preceding the scheduled date of opening of technical bid as published by the **Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.**

C_i=The all India average wholesale price index for Ordinary Portland Cement for the month under consideration as published by **Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.**

P_c=Percentage of cement component of the work

Adjustment for steel component

- (iii) Price adjustment for increase or decrease in the cost of steel procured by the contractor shall be paid in accordance with the following formula

$$V_s = 0.85 \times (P_s / 100) \times R \times (S_i - S_0) / S_0$$

V_s=Increase or decrease in the cost of work during the month under consideration due to changes in the rates for steel

S₀= The all India wholesale price index for steel (**Mild Steel-Long Products Rebars**) on 28 days preceding the date of opening of Bids as published by the **Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.**

S_i= The all India average wholesale price index for steel (**Mild Steel-Long Products Rebars**) for the month under consideration as published by **Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.**

P_s=Percentage of steel component of the work

Note : For the application of this clause, the index of **Mild Steel- Long products Re bars** has been chosen to represent the steel group.

~~Adjustments of bitumen component~~

- ~~(iv) Price adjustment for increase in the cost of bitumen shall be paid in accordance with the following formula~~

$$V_b = 0.85 \times (P_b / 100) \times R \times (B_i - B_0) / B_0$$

~~V_b=Increase or decrease in the cost of work during the month under consideration due to changes in rates for bitumen.~~

~~B₀= The official retail price of bitumen at the IOC depot at the nearest centre on the day 28 days prior to the scheduled date of opening of technical bid.~~

~~B_i=The official retail price of bitumen of IOC depot at the nearest centre for the 15th day of the month under consideration.~~

~~P_b=Percentage of bitumen component of the work~~

Adjustment of POL (fuel and lubricant) component

- (v) Price adjustment for increase or decrease in cost of POL (fuel and lubricant) shall be paid in accordance with the following formula

$$V_f = 0.85 \times (P_f / 100) \times R \times (F_i - F_o) / F_o$$

V_f = Increase or decrease in the cost of work during the month under consideration due to changes in rates for fuel and lubricants.

F_o = The official retail price of High Speed Diesel (HSD) at the existing consumer pumps of IOC at the nearest centre on the day 28 prior to the date of opening of Bids.

F_i = The official retail price of HSD at the existing consumer pumps of IOC at the nearest centre for the 15th day of the month of the under consideration.

P_f = Percentage of fuel and lubricants component of the work

Note: For the application of this clause, the price of High-Speed diesel Oil has been chosen to represent the fuel and lubricants group.

Adjustment for Construction Machinery

- (vi) Price adjustment for increase or decrease in the cost of plant and Machinery shall be paid in accordance with the following formula

$$V_p = 0.85 \times (P_p / 100) \times R \times (P_i - P_0) / P_0$$

V_p = Increase or decrease in the cost of work during the month under consideration due to changes in rates for plant and machinery spares

P_0 = The all India wholesale price index for **manufacturer of machinery for mining, quarrying and Construction** for the month under consideration as published **Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.**

P_i = The all India average wholesale price index for **manufacturer of machinery for mining, quarrying and Construction** for the month under consideration as published **Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.**

P_p = Percentage of plant and machinery spares component of the work.

Note: For the application of this clause, index of Heavy Machinery and parts has been chosen to represent the Plant and Machinery Spares group

Adjustment of other materials Component

- (vii) Price adjustment for increase or decrease in cost of local materials other than cement, steel, bitumen and POL procured by the contractor shall be paid in accordance with the following formula

$$V_m = 0.85 \times (P_m / 100) \times R \times (M_i - M_0) / M_0$$

V_m = Increase or decrease in the cost of work during the month under consideration due to change in rates for local materials other than cement, steel, bitumen and POL.

M_0 = The All Indian wholesale price index (all commodities) on 28 days preceding the scheduled date of opening of technical Bids, as published by the **Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.**

M_i = The All India whole sale price index (all commodities) for the month under consideration as published by the **Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.**

P_m = Percentage of local material components (other than cement, steel, bitumen and POL) of the work.

The following percentage will govern the price adjustment for the entire contract:

1	Labour - P_l	18.40
2	Cement – P_c	17.11
3	Steel- P_s	2.91
4	Bitumen-P_b	0.00
5	POL-P_f	5.43
6	Plant & Machinery Spares- P_p	0.00
7	Other Materials-P_m	56.15
Total		100.00 %

25. The proportion of payments retained (retention money) shall be 6% {CL. 49} from each bill subject to a maximum of 5% off initial contract price.
26. Amount of Liquidated damages for delay in completion of works
- For Whole of work {CL.50}
(1/2000)th of the Initial contract price, rounded off to the nearest Thousand, per day. For Sectional Completion (Wherever specified In item 5 of Contract data)
(1/2000)th of initial contract price for the work, Rounded off to the nearest thousand per day.

- | | | |
|-----|---|---|
| 27. | Maximum limit of liquidated damages
For delay in completion work | 10 percent of the Initial {CL.49}
Contract Price rounded off to
The nearest thousand |
| 28. | Amount of Bonus for early completion | Amount of bonus for early
Completion of work shall be given
as per (CL.50 of Section-3) |
| 29. | Maximum limit of bonus for early
Completion of work | 5 percent of the Contract {CL.50}
Price |
| 30. | The amount of the advance payment are : {CL. 52 & 53} | |

#Nature of Advances Amount (Rs.) Conditions to Be fulfilled

- | | | | | |
|-----------|---|--|---|--|
| i | Mobilization 10% of the contract On submission of unconditional Price Bank Guarantee. (to be drawn before the end of 20% of the contract period). The contractor may furnish four bank guarantees of 2.5 % of each valid for the full period. | | | |
| ii | <table border="0"> <tr> <td style="vertical-align: top;">Equipment</td> <td style="vertical-align: top;">90% for new and 50% of depreciated value for old equipment. Total amount will be subject to a maximum of 5% of the Contract Price</td> <td style="vertical-align: top;">After equipment is brought to site (provided the Engineer is satisfied That the equipment is required for performance of the contract) and on submission of unconditional Bank Guarantee for Amount of advance</td> </tr> </table> | Equipment | 90% for new and 50% of depreciated value for old equipment. Total amount will be subject to a maximum of 5% of the Contract Price | After equipment is brought to site (provided the Engineer is satisfied That the equipment is required for performance of the contract) and on submission of unconditional Bank Guarantee for Amount of advance |
| Equipment | 90% for new and 50% of depreciated value for old equipment. Total amount will be subject to a maximum of 5% of the Contract Price | After equipment is brought to site (provided the Engineer is satisfied That the equipment is required for performance of the contract) and on submission of unconditional Bank Guarantee for Amount of advance | | |
| iii | Secured Deleted Advance for Non-persishable material Brought to site (The advance payment will be paid to the Contractor no later than 28 days after fulfillment of the above conditions). | | | |
31. **Repayment of advance payment for mobilization and equipment** {CL.52.3}

The advance loan shall be repaid with percentage deduction from the interim payments certified by the Engineer under the Contract. Deduction shall commence in the next Interim Payment Certificate following that in which the

total of all such payments to the Contractor has reached not less than 20 percent of the Contract Price or 6 (six) months from the date of payment of first installment of advance, whichever period concludes earlier, and shall be made at the rate of 20 percent **collectively for both Mobilization Advance and Equipment Advance** of the amounts of all Interim Payment Certificate until such time as the loan has been repaid, always provided that the loan shall be completely repaid prior to the expiry of the original time for completion pursuant to Clause 17 and 28.

32. Deleted
33. The securities shall be for the following minimum amounts equivalent {CL. 53} As a percentage of the Contract Price:

Performance Security for 5 percent of contract price plus Rs. (to be decided after evaluation of the bid) as additional security in terms of ITB Clause 29.5

The standard form of Performance security acceptable to the Employer shall be an unconditional Bank Guarantee of the type as presented in Section 8 of the Bidding Documents.

- ~~34. The Schedule of Operating and maintenance Manuals.....N/A.{CL.59}~~
- ~~35. The date by which “as built” drawings (in scale as directed) in 2 sets {CL. 60} are required within 28 days of the issue of certificate of completion of the whole or section of the work, as the case maybe.~~
- ~~36. The amount to be with held for failing to supply “as built” drawings {CL.58} by the Date required is Rs..... Lakhs.~~
- 37. The following events shall also be fundamentals breach of contract: {CL.59.2} “The Contractor has contravened Sub-clause 7.1 and Clause 9 of GCC”
- 38. The percentage to apply the value of the work not completed representing {Cl 60} the Employer’s additional cost for completing the Works shall be 20percent.

SECTION-5
TECHNICAL SPECIFICATION

SCOPE OF WORK

The scope of work under this tender includes Civil Works for **Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana** . The major activities include under the scope of work of this tender are mentioned as under:

- 1) Dismantling
- 2) Fencing.
- 3) Precast paver block
- 4) Excavation
- 5) Earthwork
- 6) CC 1:3:6
- 7) CC 1:2:4
- 8) Hysd/TMT Sheel
- 9) Other Misc. items related to flooring, electrical work, painting, gardening, Etc..

More ever, the tender documents are prepared on the basis of Final drawings of structure. Contractor is bound to do work for whatever changes given by engineer in charge. However, no extra claim on account of revisions / changes in designs shall be entertained and the successful bidder / contractor shall have to execute the whole work as per accepted tender rates, terms and conditions, specifications etc.

**Executive Engineer
Sujlam Suflam Division No.2
Visnagar**

GENERAL CONDITION

1. **Definitions:** In the contract (as here in after defined) the following words and expression shall have the meanings here by assigned to them.
2. **Interpretations:** Words imparting the "Singular" only also includes the "Plural" "he" includes "She" and vice versa unless this repug context. Whether the term "Specification" is used apart from a specified standard specifications, it shall mean the specification or plan prepared for a particular item as instructions to the contractor is executing that item of work.
 - (i) **Approved / Approval:** Means approved in writing by Engineer-in-charge.
 - (ii) **Construction Plant:** Means all equipment appliances or things or whatsoever nature required for the execution, completion or maintenance of the works or temporary works but does not include materials or other things intended to from or forming part of the permanent work.
 - (iii) **Contract:** Means the instructions and information for tenders, general and special conditions of contract, specifications, drawings, tender (Including schedule of quantities and tender prices) formal agreement and all addenda and attachments related to the above.
 - (iv) **Contractor:** Means the particular person firm or corporation with whom the contract has been made for executing the works.
 - (v) **Drawings:** Means the drawings referred to in the specifications. The drawings provided with drawing section are preliminary. Final drawings and modification in writing by the Engineer in charge, and such other drawing as may from time to time be furnished or approved in writing by the Engineer-in-charge.
 - (vi) **Engineer in charge:** Means the Engineer in charge of the works of specified parts of the contract or such other departmental assistant or subordinates to whom the Engineer in charge may have delegated certain duties, acting separately within the scope of the particular duties entrusted to them. The contractor will be given a copy of the Government authorization designation the Engineer in charge by name and delegating his authority at the time when contract is signed. It is however, to be understood that, no delegation of powers shall be made to such departmental assistants or sub ordinates except in respect of supervision to ensure complains of the contract.
 - (vii) **Government:** Government of Gujarat - Narmada, Water Resource Water Supply & Kalpasar Department.
 - (viii) **I.S.:** Mean Indian Standard Specifications.
 - (ix) **Day:** Means a day from midnight to midnight
 - (x) **Month:** Means from the beginning of a given of a calendar month to the end of the Preceding date of the next calendar month.
 - (xi) **Week:** Mean seven consecutive days.
 - (xii) **Site:** Means the lands and other places on, in, or through which the Works are to be executed carried out and any other lands or places proved by the owner for the purpose of the contract together, with such other placed by the owner for the purpose of the contract together, with such other places as may be specifically designated in contract or subsequently approved as forming part of site.

- (xiii) **Superintending Engineer:** Means the Superintending Engineer in over all charges of the work.
 - (xiv) **Chief Engineer:** Means the officer to whom the Superintending Engineer of the circle in overall charge of the works report.
 - (xv) **Temporary Works:** Means all Temporary works of every kind required for the performance of the contract.
 - (xvi) **Employer or owner:** Mean the Govt. of Gujarat, Narmada Water Resources, Water Supply & Kalpasar Department on its commencement of business.
 - (xvii) **Amount put to tender:** Means the total amount included in the tender in Schedule "B" of the tender document.
 - (xviii) **Contract Amount:** Means the amount of the work done in accordance with contract duly certified by Engineer in charge in the bill of the payment.
 - (xix) **Contract Value:** Means the total value of the works as mentioned in the letter of acceptance of the tender.
 - (xx) The "Engineer" or Engineer-in-charge or the "Executive Engineer" shall mean the Executive Engineer, Sujlam Suflam Division No.2 Visnagar, for the time being or such other officer as may be duly authorized and appointed in writing by the Government to act as the Engineer for the purpose of the contract.
 - (xxi) The Engineer where named as final authority for decision shall mean the Superintending Engineer, Sujlam Suflam Circle No.2, Mehsana up to whom the contractor shall have a right of appeal when the contractor is not satisfied with decisions of the Executive Engineer.
3. **Contractor's obligation:** The contractor shall be deemed to have carefully examined the work and site conditions, the general conditions, the special conditions, the specifications, schedules and drawings and shall be deemed to have visited the site of works and to have fully informed himself regarding the local condition. The work should be completed within stipulated time limit.
- If he shall have any doubt as to meaning of any portion of these general conditions or the special conditions or the scope of work or the specifications or any other matter concerning the contractor, he shall get clarified in good time before submitting his tender set forth the particulars thereof, and submit them to the Engineer in writing in order that such doubt may be removed.
- The contractor shall unless in cases specially provided for, make all payments at his own expense, undertake to do all things and supply all labour, materials construction plant, equipment, temporary works transport supervision and everything whether of a temporary nature or permanent maintenance of the works, and for performing the obligations of the contract or under the contract, or which the Narmada, Water Resources and Water supply Department would have to undertake to do or had the Narmada, Water Resources, Water supply & Kalpasar Department carried out the construction completion and maintenance of works.
4. **Government Authorized to withhold payment due to the Contractor:** The Government shall have lien on and over all money payable to the contractor under this contract, and also over his security deposits withhold or recoveries made under relevant clauses of this contract, in respect of any Government by the contractor either alone or jointly with another person under the provisions of the Government Acts, or any other statutory enactments in force in

modification or substitution thereof. Government shall at all times be entitled to deduct the said sum or tax from contractor from the moneys, securities or deposits which may become payable or returnable to the contractor under this contract.

5. **Recoveries:** Any recovery advised by the Government or arising from the work shall be recovered from any bill or money retained from his contract.
6. **The Engineer-in-charge decision:** It shall be accepted as an inseparable part of the contract that in matters regarding materials, workmanship, removal of improper work, interpretation of contract drawing and contract specifications, the decision of the Engineer in charge which shall be given in writing shall prevail.
7. **Base lines and grade:** Permanent base lines and cross lines shall be established at sufficiently close interval with bench marks at all corner points to serve as 'reference grid'. The contractor shall provide at his expenses, all templates pillars stacks, equipment, materials and labour for establishing the grid and pillars and preserve during the whole period of construction. These shall be laid out with prior approval for the Engineer. The contractor shall maintain certified copies of such approved reference line, marks and levels and shall not remove any of them without the prior approval of the Engineer.

The contractor shall further lay out the work from these reference base lines in consultation with the Engineer and shall be in level in connection therewith, notwithstanding the fact that the same might have been checked by the departmental staff.

The contractor shall be responsible for the proper execution of the work to such lines and grades as may be specified in the drawing or established or indicated by the Engineer.

8. **Fencing Lighting & Ventilation:** Except as hereinafter provided the contractor shall unless otherwise specified be responsible for the proper fencing, lighting, ventilation regarding and taking of the necessary safety measures for all works comprised in the contract and / or for the proper provision of temporary roadways, foot ways, guard fences, caution notice etc. as far as the same may be rendered necessary by reasons of the work for the accommodation of workmen, foot passengers other traffic and of the owners and occupants of adjacent property and of the public and shall remain fully responsible for any accident that may occur on account of this failure to take all timely precautions.

Lighting: Entire campus for proposed work and all the work approaches shall be adequately illuminated with electric lights to the satisfaction of the Engineer. The power lighting connection wiring equipment's shall be subjected to the inspection and passing by electrical inspector to Government authorized under the Indian Electricity Act. Any addition and alternation omission shall be got approved from the Engineer and got certified from the electrical inspector. The work spots such as faces of excavation, concreting and masonry work, grouting, diaphragm wall, floors etc. shall be adequately floor lighted to the satisfaction of the Engineer. All costs involved in drawing low tension or high-tension lines, meters, switches, starting and lighting accessories are to be borne by the contractor. Assistance will be given by the Department for expediting power supply release and connection by Gujarat Electricity Board.

Whenever more than one agency is working in the areas the contractor, who has already provided lighting arrangement shall extend the facilities to the other contractors who shall pay for such facilities at mutually agreed rates. In case of dispute, the matter shall be decided by the Engineer whose decision shall be final.

Ventilation: All component of work shall be properly and adequately ventilated by system of ducts and fans to the satisfaction of the Engineer-in-charge. Positive artificial means of ventilation shall be installed and shall be in operation at all times. When more than one agency is working at one location, all the agencies should co-operate with each other. No contractor shall stop or threaten to stop his ventilation system and jeopardize the work of other

contract. The contractor- who will be using the ventilation facilities installed by other contractors shall make payment to him at mutually agreed rates. In case of dispute, the Engineer's decision shall be final and binding to all parties.

In case of works there are connecting passages, ventilation circulation system be kept getting modified as and when different passages get joined during execution of the same and when they get out off further works of concreting etc. as taken up. Also, the demand of fresh air may change when more than one agency are working. The general lay out ventilation shall be changed suitably to avoid any part being isolated from ventilation system for proper air circulation.

9. **Explosive and Inflammable materials:** If explosive and/or inflammable materials are to be used for the execution of the works, the contractor shall at his own risk and expenses, obtain such license for storing and using explosives. The contractor shall procure such license whenever demanded by the Engineer in charge or its sub-ordinates for its verifications for storage of explosives and inflammable materials. The department shall not take any responsibility whatever in connection with the storage of explosives on site or of any accidents etc. In connection therewith all operations of the contractor in which or for which explosive is applied shall be at his own risk and upon the sole responsibility.
10. **Liabilities for accidents to persons:** On the occurrence of an accident which results into death of workmen employed by the contractor or which is so serious as likely to result in death if any such workmen, the contractor shall within 24 hours of happening of such accident intimate in writing to Engineer, the facts of such accident. The contractor shall indemnify the Govt. against all loss or damage sustained by the Government, resulting directly or indirectly from his failure to give intimation in the matter aforesaid including the penalties or fines if any payable by the Government, due to such lapse. Contractor shall be fully responsible for Government's failure to give notice under the workmen's compensation act or otherwise to confirm to the provisions of the said act in regard to such accident. In case of an accident in respect of which compensation may become payable under workmen's compensation act whether by the contractor or by the Government as principal employer, it shall be lawful for the Engineer to retain money due and payable to the contract, the sums of money as may in the opinion of the Engineer be sufficient to meet liability. The opinion of the Engineer shall be final in regard to all matters arising under this clause.
Contractor shall be bound to provide in writing with the details of staff employed, emoluments paid and status of the workmen as may be required under the act to Engineer in charge.
11. **Access to site of work:**
The Engineer, may if he considers fit from time to time enter upon any lands which may be in possession of the contractor under this contract for the purpose of executing any work not included in this contract and such work not included in this contract by agents, or by other contractors at his option and the contractor shall, in accordance with requirements of the Engineer, afford all reasonable facilities for execution of the works including occupation of lands by structure or otherwise for any workmen or for the workmen of the Government who may be employed in the execution on or near the site of the work not included in the contract or of any contract in connection with or ancillary to the works and in default the contract shall be liable to the Govt. for any expenses incurred by reasons of such default. Provided always that if the exercise of these powers shall cause any damage to the contractor he may within fifteen days of such damage arising makes, statement of the Engineer who shall from time to time access the value in his judgment of such damage and the Govt. shall from time pay to the contractor the amounts (if any) accepted as justified by Engineer.
12. **Other contractors for the works:** Government has the right to split up the work and site conditions into distinct items and this contract shall apply duly to those items which shall have been specified in this contract should the Government enter into other contract for specified items of the contract work, each contractor shall co-operate with other to the fullest extent,

shall allow to each other every facility and co-ordination for execution of their works simultaneously and satisfactorily as intended in the designs and specification and drawings' Should there be a dispute or disagreement between the contractors for any cause what so ever the same shall be referred to the Engineer in charge whose decision regarding the co-ordination, co-operation and facilities to be provided by any of the contractors to the other shall be provided by any of the contractors to the other shall be final and binding upon all parties and such a decision or decisions shall neither vitiate any contract nor absolve contractor of his responsibility under the contract nor form ground for any claim or compensation.

13. **Interest on money due to the contract:** No omission by the Engineer to pay the amount due to upon measurement or otherwise vitiate or make void the contract nor shall the contractor be entitled to any interest upon, guarantee, R.A. bill and final payment in arrears not upon any balance which may on the settlement of his account become due to him.
14. **Contract documents and matters to be treated as confidential:** All documents, correspondence, order, decisions and other matters concerning the contract and he shall not allow access there to any unauthorized persons of any kind. In case of any discrepancy in the item and specification of work the decision of Engineer in charge is final and bond to contractor.
The contractor shall not be entitled to interest upon any guarantee, fund of payment in arrears or upon any balance which may be due to him on the final settlement of his account.
15. **Work during night or Sunday & Holidays:** Unless otherwise permitted none of the permanent works shall be carried out during night, Sundays or authorized Holidays without the permission in writing. However, when the work is unavoidable or necessary for the safety of life properties or works, the contractor shall take necessary action immediately and advise the Executive Engineer accordingly.
16. **Patents right:** In the event of any claim or demand being made or action being brought against the Government enforcement of letter of patent registration of design or trade mark in respect of machinery plant work materials or thing used or supplied by the contractor under this contract or in respect of any method of using or working by the Government or such machine part work material or the thing beginning to the contractor, he shall indemnify Government against all costs and expenses arising from or incurred by reason of any such claim provided Government shall notify the contractor immediately and claim is made and that the contractor's expenses to conduct all negotiations for the settlement of the same of any litigation that may arise there from the provided that no such machinery plant, materials, thing shall be used by the Government for any purpose of in any manner other than that for which they have been supplied by the contractor and specified under this contract.
Whenever the contractor desires to use any design device, materials or purpose covered by the letter of patent of copy right, the right for such use shall be generally secured by suitable legal agreement with the Engineer in charge.
17. **Co-operation with other constructing Agencies:** When two or more contractors are engaged on work in the same vicinity, they shall work together in a spirit of co-operation and accommodation. The contractor shall not take of cause to take, any steps or actions that may cause disruptions or disturbance to the works, labour and arrangement of other contractors in the neighboring on the project locally. In case of any difficulties amongst the contractors, the Engineer in charge shall direct the manner in which the contractor shall conduct his work so far as if effects the other.
18. **How to give Notices:** Where any legal notice or any other document or order or direction in to be given to or served upon the contractor, it shall be deemed to be duly given, observed if it shall have been either delivered to him personally or to his recognized agent (including in the case of company) the secretary of such company or delivered at or sent through registered post A.D. addressed to the contractor at the contractor's or in the case of a company to registered post A.D. post addressed to the last known place of business of the contractor or in the case of a company to registered office and in the case of a firm contractor, a notice or other

documents, which shall be so given to or served upon any one of the partners in such firm shall deemed to have given to or served on all of them.

19. **Cost of facilities and incidental work:** The cost of all the facilities or any other incidental work etc. as prescribed in various clauses that may have to be provided by the contractor for the purpose of this contract shall be born by the contractor and no payment shall be made for the same unless specifically mentioned or stipulated.
20. **Damage by floods or accident:** The contractor shall take full precautions against any damage to the works by floods or from accidents. The works in progress shall be brought to the safe stage well in time before on set of monsoon i.e. 15th June of the year. If contractor fails to safe guard the work done, materials, plant, shifting of plant and machineries etc. and if damage may occrued due to heavy rain fall, flood water, unprecedented floods or otherwise or due to other causes, no compensation shall be allowed to the contractor for such damages. Moreover, the contractor shall be liable to make good the damaged portion of the work in its original position at his own cost. Also in the event of such accidents, the damage to the machineries, plants hired etc. necessary repairs in this connection shall be the responsibility of the contractor at his own cost.
21. **Treasure Trove:** In the event of discovery by the contractor or his employees during the progress of work of any gold, silver, oil or other minerals of any description and precious stones, treasures, coins, antiquities, relics, fossils or other articles of value or interest, whether geological, archeological or any other such treasure and other things shall be deemed to be the absolute property of the Government and the contractor shall duly preserve the same to the satisfaction of the Engineer-in-charge, from time to time deliver the same to such person or persons as the Engineer may appoint.
The contractor shall take all reasonable precautions to prevent his workmen or any other persons from removing or damaging any such articles or things, shall immediately after discovery any carry out his orders for disposal of the same.
22. **Relation with public authority:** The contractor shall comply with all proper and legal orders and directions from time to time by the local or public authority and shall pay out which he may be liable.
23. **Title of clauses:** The title of the clause does not form part of the same and shall not effect their legal construction.
24. **Jurisdiction:** The contract shall be governed by the laws of India for time being in force and be subject to the jurisdiction of Indian courts. In case of disputes leadings to the contractors or Govt. of Gujarat approaching a court of law it shall be the court within whose jurisdiction the site of work is situated.
25. **Construction of the Contract:** The contract shall in all respects be constructed and operated as a contract as defined in the Indian contract act, 1872 and all payments made there under shall be made in Rupees unless otherwise specified.
26. **Vehicle Tax:** The contractor shall have to pay the Vehicle tax and goods tax even in the vehicle are to be played in the project area. No claim for refund for the same shall he entertained.
27. **Observation of labour acts:** The contractor shall strictly observe all the requirement laid down in the contract labour (Regulation and abolition) Act, 1970 and Gujarat Rule, 1972 and other Acts in force from time to time so far as applicable.
28. **Insurance of Labourers:** The contractor shall be responsible to arrange for insurance of all labourers skilled and unskilled workers, supervisors etc. employed by him as per Labour regulations of the State.
29. **Tress pass:** The contractor shall at all-time be responsible for any damage to all tress pass committed by him or his agent, or working people authorized by the Engineer in charge of work.
30. **Other permission:** The contractor shall approach directly to the concerned Municipal Corporation, Local Bodies, Revenue Authority, concerned departments of the Government and

other authorities for obtaining any type of permission required. Suitable assistance will be tendered by the department for expediting such permissions. No claims for delay in obtaining such permissions shall be entertained.

31. **Occupancy of additional land:** In case when it becomes necessary for the due fulfillment of the contract for the contractor shall make his own arrangement with the land owners and pay such amount as may be mutually agreed upon by them.
The Department will provide all possible assistance to the contractor to enable to obtain land for such purpose.
32. **Work order book:** A work order book as prescribed by the Govt. shall be maintained on the work site and the contractor shall sign the orders in token of acceptance as given by the Engineer in charge or his representative. He shall carry out in the true spirit and as required for the contract performance. Work order book is the property of the department and shall remain in the custody of the department supervisory staff on duty. The field compliance shall be carried out promptly and reported to the Engineer in charge in good time by the contractor so that the work can be checked. If the contractor fails to take note of the orders or instructions issued in the work order or tries to avoid the same, Engineer in charge shall have power to take suitable actions. Any such action of the Engineer for the Noncompliance on the part of the contractor shall be binding upon him.
33. **Signed drawings no authority to the Contractor:** Signed drawing alone shall not be deemed to be an order for work unless it is entered in the agreement or schedule or drawings under proper attestation of the contractor and the Engineer in charge with a covering letter containing that the drawing is an authority for work in the contract.
34. **Copies of drawing and specification:** One copy of the drawing and modified or supplementary drawings and specification shall be furnished free of cost to the contractor.
35. **Plan and drawings:** The contractor shall submit the following information to the Engineer in charge for approval within the time stipulated against each item below:
 - (a) A general lay out plan of construction plant and equipment for the execution of work which the contractor proposes to adopt at site in triplicate within 14 days from the date of notice of proceed with the work shall be submitted.
 - (b) Drawing or prints in triplicate showing the location of major plants and other facilities which he proposed to put up the site including any charge in the general lay out at least 14 days prior to the commencement of the respective work.
36. **Materials and Workmanship, Contractors, Superintendence and Supervision:** The contractor shall provide and install superintendence during the execution of the work and as long thereafter as may be necessary for the proper fulfilling of the contractor's obligation under the contract. The contractor or a competent and authorized agent or representative approved of in writing by the Engineer-in-charge whose approval may be any time withdrawal to be constantly on the works and shall give his whole time to the superintendence of the same.
The contractor shall provide and employ sufficient number of qualified men for supervision on all aspect of work.
37. **Construction plant:** The contractor shall provide and install all necessary construction plant and shall use such methods and appliances for the performance of all operations connected with the work entered under the contract as shall secure and satisfactory quality of the work and rate of progress which shall ensure the completion of the work within the time specified.
38. **Protection adjoining premises:** The contractor shall protect the adjoining site against structural decorative and other damages that could be caused by the execution of these works and make good at his cost any and all such damages.
39. **Tolls and duties:** The contractor shall unless otherwise specifically provided in the contract pay all duties tolls, octroi duties, quarry fees, royalties, VAT, Service Tax and other taxes on all material and articles that shall be used in work.
40. **Release of Claims:** After completion of the work and prior to final payment the contractor shall furnish to the Engineer in charge a release of claims against the Government arising out

of the contract, other than claims specifically identified evaluated and accepted from the operation of the release by the contractor.

41. **Observance of laws, local regulation & attachments:** The contractor shall confirm to all laws of the land, and the regulations and bye-laws of any local authority, and of any water or lighting companies with whose system the structure is proposed to be connected. He shall before making any variations from the drawings or specification that may be necessitated for so confirming give to the Engineer in charge written notice, specifying the variations proposed to be made and the reason for marking them and apply for instructions there on. Incase the contractor does not receive such instructions within seven days, he shall proceed with the work confirming to the provisions, regulations or bye-laws in question and any variations in the drawings or specifications so necessitated shall be dealt with under the clause "Extra Items". The contractor shall give notices required by the said Acts, regulations or bye-laws and pay the required fees in connection there with. He shall also sure that no attachment are made against materials or works related to the contract. The contractor shall protect and indemnify Government against all claims or liabilities arising from or based on the violation of such laws ordinance, regulations, bye-laws, decrees or attachments by him or by his employees. In case of any disputes required to be referred to court of law, the same shall be subject to the jurisdiction of Ahmedabad.
42. **Safety provision:** The contractor in his operation shall arrange for safety measures as recurred inclusive of the provisions in the safety manual published by the Central Water and power commission, New Delhi (January 1962 edition). In case the contractor fails to make such arrangements the Engineer in charge shall be entitled to cause them to be provided and to recover the cost there or from the contractor.
43. **Income Tax:** Deduction will be made towards income tax at source by the Employer as directed by the income tax department.
44. **Sales tax clearance certificate:** If the contractor is a sales tax assessee, he should produce a valid sales tax clearance certificate before the payment of the final bill otherwise the final payment to the contractor will be withheld. If the contractor is not liable to sales Tax assessment a certificate to this effect from the competent sales Tax Authorized shall be produced before payment of the Final bill otherwise the final payment to the contractor will be withheld.
45. **Removal of contractor's men:** The contractor shall on the written direction of the Engineer in charge immediately remove from the works any person employees there on who may in the opinion of the Engineer in charge is to be found incompetent or has misconducted himself. Such persons shall not be employed again on the works without written permission of the Engineer in charge.
46. **Royalty Charges:** Rates quoted by the bidder are all inclusive. The contractor shall pay the royalty to the competent authority as per rule. The royalty charges paid shall be borne by the contractor and shall not be reimbursed by the Employer.
47. **Progress Schedule :**
 - (a) The contractor shall furnish within 21 days of the order to start the work, a progress schedule in quadruplicate indicating the date of start, the monthly progress expected to be achieved, and the anticipated completion date of each major item of work to be done by him, also indicating dates of procurement and setting up of materials, plant and machinery. The Schedule should include a statement of proposed general and detailed arrangements for carrying out works, and of time, order and manner in which it is proposed that these shall be executed. The Schedule should be framed keeping requirement of clause 28 of conditions of contract form in view and be such as is practicable of achievement towards completion of the work in the time limit and of the

particular items on due dates specified in the contract and shall have the approval as in this schedule shall be adhered to.

In case it is found necessary at any stage to alter the schedule, the contractor shall submit in good time a revised schedule, incorporating necessary modifications proposed and get the same approved by the Engineer. No revised schedule shall be operative without such acceptance in writing.

Detailed schedules for each working season showing the progress proposed to be achieved month by month for each major item and quarterly for other items shall be submitted to the Engineer not later than the prescribed date by the Engineer-in-charge preceding the working season, and got approved.

The Engineer is further empowered to ask for more detailed schedule or schedules, say week, for any item or items, and the contractor shall supply the same as and when asked for.

- (b) The Engineer shall have, at all times, the right without in any way vitiating this contract or forming grounds for any claim to alter the order of the work or any part thereof and the contractor shall after receiving such direction, proceed in the order directed. The contractor shall also revise the progress schedule accordingly and submit four copies of the revised schedule to the Engineer within seven days of the Engineer's direction to alter the order of works.
 - (c) The contractor shall furnish sufficient plant, equipment and Labour and shall work such hours and shifts as may be necessary to maintain the progress of the work as per approved progress schedule. The working and shift hours shall comply with all government regulations in force, and shall be such as may be approved by the Engineer. That shall not be varied without the prior approval of the Engineer.
 - (d) The contractor shall from time to time as may be required by the Engineer furnish the Engineer with a statement in writing of the arrangement he purposes to adopt for the execution of this contract and the Engineer may if he consider necessary at any time, advise alteration in the same which the contractor shall adopt on notice thereof.
 - (e) The progress schedule shall be in the form of progress charts, forms, statement and / or reports as may be approved by the Engineer. The contractor shall submit four copies showing the progress of the work in forms and charts etc. at periodical intervals as may be specified by the Engineer.
 - (f) The approval of the progress schedule by the Engineer shall not relieve the contractor of any of his duties and responsibilities under the contract. The adoption of any modification in the schedule required by the Engineer shall not entitle the contractor to any extra payments.
48. **Training Of Government's Personnel :** The contractor shall, if and as directed by the Engineer-in-charge provide, free of any charge, adequate facilities to the Government for training of Government officers, supervisors, foremen, skilled workmen etc., not exceeding twelve in number at any one time on the contractor's works. They will work with the contractor's staff and remain under his control. Their salaries etc., will be borne by the Government and training scheme will be arranged by the Engineer-in-charge, in consultation with the Contractor.

49. Care & Diversion of CANAL/RIVER/Canal:

The scope of work under this tender includes Care & Diversion of CANAL/RIVER and care of site includes keeping the area under all permanent and continuous work and the adjoining areas free from entering water.

The contractor shall design, construct and maintain necessary diversion channel earthen bund and other temporary diversions protective work and make provision for diversion of the CANAL/RIVER flows, and maintain and operate all necessary pumping and required plants for dewatering and maintaining the foundations trenches, sump drainage and other parts of the works as free from water as required construction operations continuously.

The method of removal of water from foundation excavation shall be efficient and effective where excavation for all sorts of trenches extended below the water table. The portion below the water table shall be dewatered in advance of excavation. The dewatering shall be accomplished in a manner that will prevent flow of fines and will maintain stability of excavated slope and the bottom of foundation and will result in all construction operation being performed in the dry conditions. The seepage along the bottom of the foundation of the structures shall also be controlled which may require and supplement the dewatering system by the pipe drain and leading to sump from which water shall be pumped. Such pipe drain shall be provided with grid connection and returns at 15m interval and shall be embedded in a reasonably well graded like materials. The contractor shall suggest and provide alternative arrangement of well point system for dewatering which if considered suitable and sure and not likely to obstruct or cause delay.

The area shall also be maintained free of water after any part of the work is completed for inspection, safety and operation by Government or any determined as necessary by the Engineer-in-charge. The contractor shall pump all water from the site of the Barrage and appurtenances works, adjoining area and shall keep the foundation free of water. Excavation and concreting or placing masonry or as otherwise required for completing the work and shall be entitled to no claims or damages on account of or by reasons of any amount of water leaking through under or around the coffer dams, diversion channel and other diversion and protective works or over topping of the diversion.

The contractor shall not be entitled for any charges on account of effect any consequent upon dewatering, pumping and disposal of water etc. done by him also any damage to the Government work due to failure of pumping, dewatering as arrangement made by the contractor for disposal of water will be made good by him without any cost. In case of any dispute as regard as the responsibility of the contractor in this account, the decision of Engineer in Charge will be considered final.

The care and diversion works shall have to be reckoned and provide for any eventualities like un-seasonal floods etc.

A preliminary thought has been given to channelize the post monsoon flow by providing channel together with an upstream and downstream coffer dam as may be required to divert the post monsoon flow. This likely to be required for completion of work depending upon the progress of work achieved. The above scheme is purely for general guidance only. Any inference and conclusion reached there by the tendered are at his risk and responsibility of contractor.

The contractor will be free to suggest alternative arrangement which it is considered suitable and safe and not likely to obstruct or delay the progress which may be approved at the discretion of the Engineer-in- charge. The contractor shall not be entitled to put any extra claims on this account and the rates shall be quoted keeping in view all these circumstances.

The contractor shall satisfy himself fully about the quantum of flow of be tackled and about the adequacy, efficiency and safety of the care and diversion arrangement to be adopted by him.

The Engineer shall however, shall have the right to direct to enlarge or strengthen the arrangements if he so considers it in the interest of work. All such additions modifications etc.

directed by Engineer shall be promptly executed by the contractor and the same shall be deemed to be included in tender items and no extra payment shall be made.

In case of the diversion arrangement getting washed out or largely damaged in pre monsoon or post monsoon showers the same shall be immediately required and reclaimed by the contractor to its original safe condition at his own cost. Necessary pumping of water, removal of silt, etc. shall also be executed promptly so as to cause the least delay in the progress of work. No claim shall be entertained on this account.

The contractor shall make channel or diversion arrangements in such a way that no damage would be caused to the permanent or temporary structure. If such damage is caused due to the flood water either during the monsoon or in the post monsoon period the same shall be made good at the contractor's cost.

The contractor shall construct and maintain the diversion channel and furnish, install, maintain and operate all necessary pumping and other required for the dewatering of the various parts of the Barrage and keeps them free-from water as required to suit the construction facilities.

After having served their purpose the coffer dam, temporary bulkheads etc. shall be removed and to the extent directed by the Engineer from time to time. The removal of the temporary works, bulk heads etc. shall be so arranged as not to damage the permanent works and any damage resulting from operations shall be made good by contractor to the satisfaction of the Engineer. Any reasonable inflow of water shall be diverted by the contractor as part and parcel of the item without any extra claim.

During the monsoon season the work in the CANAL/RIVER portion shall be closed and the floods shall be passed safely and under no circumstances such flood shall cut flank the other parts of the work.

The material available from the excavation of diversion channel shall be disposed as under:

- If found suitable, by the Engineer-in-charge it shall be transported and used for the permanent structures of Barrage Scheme and appurtenant works. Payment for depositing the suitable materials for use in the permanent structures of Barrage and appurtenant works shall be paid under respective item.
- The unsuitable materials obtained from the dismantling of coffer dam shall be suitably disposed of. Under no circumstances such materials shall be allowed to be dumped across the CANAL/RIVER so as to obstruct the flow of the CANAL/RIVER or endanger any permanent structure. On completion of the diversion works shall be entirely removed and materials shall be disposed of in the manner as and were directed by the Engineer-in-charge.

The contractor shall quote for various items mentioned in the Bill of Quantity considering the above General Conditions as No specific payment on this account shall be made separately.

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SPECIAL CONDITIONS

1. Accuracy of Lines, Level & Grades:

The various works shall be done true to line, level & grades. The periodicals checking of this by the Government's staff shall not absolve the contractor of his responsibility regarding the accuracy. In case of any deviation or discrepancy, contractor shall rectify the same at his own cost & without any extra compensation for the additional work involved. Where ever such a discrepancy is found to arise at the junction or works of difference contractors the relative liability to set right their respective discrepancies shall be fixed by the Engineer-in-charge whose decision shall be final & finding on the contractor concerned. The Engineer shall further have the unquestioned right, the Engineer-in-charge may recover the cost from the contractor or contractor according to proportions as he may consider responsible, for rectifying the discrepancies.

2. Applicable Publications:

All methods or procedure for execution of different items of the work shall confirm to Indian specification of late editions unless otherwise specified. The reference of Indian standard specifications are listed below:

Sr. No.	I.S. Code	Title
1	IS 2720 (Part I to V)	Method of tests for soils
2	IS 3764	Excavation work – Code of Safety
3	IS 456	Plain & Reinforced Concrete – Code of Practice
4	IS 9103	Concrete – Specification
5	IS 12269	Specification for 53 Grade OPC
6	IS 3535	Methods of Sampling Hydraulic Cements
7	IS 4031 (Part-I)	Method of Physical Tests for Hydraulic Cement
8	IS 4032	Method of Chemical Analysis of Hydraulic Cement
9	IS 383	Specification for Coarse and Fine Aggregates from Natural Sources for concrete
10	IS 2386 (Part-I to VII)	Method of Test for Aggregate for Concrete
11	IS 1124	Method of Test for Determination of water absorption, apparent specific gravity and porosity of Natural Building Stones.
12	IS 1125	Method of Test for Determination of Weathering of Natural Building Stones
13	IS 3076	Specification for Low Density PVC Pipes
14	IS 12200	Provision of Water Stopes at Transverse Contraction Joints in Masonry and Concrete Dams – Code of Practice
15	IS 15058	PVC Water Stop at Transverse Contraction Joints for use in Masonary & Concrete Dams
16	IS 1786	Specification for High Strength Deformed Steel Bars for Concrete Reinforcement
17	IS 432	Specification for Mild Steel and Medium Tensile Steel bars and Hard Drawn Steel wire for Concrete Reinforcement
18	IS 12584	Bentonite for Grouting in Civil Engineering works – Specification
19	IS 4082	Stacking and Storage of Construction Materials and Components at Site – Recommendations
20	IS 14344	Design and Construction of Diaphragm for under seepage control – Code of Practice
21	IS 4925	Specification for Concrete Batching and Mixing Plant
22	IS 9429	Code of Practice for Drainage System for Earth and

		Rockfill Dams
23	IS 516	Methods of Tests for strength of Concrete
24	IS 1199	Methods of Sampling and Analysis of Concrete
25	IS 2770 (Part-I)	Methods of Testing Bond in Reinforced Concrete - Pull out Test
26	IS 2502	Code of practice for Bending and Fixing of Bars for Concrete Reinforcement
27	IS 5525	Recommendations for detailing of Reinforcement in Reinforced Concrete works.
28	IS 2751	Code of practice for Welding of Mild Steel Plain and Deformed Bars for Reinforced Concrete Construction
29	IS 460 (Part-I to III)	Specification for Test Sieve
30	IS 457	Code of practice for General Construction of Plain and Reinforced Concrete for Dams and Other Massive Structures.
31	IS 1498	Classification and Identification of Soils for General Engineering purpose.
32	IS 1838 (Part-I & 2)	Specification for Preformed Fillers for Expansion Joint in concrete pavement and structures (Non Extruding and Resilient type)
33	IS 1123	Method of Identification of Natural Building Stones
34	IS 2645	Integral Waterproofing Compounds for Cement Mortar and Concrete – Specification
35	Other	Concrete publication Manual : U.S.B.R. (Latest Edition)

3. Testing of Materials & Works:

- (a) All materials before being incorporated in the work shall be inspected and if necessary tested before approval by the Engineer-in-charge. Any work, on which such materials are used without prior inspection (and when necessary, testing) and without approval or written permission of the Engineer-in-charge, is liable to be considered as unauthorized, defective and not acceptable.
- (b) The day to day and periodical test to be carried for materials used, mixed & placed concrete, concrete etc, shall be carried out by the contractor as specified in the relevant chapters/ sections/ items.
- (c) The contractor shall allow all facilities and co-operations towards collections of samples etc. Unless otherwise specified all labour for collecting samples for test will be supplied by contractor free of cost to Government.
 - (i) The supply of the sample & the carrying out of such test at contractor's cost is provided for or clearly intended in the contract and is carried out either at site of work or manufacture at a place specified in the contractor documents.
 - (ii) The supply of the samples & the carrying out of such test is not provided for or clearly intended in the contract but on test the materials if found defective & has to be rejected. Any additional test required to be carried out as per instruction of Engineer are to be carried out and above those specified in the technical specifications.
 - (iii) The test samples which cannot be tested at site, shall be got tested at field laboratory or at laboratory as directed by Engineer-in-charge. In that case transportation charges, testing charges etc. shall be borne by the contractor. The contractor shall however supply all materials required for test and also make goods at his cost. Materials, mixes by and to the satisfaction of the Engineer in charge.

An authorized representative of the contractor shall remain present at the time when samples or cores etc. are taken and shall authenticate the facts if so. Required when the contractor's agent fail to be present as aforesaid, the samples or cores etc. taken by the Engineer in charge or his representative shall be considered to be authentic. The contractor will however, be informed to the 'details of such samples and cores etc. having been taken.

The Materials, mixes and cores etc, shall be tested day to day or periodically at places mentioned in foregoing Para and the results given thereby shall be considered correct and authentic by the contractor. The contractor shall be given accesses to all operations and tests that may be carried out as aforesaid so that he may satisfy himself regarding the procedure and methods adopted. It shall then be the contractor's responsibility to produce on the work, materials and finished items to the standards used on the laboratory designs and test.

4.0 Co-operation with other construction agencies:

When two or more contractor are engaged on work in the same vicinity, they shall work together in part of co-operation and accommodate on the contractor shall not made or cause to be taken any steps or actions that may cause disruptions, discontent or disturbance to the works, labour and arrangement or other contractors in the neighboring and the project locality in case of any difficulties amongst the contractors, the Engineer-in-charge shall direct the manner in which each contractor shall conduct his work so far effects the others

5.0 Treatment during monsoon:

If during the time the work in progress, the monsoon brakes in, it is the responsibility of the contractor to preserve and maintain the safe conditions of all materials, machinery and tools and work site from floods, due to unseasonal rains, cyclone etc. and damage to the work, plant, materials, machineries etc, shall be made good by the contractor without any additional claims. The contractor is not entitled for any unprecedented rain / flood, earthquake or any natural calamities occurred during construction.

6.0 Inspection facility:

A motorable inspection road shall be maintained by the contractor for inspection of the work during construction in the working period. The Contractor shall also provide necessary, temporary inspection facilities for the detailed inspection of the work. These works shall be done at the cost of contractor.

A site office with latest configuration computer and printer shall be established by contractor with his own risk and cost.

7.0 Security measures:

In view of the strategic importance of all the irrigation and power projects and installations, security restriction may be imposed by the Engineer as per direction of the necessary authorities and the contractor shall abide by all such instructions scrupulously. In case a system of identity cards is introduced the contractor shall at his cost provide for his personal, all such identity cards with photos, if necessary and get these duly signed by the Engineer or his duly authorized representative. The contractor shall also keep the Engineer informed regarding visitors and obtain proper permits for their visit to the works no unauthorized visitors will be allowed on works site.

**Executive Engineer
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Visnagar**

WORK & SITE CONDITION

1.0 Work to be executed under this Tender:- The present tender covers the works of “Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana ..”

The above information is only a general outline and does not in any way limit the scope of work under this tender. No claim shall be entertained if any of the item or individual work is deleted or minor change in location after tender accepted.

1.1 The proposed work is situated Near Village **Dela Taluka:- Mehsana , District :- Mehsana**. The contractor shall carry out the work after dewatering. The contractor shall also responsible for dewatering, de-silting and removal of all water & silt that may enter in the foundation either due to construction work of “**Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana** ..” area. if necessary at his own cost if separate provision is not made. For dewatering excavation, backfill shall be done by contractor at his own cost and no claim what so ever shall be entertained.

1.2 Tender will be deemed to have inspected the site and to have satisfied himself as to nature of all work, all existing road, water ways and other means of communication and access to and from the site of work and the building that may be required for temporary purpose in connection with the construction with the completion and maintenance of the work and must make his own inquires as to works, and area as may be required by him for temporary purpose for construction competing and maintaining the work.

2.0 LOCATION: -

The site of work is situated near Dela Taluka:- Mehsana , District :- Mehsana.

3.0 COMMUNICATION: -

The Village is Dela Taluka:- Mehsana , District :- Mehsana.

4.0 LABOUR: -

Availability of labour is good in the district except sowing and harvesting period. However, there may be shortage of skilled labour such as masons, carpenters, operators, mechanics foremen in the work area to perform the job etc. However, the contractor shall have to make his own inquiry in this regard and quote his rates.

5.0 HOUSING: -

Local housing is not likely to be available and the contractor should plan for suitably housing for his staff and labour within the land area as may be made available to him in accordance with tender norms.

6.0 WATER SUPPLY: -

The contractor shall have to make his own arrangements of water supply for this work and camp. Use of water for this purpose will be allowed to be made free of cost to the contractor and the construction area and the area transferred to Narmada Water Resources Water Supply & Kalpsar Department. Contractor shall have to make his own arrangement for Operation & Maintenance work at his own cost.

7.0 DRAINAGE :-

Suitable and adequate arrangements shall have to be made by the contractor for drainage of rainwater around his camp / colony and the work spot. The contractor shall also install and maintain suitable drainage system to dispose off sewage & sullage from his camp / colony at, his own cost. The layout of the system shall be got approved from the Engineer-in-Charge.

8.0 CAMP REGULATIONS :-

The contractor shall be responsible for maintaining law and order in his camp and on his work, and for that he shall employ such officers, watchmen or other persons as required. Unauthorized or undesirable persons shall be excluded from the camp and from the works. If in the opinion (which shall not be questioned) of the Engineer-in-Charge any employee or agent of the contractor misbehaves and/or causes obstructions in O & M & Repair works, or otherwise makes himself undesirable, the contractor shall, on receipt of the instruction to do so, remove him from the premises.

9.0 MEDICAL AID :-

The contractor shall have to provide at his own cost first aid arrangement at the various work spot in accordance with the labour rules and regulations and as may be directed by the Engineer. The service of the government hospital at- Bechraji Dist- Mehsana will be available for the contractor's staff and labour on payment of requisite charges to hospital by the contractor.

10.0 Climatic Condition :-

The area is situated in relatively medium rain fall zone. The rainy season commence normally from the middle of June and last upto end of September. It has been observed that works required to be totally closed in monsoon but in the part of it, can be continued with precautions in dry spells during monsoon.

11.0 ROADS :-

The contractor shall construct and maintain the inspection roads and quarry roads for all purposes required during entire construction work, Operation & Maintenance work at his own cost. There will however be no charge for any reasonable use of any road constructed by Government at site work.

12.0 MATERIALS :

12.01 SAND :-

Natural sand is available within a reasonable lead in **Sabarmati RIVER** for which the contractor shall have to make his own survey for availability of sand. Nothing extra shall be paid for change in lead.

12.02 CRUSHED AGGREGATE / RUBBLE :-

Best-crushed aggregate will be available within 80 km. lead for which contractor shall have to make his own survey.

Contractor shall make his own arrangement for cement, steel, welding rods, gas for cutting etc. as per specification.

The contractor shall have to make his own inquiries regarding availability of materials and other materials required for Maintenance of work and accordingly he shall quote the rates. If the materials of the required standards are not available from the specified quarries, no extra lead will be payable by the Department.

The contractor shall have to make his own survey and quote rates for all leads and lifts for items mentioned in BOQ. Above mention leads are given for general idea for availability of material. Employer will not give any extra payment for any items for any type of leads and lifts.

13.0 LOCATIONS OF SUB-DIVISION / DIVISION OFFICE:-

The office of the Executive Engineer, Sujlam Suflam Division No.2 Visnagar is located at Visnagar and can be connected on office phone No.(02765) 231661, Visnagar. The sub Division office in charge of the Deputy Executive Engineer, Sujlam Suflam Division No.5, Mehsana situated at Narmada Vasahat Colony, Lakhvad Road, Mehsana

14.0 The Excess/Saving or over payment:-

The Excess/saving or over payment the agency shall be fully responsible for payment or excess Quantity, saving Quantity, price variation, price escalation & extra item. The Engineer in charge can recover above payment from the bill, final bond after final bill at any time or other his contract agreement in govt. of gujarat or india.

**Executive Engineer
Sujlam Suflam Division No.2
Visnagar**

GENERAL TECHNICAL SPECIFICATION

1. GENERAL

- 1.0 The present tender cover the work of “**Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana ..**”

The work site is located near village Dela Taluka:- Mehsana , District :- Mehsana. The work consist of

The main item consists in above work shall be as under,

- 1) Dismantaling
- 2) Fencing.
- 3) Precast paver block
- 4) Excavation
- 5) Earthwork
- 6) CC 1:3:6
- 7) CC 1:2:4
- 8) Hysd/TMT Sheel
- 9) Other Misc. items related to flooring, electrical work, painting, gardening, Etc..

- 2.0 The work area is situated in relatively medium rainfall zone. The rainy season commence normally from the middle of June and lasts up to end of September. It has been observed that works are required to be totally closed in monsoon, but in part of it, can be continued with precaution in dry spells during monsoon. If during the monsoon breaks, the works are in progress, it shall be the responsibility of the contractor to preserve and maintain the safe condition of all materials, machinery, tools and work sites from the floods due to seasonal or unseasoned rains, cyclone etc. The damages to the work, plant, materials, machinery etc. shall be borne by the contractor without any claims. No payment shall be made for any part of earthwork or materials washed away or damaged during the monsoon or other period and it shall have to be made good by the contractor at his own cost. It is the responsibility of the contractor to make good or repair any Government property, material to be utilized for the present work or completed part of present work damaged during the construction period, before handing over the work to the department.

- 3.0 The Contractor shall make his own survey, arrangement for construction materials such like Cement, Fine aggregate, Coarse aggregate, Water, Steel, Murrum, Sand, etc. as per tender Specification.

The above information is given for general guidance to the contractor and it does not in any way limit the performance of work under this tender. The contractor shall have to make his own arrangement of the quality and the quantity of the construction materials along with the developing accessibility to the structures and its ancillary works, etc. Department does not bind itself to any conclusion or towards any conclusion that may be made by the contractor in this respect from this information and no claims on this account shall be entertained.

- 4.0 A motorable inspection road shall be maintained by contractor for inspection of the work during construction period. In working period, necessary temporary inspection facilities on site of work shall be also provide for the detailed inspection of the work. Proper diversion roads, for highway road traffic shall be maintained by the contractor with proper sign boards and red lights on entry and exist of the diversion etc. as directed by the Engineer - in - charge in during currency of the contract without any type extra payment.
- 5.0 The work in general shall be carried out in workmen like manner as well as to the correct section, better (side slope) and gradient as per drawing and to the entire satisfaction of the Engineer-in-charge or his authorized any representative. The various works shall be done true to line, level and grade. The periodical checking of these works by Government's staff shall not absolve the contractor of his responsibility

regarding the accuracy. In case of any deviation or discrepancy in line, level or grade at the meeting faces, the contractor shall make good the discrepancy at his own cost and without any extra compensation for the additional work involved. Whenever such a discrepancy is found to arise at the junction of works of different contractors, the responsibility to set right such discrepancy lies with the contractors concerned. The Engineer-in-charge shall further have the unquestioned right, if need be, to rectify the discrepancies and recover the costs from the contractor or contractors according to proportion as he may consider reasonable.

All work shall be carried out as per specification given in P.W.D. volume I & II and / or as per relevant latest I.S.I. standard and technical specification of contract document As Well As Contractor Shall Be Carried Out Work As Directed By Engineer-In Charge. The site shall be cleared of all rubbish material and heaps etc. and shall be handed over in neat and good condition after completion of the work.

The proposed methodology and program of construction including environmental management plan, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

6.0 TESTING OF MATERIALS:

- 6.1 All materials before being incorporated in the work shall be inspected and if necessary, tested before being approved by the Engineer-in-charge. Any work on which such materials are used without prior inspection (and when necessary prior testing) and without approval or written permission of the Engineer-in-charge may be considered as unauthorized, defective and not acceptable.
- 6.2 The day-to-day / periodical tests to be carried out on materials, mixes and placed concrete, concrete etc. shall be specified by the Engineer-in-charge or as per relevant IS from time to time for ensuring quality and workmanship. The contractor shall allow all facilities and co-operation towards collection of samples & testing procedure etc. The contractor shall supply necessary materials for testing at his own cost. Also, required labour for collecting samples of materials & transport facilities with loading, unloading to samples of materials from work site to field laboratory / Govt. laboratory / Govt. approved laboratory for tests, shall be supplied by contractor free of cost to department. Necessary arrangement for proper curing of cast specimen on work site & transport it from work site to laboratory shall be arranged by the contractor at his own cost.

The contractor shall supply necessary materials at testing laboratory for working out suitable Mix designs at his own cost. The methods of sampling and testing, the procedure and standards shall be as laid down by the Engineer-in-charge for the respective item as per relevant latest I.S.I. standard.

- ~~6.3 Site Laboratory tests will be carried out by qualified Engineer of the Contractor to whom I Card is given by the Executive Engineer and in the presence of Section Officer / Dy. Executive Engineer or Executive Engineer in charge of work. All the Registers required for testing will be maintained by the Contractor's Engineer.~~

~~The contractor shall be established a site laboratory with necessary required equipment with required facilities of light, water etc. at site of work at his own cost / expenses to carry out field test. The contractor shall be provide All Equipments For Testing of All Item Of Works In Field Laboratory.~~

- 6.4 Contractor shall provide all the required testing equipment's including compressive strength testing machine at site such that 80% of the test shall be performed on site, 10% of test shall be performed in Govt. approved laboratory and remaining 10 % test shall be carried out in GERI/Government Engineering college/Government Polytechnic, such that at least one test shall be conducted in GERI. **Testing And Mix Design charges will be BORN BY THE GOVERNMENT AS PER NWR&K Department circular**

Misc/1097/1397/(11)/k-1 M.I.cell dtd. 12/1/2013. If Any New GR (for Testing) Has been Issued by The Department During the ongoing work the Contractor shall also consider it and Test Accordingly. The Material Test Which is Not Carried out By GERI, It Shall be Carried Out In Govt, Approved Lab Or Any Other Private Lab

- ~~6.5 Mix design of each grade shall be carried out in Geri/Govt. Engineering collages/Govt. Laboratories/Government approved Laboratory. Mix design after change in season shall be carried out in Geri/Govt. Engineering collages/Govt. Laboratories/Government approved Laboratory. Each mix design shall be approved by Engineer in charge. If engineer in charge not satisfied with mix design provided by Government approved Laboratory revised mix design has to be carried out in GERI. As per GR, R&B Department, GOG vide letter no. LAB/10/2025/273/C, Dt.16/10/2025.~~
- ~~6.6 The contractor shall submit the monthly schedule in advance for the work to be taken up during that month and which shall be approved by the Engineer in charge. The work shall be carried out in accordance with approved work schedule.~~
- ~~6.7 Concrete work should be done with mix design to maintain quality of concrete and for proper Control concrete mixing, Contractor will have to set up a batching plant at site within 1 km of site of work and with a capacity of 30 cubic meters/hour at his own Cost, for that no separate payment will be made from the government and in any case, if rent/compensation is given to the farmers for setting up the batching plant, the same will have to be paid by the Contractor.~~
- 6.8. A motorable inspection road shall be maintained by contractor for inspection of the work during construction period. In working period, necessary temporary inspection facilities on site of work shall be also provide for the detailed inspection of the work. Proper diversion roads, for highway road traffic shall be maintained by the contractor with proper sign boards on entry and exist of the diversion etc. as directed by the Engineer - in - charge in during currency of the contract without any type extra payment.
- 6.9. If any defect or discrepancy is found in the tender or tender specification, the decision of the Engineer In charge will be final.

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List of I. S. Code and other publication

1.0 Applicable Publications.

Generally, Bureau of Indian standard codes (latest version of I. S. code) shall be followed for all items of works, wherever such code does not exist, the reference shall be taken from other technical publications as directed by Engineer- In- Charge.

1.1 Indian Standards and Other Publications: (for Earthwork)

1	IS: 1498 -1970	Classification and identification of soils for general engineering purposes (first revision) (Amendment Nos.1 and 2)
2	IS: 2809 -1972	Glossary of terms and symbols relating to soil engineering (first revision).
3	IS: 3764 -1966	Safety code for excavation work (Amendment No. 1)
4	IS: 7293 -1974	Safety code for working with construction machinery.
5	IS: 4701 -1982	Code of practice for earthwork on canals (first revision)
6	IS: 1720 -1978 (Part I to xx)	Methods for testing of soils
7	IS: 2720 -1995(Part - I to X & Part 14)	Methods of test for soils
8	IS: 1888 -1982	Methods of load test on soil (second revision)
9	IS: 2131 -1981	Method of standard penetration test for soils (first revision)
10	IS: 5529 -1985 (Part-I)	Test in overburden (first revision)
11	IS: 7894 -1975	Code of practice for stability analysis of earth dams (Amendment-No.1)
12	IS: 8237 -1985	Code of practice for protection of slopes for reservoir embankments (first revision)
0 -1	U.S.B.R. (United State Bureau of Reclamation)	Earth manual (Second edition 1974, reprinted 1985)
0 - 2	Central Water commission	Safety manual

1.2 Indian Standards and Other Publications: (for Concrete work)

1	IS :8112	Specification for 43 grade ordinary Portland cement (First revision)
2	IS:12269	Specification for 53 grade ordinary Portland cement.
3	IS :455	Specification for Portland Slag Cement (Fourth Revision.)
4	IS :1489	Specification for Portland pozzolana cement (Third revision) (Part I & II)
5	IS :3535	Method of sampling hydraulic cement (First revision)
6	IS :4845	Definitions and terminology relating to hydraulic cement (Reaffirmed 1987)
7	IS :4031 (part 1 -13)	Methods of physical tests for hydraulic cement (First revision)
8	IS :4032	Method of chemical analysis of hydraulic cement (First revision)
9	IS:8041	Specification for rapid hardening Portland cement (Second revision)
10	IS:8043	Specification for Hydrophobic Portland cement (Second revision)
11	IS :5512	Specification for flow table for use in test of hydraulic cement

		and pozzolanic materials (First revision)
12	IS :2580	Jute sacking bags for packing cement (Second revision) (With Amendment No. 1 to 3)
13	IS :650	Specification for standard sand for testing of cement (First revision) (Amendment No.1,2&3)
14	IS :383	Specification for coarse & fine aggregate from natural sources for concrete (Second revision)
15	IS :460	Specification for test sieves (Part 1 to 3)
16	IS :2430	Methods for sampling of aggregates for concrete (First revision)
17	IS :2386(Part I - VIII)	Method of test for aggregates for concrete.
18	IS :5640	Method of test for determining aggregated impact value of soft coarse aggregates.
19	IS :456	Code of practice for plain & reinforced concrete (Fourth revision)
20	IS :457	Code of practice for general construction of plain and reinforced concrete for dams & other massive structures.
21	IS :4926	Specification for ready mixed concrete (First revision)
22	IS :1199	Method of sampling and analysis of concrete.
23	IS :516	Method of test for strength of concrete (Amendment No.1)
24	IS :3085	Methods of test for permeability of cement, concrete and concrete.
25	IS:1791	Specification for batch type concrete mixers (Second revision)
26	IS :2722	Specification for portable swing weigh batchers for concrete (Single & double bucket type)
27	IS :4634	Methods for testing performance of batch type concrete mixers.
28	IS :5892	Specification for concrete transit mixer and agitators.
29	IS :7245	Specification for concrete pavers.
30	IS :4925	Specification for concrete batching & mixing plant.
31	IS: 6461 (Part I to XII)	Glossary of terms relating to cement concrete vibrators.
32	IS :2505	General requirement for concrete vibrators (immersion type) (Second revision)
33	IS :2506	General requirements for screed board concrete vibrators.
34	IS :4656	Specification for form vibrators for concrete.
35	IS :6923	Methods of test for performance of screed board concrete vibrators.
36	IS :5889	Specification for vibratory plate compactor.
37	IS :3558	Code of practice for use of immersion vibrators for consolidating concrete.
38	IS :4558	Code of practice for under drainage of lined canals (First revision)
39	IS :3873	Code of practice for laying in situ cement concrete lining of Canal (Second revision 1993)
40	IS :5256	Code of practice for sealing joints in concrete lining on canals.
41	IS :7861(part I & II)	Code of practice for extreme weather concreting.
42	IS :5513	Specification for vicat apparatus (First revision) (Amendment No.1)
43	IS :5515	Compacting factor apparatus (First revision)
44	IS :5529 (part I & II)	Code of practice for in-situ permeability test.
45	IS:5816	Method of test for splitting tensile strength of concrete cylinders. (First revision)
46	IS :7320	Specification for concrete slump test apparatus (Amendment No.1)
47	IS :9284	Method of test for abrasion resistance of concrete.
48	IS :8142	Method of test for determining setting time of concrete by

		penetration resistance.
49	IS :9013	Method of making curing & determining compressive strength of accelerated cured concrete test specimen.
50	IS :9103	Specification for for concrete. (First revision)
51	IS :6925	Methods of test for determination of water-soluble chlorides in concrete .
52	IS:12200	Code of practice for provision of water stops at transverse and construction joints in masonry and concrete dams.
53	IS :8989	Safety code for erection of concrete frame structures.
54	IS :303	Specification for plywood for general purposes (Second revision) (Amendment No.1 to4)
55	IS :883	Code of practice for design of structural timber in building (third revision)
56	IS :4990	Specification for plywood for concrete shuttering work (First revision (Amendment No.1)
57	SP:16 (S & T)	Design aids for reinforced concrete to IS: 456.
58	SP:23	Handbook for Concrete Mix.
59	IS:3370	Code of practice for concrete structures for the storage of liquids (part I to IV)
60	IS:3025- 1964	Sampling & testing (physical & chemical) for Water
61	Is 2770- 1967	Method of testing bond in reinforced concrete
0-1	Indian Road Congress (IRC	Standard specification and code of practice for Road Bridges. Section – I, Section – II, Section – III
0-2	The United State Bureau of Reclamation (USBR)	Concrete Manual (Eighth Edition) (Revised– 1981)
0-3	American society for Testing of Materials (ASTM)	All relevant codes.
0-4	ACI codes and Manual	All relevant codes.
0-5	CBIP	Manual on canal lining
0-6	MORT & H	Specifications for Road & Bridge works (fourth revision, August 2001, reprinted in January 2002)

1.3 Indian Standards and Other Publications: (for Reinforcement / Steel work)

1	IS: 226	Structural steel (standard quality) (fifth revision) (Amendment No.1 to 5)
2	IS: 280	Mild steel wire for general engineering purposes (third revision)
3	IS: 432	Mild steel and medium tensile bars and hard drawn steel wires for concrete reinforcement.
4	IS: 432 (Part-I)	Mild steel and medium tensile steel bars (third revision)
5	IS: 432 (Part-II)	Hard drawn steel wire (third revision)
6	IS: 1566	Specification for hard drawn steel wire fabric for concrete reinforcement. (second revision) (Amendment No.1)
7	IS: 1786	Specification for high yield strength deformed steel bars and wires for concrete reinforcement (third revision)
8	IS: 1139	Hot rolled mild steel, medium tensile steel and high yield strength steel deformed bars for concrete reinforcement.
9	IS: 1481	Metric steel scales for engineers (first revision) (with 2 Amendments)
10	IS: 2502	Code of practice for bending and fixing of bars for concrete reinforcement.

11	IS: 5525	Recommendations for detailing of reinforcement in reinforced concrete works.
12	IS: 1521	Method for tensile testing of steel wire (first revision)
13	IS: 1608	Method for tensile of steel products (first revision)
14	IS :9077	Code of practice for corrosion protection of steel reinforcement in RB and RCC construction.
15	IS:2062	Weld able Structural Steel (third revision)
16	IS: 2751	Recommended practice for welding of mild steel plain and deformed bars for reinforced construction (first revision)
17	IS: 9417	Recommendation for welding cold worked bar for reinforced concrete construction.
18	IS: 814	Covered electrodes for metal arc welding of structural steels.
19	IS: 814 (Part-I)	For welding products other than sheets (fourth revision) (with Amendment No. 1 to 3)
20	IS: 814 (Part-II)	For welding sheets (fourth revision)
21	IS: 1278	Filler rods & wires for gas welding (second revision) (with Amendment No.1)
22	IS :5242	Method of taste for determining shear strength of metal (first revision).
23	IS:800	For Structural Steel
24	IS :961	For Structural Steel (high tensile)
25	IS :1977	For Structural Steel
26	IS:2062	For Structural Steel (for general purpose)
27	IS:816	For Welding work on Steel
28	IS:1477	For Paint on Steel
29	IS:1852-1967	For Structural Steel component
30	IS: 7215-1974	For Fabrication of Structural Steel
31	IS:14589-1999	For Paint on Steel
32	IS: 932	Properties (high quality) of Structural Steel
33	IS: 2074	Ready mixed Paint, Red oxide, zinc chrome & priming
34	BS-EN-499	For Welding consumables material
35	IS:2339-1963	Aluminum Paint for General purpose in dual container
36	IS: 822-1978	Code of Procedure for Inspection of Welds

1.4 Indian Standards and Other Publications: (for other work)

1	IS:458	Specification for Concrete pipes (with and without reinforcement (third revision)
2	IS:783	Code of practice for laying of concrete pipes (first revision)
3	IS:3597	Methods of test for concrete pipes (first revision)
4	IS:1239	Mild steel tubes, tubular and other wrought steel fittings; Part-I mild steel tubes (fourth revision)
5	IS: 3114	Code of practice for laying of cast iron pipes (first revision)
6	IS:1592	Specification for asbestos cement pressure pipe (third revision)

7	IS:1630	Code of practice for laying of asbestos cement pressure pipes.
8	IS:8794	Cast Iron detachable joints for use with Asbestos cement pressure pipe (first revision)
9	IS:6163	Centrifugally cast (spume) iron low-pressure pipes for water, gas and sewage (first revision)
10	IS:1838	Preformed filler for expansion rest in concrete pavement and structures (on extruding and resilient type)
11	IS:5382	Rubber sealing rings for gas mains, water mains and sewers (first revision)
12	IS:1542-1977	Specification for sand for plaster (first revision)
13	IS:2116-1980	Specification for sand for masonry concrete (first revision)
14	IS: 2250-981	Code of practice for preparation and use of masonry concrete (first revision)
15	IS:1597-1967	Code of practice for construction of stone masonry
16	IS:1597-1967 (Part-I)	Rubble stone masonry
17	IS:4101-1967 (Part-I)	Stone facing
18	IS: 7779-1975 (Part-I/Sec.2)	Gujarat state, section 2 Engineering properties of building stones
19	IS: 8381-1977	Recommended practice for quarrying stones for construction purposes
20	IS:1127-1970	Recommendation for dimensions and workmanship of natural building stones for masonry work (first revision)
21	IS:1129-1972	Recommendation of dressing of natural building stone (first revision)
22	IS:1123-1975	Methods of identification of natural building stone (first revision)
23	IS: 4121-1967	Methods of test for determination of water transmission rate by capillary action through natural building stones
24	IS: 4122-1967	Methods of test for surface softening of natural building stones by exposure to acidic atmosphere
25	IS: 5218-1969	Method of test for toughness of natural building stones
26	IS:1706-1972	Methods of test for determination of resistance to wear by abrasion of natural building stones (first revision) Methods
27	IS: 4348-1973	Methods of test for determination of permeability of natural

		building stones (first revision)
28	IS:1121-1974 (Part 1 to 4)	Methods of test for determination of strength properties of natural building stones (first revision)
29	IS:1122-1974	Methods of test for determination of true specific gravity of natural building stone (first revision)
30	IS:1124-1974	Methods of test for determination of water absorption, apparent specific gravity and porosity of natural building stones (first revision)
31	IS:1125-1974	Methods of test for determination of weathering of natural building stones (first revision)
32	IS:1126-1974	Methods of test for determination of durability of natural building stones (first revision) (Amendment No.1) building stones (first revision) (Amendment No.1)

**Executive Engineer
Sujlam Suflam Division No.2
Visnagar**

2. TECHNICAL SPECIFICATION FOR MATERIALS

M - 1 CEMENT:-

- 1.1 Only Ordinary Portland Cement of grade 53(Major Plant) shall be used conforming to I.S. 8112 - 1989 and I.S. 12269 - 1987 respectively (or its latest version) for the entire work under the tender in all respects and shall be procured in bag. The contractor shall have to make his own arrangement to procure the cement (bearing I.S.I. mark & which Cement brand / Company should be approved by department) directly from the manufacturer / authorized Dealer of Cement Company.

The contractor shall arrange a suitable & adequate infrastructure for procuring, conveying with loading & unloading and proper storing the same to the site of work at his own cost with sufficient quantity for advance planning of work to be done for next fifteen days as approved by the Engineer-in-charge of the work. EIC will conduct minimum required test to ascertain its quality. For verification of such purchase, the contractor shall have to produce all the bills of manufacturer/authorized dealer along with the testing details (i.e. M.T.C. for each batch of cement which is brought to the work site) to the Engineer-in-charge of the work. Work will be only allowed if MTC results are found satisfactory, until the testing results are received from the approved laboratory of Department.

- 1.2 All cement shall be stored in dry, water tight stored shade, facilities to protect cement from dampness & properly ventilated structure. In case of storage of cement bag, the floor on which cement is to be stored shall be raised at least 30cm. above ground level & the bags shall not be piled more than 10 bags height and shall be arranged in headers & stretches fashion as close as possible. The Contractor shall be responsible for proper storage of cement and if any damage or deterioration there in, shall be responsible for the change or removed at his own cost.

Cement shall be used in the work, in order of receipt to the store/site. For this purpose, on the arrival of the consignment, it shall be stacked separately and placard mentioning the date of arrival should be pinned to the pile. The arrangement of storage and utilization shall be such that to ensure the utilization of the cement in order of its arrival at the storage. The contractor shall maintain updated record which would at any time show the date of receipt and proposed utilization of cement laying in the store at the site.

The contractor shall provide a double locking arrangement for the store and the key of one lock will remain with the Engineer-in-charge of the work or his authorized representative. The Engineer-in-charge shall any time have an easy access to the store and the site of the work for checking. The Engineer-in-charge or his authorized representative shall have authority to check and examine the method of storage, records, accounting and security provided by the contractor. The Contractor shall produce the proof by way of record, books, return performa etc. to be maintained by his staff on site, on demand by Engineer-in-charge of the work or his authorized representative. The contractor shall keep this records up to date to enable the Engineer-in-charge of the work or his authorized representative to apply the check which they may desire to impose.

- 1.4 On arrival of cement at site by the contractor, it shall be sampled as per I.S. 3535 (or latest version of I.S.) & sent it in approved lab. of Dept. for testing as per I.S. 4031, 4032 (or latest version of I.S.) by EIC or his authorized representative. The contractor shall make the arrangement for sampling & samples shall be submitted to the Government Laboratory or Govt. approved laboratory at his own cost. The testing shall be done for each consignment received at the site. The cement consignment more than 50 tons or part thereof; each consignment shall be stacked separately.
- 1.5 The cement not satisfying the criteria as per I.S. 12269 for grade 53 shall be rejected and such stack of cement shall be removed immediately from the site of work. No extra cost either for testing or for rejected cement shall be paid to the contractor. No cement shall be used for the work without being tested (either MTC or testing from the approved Laboratory by Dept.). In case of failed result or untested sample of

cement, such work shall not be paid by the Engineer-in-charge and shall be removed at contractor's own cost. The results of the cement should be submitted by the contractor as and when required by the Engineer-in-charge or his authorized representative.

- 1.6 The samples of cement older than 90 days shall be tested by the Quality control Unit of GERI at Gandhinagar or Baroda at the contractor's cost. If the test results are in accordance with I. S. specification then and only then the Engineer-in-charge will permit to use of such cement, & such cement shall be used within a prescribed period. The cement older than 180 days shall not be permitted to be used for the work.
- 1.7 A regular day to day account of cement received and consumed / used in the work, together with the particulars tender item & quantity of each work shall be maintained in ink by the responsible representative of the department and shall be signed both i.e. by the departmental representative as well as the contractor, after proper verification at the end of the day's work. The accounting shall be shown to the inspecting officer when asked for. The Engineer-in-charge of the work or his authorized representative shall have the authority to verify the stock and check on the consumption in any manner he thinks proper. The volume of one cement bag weighing 50 kg shall be considered as 0.0342 cum for mixing in concrete.
- 1.8 **Frequency for Cement testing** (physical / chemical properties) is as under, as per IS:3535-1986.

Weight of lot/ batch(in tonne)	No. of Sample to be taken	Remarks
Up to 50	1	(1) For sample (15Kg. of cement) taken from 2% bag out of total bag of consignment. (2) The frequency for chemical testing for cement to be decided by the Engineer-in-charge of the work as per requirement, or shall be twice in each working season, per brand, per grade of cement.
51 to 100	2	
101 to 200	3	
201 to 300	4	
301 to 500	5	
501 to 1000	6	
1000 to 2000	7	

The following Test with required results are required for Physical / Chemical properties of Cement.

Requirements of Test		Requirements for Test Results
		53 Grade Cement (IS12269)
Specific Surface area (in m^2/Kg)	Fineness	Min.225
Standard Consistency (in %)		Above 30
Setting Time (in minutes)	Initial	Not less than 30
	Final	Not more than 600
Soundness	(a) By Le- Chateller (in mm)	Not more than 10
	b) By autoclave (in %)	Not more than 0.8%
Compressive strength (in N/mm^2)	03 days	Not less than 27
	07 days	Not less than 37
	28 days	Not less than 53
(i) Ratio of % of	$\left\{ \text{Cao} - \left(\frac{0.7\text{SO}_3}{2.8\text{SiO}_2} \right) + 1.2\text{Al}_2\text{O}_3 + 0.65\text{Fe}_2\text{O}_3 \right\}$	Not Greater than 1.02 & Not less than 0.66

(ii) Ratio of % of Alumina (C_3A) to that of Iron Oxide	Not less than 0.66
(iii) Insoluble residue (% by mass)	Not more than 2
(iv) Magnesia (% by mass)	Not more than 6
(v) Total sulphur content ... calculated as sulphuric anhydride (SO_3) (% by mass)	Not more than 2.50 & 3.0 when tricalcium aluminates % by mass is 5 or less & greater than 7 respectively
(vi) Total loss on ignition (% by mass)	Not more than 5

Rejection: - Cement shall be rejected if it does not comply with any of requirement of above specification.

M – 2 FINE AGGREGATE (Sand):-

- All the fine aggregates shall conform to IS: 383-1970 or its latest version and as directed by the Engineer-in-Charge. Sand to be used shall be natural as obtained from the CANAL/RIVER bed and the maximum size shall be limited to 4.75mm. The Sand shall be obtained from Sabarmati CANAL/RIVER bed or from any other suitable sources as approved by Engineer-in- charge.
- 3.1 The sand shall consists of hard, dense, durable, uncoated siliceous gritty materials. It shall be free from injurious materials of dust, lumps, soft and flaky particles, shale, alkali-organic matter, loam, mica, earth, clay and other deleterious substances. The maximum size of sand particle shall be limited to 4.75mm. The F.M of the sand to be used in concrete / masonry shall be ranging in between **2 to 3.5**. The maximum percentage of each of the deleterious substances in sand as delivered to the mixer for use in concrete etc.shall not exceed the following values.
- (a) Limits of deleterious materials.

Limits of Deleterious materials for Uncrushed Fine Aggregate (As per IS 383):

Sr. No.	Deleterious Substance	Fine Aggregate percentage by Weight, Max.
1	Coal and Lignite	1.0
2	Clay lumps	1.0
3	Materials finer than 75 micron IS Sieve	3.0
4	Soft Fragment	-
5	Shale	1.0
6	Total percentages of all deleterious materials	5.0

- (b) Sand shall be free from injurious amount of organic impurities. Sand that are producing a colour (obtained by dissolving 9 grams of chemically pure (c.p.) ferric chloride and 1grams of c.p. cobalt chloride in 100 ml of water to which one-third ml of hydro-chloric acid has been added) darken than the standard in the test (organic test) for organic impurities shall be rejected.
- 3.2 Fine aggregates shall be tested for their gradation, fineness modulus, specific gravity, water absorption, soundness, deleterious constituents, petrographic analysis and alkali aggregate reactivity.
The following testing frequencies shall be maintained for the same source of fine aggregates.

Sr. No.	Name of test	Minimum number of test specified
1	Gradation	Daily one test
2	For Fineness Modulus (F.M.) Silt Content	Daily one test
3	Moisture Content	Daily one test
4	Sp. Gravity & water absorption, Alkali-Aggregate Reactivity, Petro graphic examination.	Twice in a concreting working season.

3.3 Due allowance shall be made if the sand is wet at the time of mixing, the exact extent of such allowance or bulkage shall be depend upon the quantity of moisture in sand and it shall be decided by the Engineer-in-Charge.

3.4 Gradation:-

(a) Sand shall be well graded so as to impart good workability and good finishing. Sieve analysis of natural sand shall confirm to the following limits of gradation.

IS Sieve Designation	Percentage passing for			
	Grading Zone-I	Grading Zone-II	Grading Zone-III	Grading Zone-IV
10 mm	100	100	100	100
4.75 mm	90-100	90-100	90-100	95-100
2.36 mm	60-95	75-100	85-100	95-100
1.18 mm	30-70	55-90	75-100	90-100
600 micron	15-34	35-59	60-79	80-100
300 micron	5-20	8-30	12-40	15-50
150 micron	0-10	0-10	0-10	0-15

(b) Deviations from the prescribed limits of cumulative percentage retained on 10mm, 4.75 mm, 2.36 mm, 1.18 mm, 600 micron, 300micron and 150 micron IS sieves shall be permitted provided total of such deviations do not exceed 5%.

(c) No deviation from the prescribed limit shall be permitted for cumulative percentage passing through 600 micron IS Sieve.

Fineness Modules:-

(a) The sand shall have a fineness modulus ranging in between **2 to 3.5** subject to the gradation specified in the preceding paragraph.

(b) The modules shall be computed by adding cumulative percentage of the sand retained on the standard screen from 4.75 mm, 2.36mm, 1.18 mm, 600micron, 300 micron, 150 micron IS sieves (as M.T. standard screen from 3/16" and no. 480, 120, 60, 30, 15 sieve) and dividing the sum by 100. Gradation of sand shall

be so controlled that the FM of at least 9 out of 10 consecutive test samples of finished and shall not vary more than 0.10 from the average 10 tests samples.

(c) Any deviation from the specified range of gradation and fineness modules shall not be permitted to be used in work, without the written permission of the Engineer-in-charge. Any deviation from the specified range of the fineness modules will not be tested for clay, organic impurities and other deleterious substances as laid down in I.S. 383.

(d) Details regarding Fineness Modulus for sand available at different locations in CANAL/RIVER bed can be seen in the office of the Executive Engineer SujalamSuflam Division No.2, Visnagar It may be pointed out in particular that the large quantity of sand is available in CANAL/RIVER Sabarmati. The Contractor shall procure approved quality of sand from any other source if required at their own cost. The contractor shall procure approved quality of aggregates from any other sources for which no extra claim shall be entertained.

3.5 Frequency of test shall be as per table of para 3.2 / at change of source of fine aggregate / one test for each 250 cumt. of sand or part thereof.

3.6 Storage: - All sand shall be stored on the site of work in such a manner as to prevent intrusion of foreign matter.

3.7 Royalty: - The contractor shall be responsible for obeying the laws, rules and regulations imposed under the mines and minerals Act and such other laws and rules prescribed by Government Departments such as forest, revenue or any other competent authority. The contractor subject to general conditions of contract shall pay local authorities, royalty etc. payable for securing the material.

M –3 COARSE AGGREGATE / GRIT / KAPACHI / CRUSHED METAL

- Crushed Coarse aggregates are available in sample quantities from the quarries near Ambaghata in Banaskantha District. These are indicative only. The contractor shall procure approved quality of aggregates from any other sources for which no extra claim shall be entertained.

4.1 Coarse aggregate shall be of machine crushed stone. It shall be hard, strong, dense, durable, clean, and free from thin elongated soft flaky pieces, vegetable matter, organic or other deleterious matter i.e. such as to reduce the strength & durability of the concrete or harmful to steel reinforcement. Predominantly flaky aggregates shall not be used. It shall have no adherent coating of clay, silt, mud or any other adherent-coating likely to prevent proper adhesion of concrete. Aggregates shall have no deleterious reaction with cement. It shall be capable of developing good bond with cement paste and weather resisting and unaffected by water. Coarse aggregate shall be well graded and gradation shall give a dense concrete of the specified strength and consistency that will work readily into position without segregation and without the use of excessive water content.

4.2 Contractor shall remove all vegetations and other perishable substances and objectionable amounts of other foreign matter. All Coarse aggregates shall be washed and/or screened by the Contractor, if required, at the source approved by the Engineer-in-charge. In case the coarse aggregate brought to the site of work is not washed and screened at the source the contractor shall make necessary arrangements for washing and screening at the work site / B&M plant. The cost of washing & screening shall be born by the Contractor.

4.3 The size of the coarse aggregate for plain cement and ordinary reinforced cement concrete shall generally be as per the table given below and shall have a maximum size of 40mm. Following shall be maximum size of coarse aggregate for the different items of work. However, depending on the technical requirement various size of aggregate may be required to be used in various components of

Sr. No.	Item of work	Maximum nominal Size of Coarse Aggregate (MSA)
1	(1:3:6) grade for plum concrete, PCC M-10 in Foundation (mass concrete)	40mm
2	PCC-M-15 work in U/S & D/S floor, below raft etc.	40mm
3	R.C.C. work in U/S & D/S cutoff walls.	40mm
4	R.C.C. work in Raft, Abutment walls. Return walls, Pier etc.	40 mm
5	For any other items of construction, not covered in Item No 1 to 15	As specified in the drawings or in case, it is not specified in drawing, as directed by the Engineer –in- Charge.

For heavily reinforced concrete members, as in the case of ribs of main beams, maximum size of aggregate shall usually be restricted to 5mm less than the minimum lateral clear distance between the main bars or 5mm less than the minimum cover to the reinforcement, whichever is smaller, However, if required under special circumstances, the Engineer- in - charge may permit an aggregate of maximum size 25% more than this critical spacing / cover provided that proper vibration is ensured.

4.4 Coarse aggregates will be tested for their gradation, specific gravity, water absorption, impact and abrasion values, soundness, flakiness and elongation indices, deleterious constituents, petrographic analysis and alkali aggregate reactivity. The necessary test indicated in I.S.383-1970 and 456-1970 shall have to be carried out to ensure the acceptability of aggregate.

The following testing frequencies shall be maintained for the same source of coarse aggregate. The below test shall be carried out at the starting of the work, and at the change of source of materials or / and directed by the Engineer- in -charge as required.

Sr. No.	Particulars of Test	Frequency of test for coarse aggregate as per IS:2386-1963(Part-1 to 8),IS:383-1970
1	Gradation	Daily one Test
2	Specific Gravity & Water Absorption	2/season
3	Flakiness & Elongation Indices	2/season
4	Impact value	2/season
5	Abrasion value	2/season
6	Soundness	2/season
7	Alkali Reactivity	2/season
8	Petrographic examination	2/season

4.5 Coarse aggregate shall be either in single size or graded, in both cases the grading shall be within the following limits (IS 383):

IS Sieve Size (mm)	Percentage passing for single sized aggregates of Normal size.						Percentage passing for graded aggregates of Normal size.			
	63 Mm	40 Mm	20 mm	16 mm	12.5 mm	10 mm	40 mm	20 Mm	16 mm	12.5 mm
80	100	-	-	-	-	-	100	-	-	-
63	85-100	100	-	-	-	-	-	-	-	-

40	0-30	85-100	100	-	-	-	95-100	100	-	-
20	0-5	0-20	85-100	100	-	-	30-70	95-100	100	100
16	-	-	-	85-100	100	-	-	-	90-100	-
12.5	-	-	-	-	85-100	100	-	-	-	90-100
10	-	0-5	0-20	0-30	0-45	85-100	10-35	25-55	30-70	40-85
4.75	-	-	0-5	0-5	0-10	0-20	0-5	0-10	0-10	0-10
2.36	-	-	-	-	-	0-5	-	-	-	-

Note:- (a) In concrete for canal lining the percentage at 4.75 to 10mm fraction shall be reduced to about 5 to 10 percent of the total coarse aggregate.

(b) However above % may be varied by the exact gradation required to obtaining a dense concrete of specified strength and desired workability shall be decided by the Engineer-in-Charge.

(c) The grading between the limits specified above shall be such as shall produce a dense concrete of the specified proportion and consistency that will work readily into without segregation and without the use of excessive water content. The material passing through the screen shall be in gradation ranging from 40mm to 4.75 mm.

(d) Coarse aggregate of a maximum size of 20mm shall be used where the minimum clear distance between reinforcing bars is 25mm.

4.6 The percentage of deleterious substance in coarse aggregate shall not exceed the following values.

Material passing 150micron IS Sieve screen	1 Percent by weight
Shale	1 Percent by weight
Coal and lignite	1 Percent by weight
Soft fragments	3 Percent by weight
Other deleterious substances	1 Percent by weight
Clay lumps	1 Percent by weight

The sum of the percentage of all the deleterious substances shall however, not exceed 5 percent by weight.

4.7 The coarse aggregates shall satisfy abrasion, soundness, crushing and alkali aggregate reactivity tests and water absorption results as laid down in IS: 383-1970 and other relevant Indian Standard Specifications.

Sr.No.	Name of Test	Criteria as per IS 383, 2386	
		For other than Wearing surface	For Wearing surface
1	Impact value (max.)	45%	30%
2	Abrasion value (max.)	45%	30%
3	Soundness (after 5 Cycle)		
	(a) with Sodium Sulphate (max.)	12%	12%
	(b) with Magnesium Sulphate(max)	18%	18%
4	Flakiness Index (max.)	25%	15%
5	Elongation Index(max.)	15%	15%
6	Specific Gravity(max.)	3%	3%
7	Water Absorption in 24hrs (max.)	1%	1%

4.8 Frequency of test shall be as per table of para 4.4 / at change of source of coarse aggregate / one test for each 500 cum. of kapachi or part thereof.

4.9 Storage (Stock piles) :-

- a) Aggregate shall be stacked in such a way as to prevent the admixture of foreign materials such as soil, vegetable matter etc. The aggregates shall be kept free of dirt, rubbish papers, vegetable matter, bidi, etc. on the stock piles by the collection of people.
- b) Heaps of fine and coarse aggregates- procured separately they shall be stored in separate stockpiles, sufficiently away from each other to prevent the materials at the edge of the piles from getting intermixed. Each grade of materials shall be stacked 40mm to 20mm, 20mm to 10mm, & 10mm to 4.75mm.
- c) The aggregates shall be stockpiled adjacent to the mixer site so as to require minimum re-handling and labour when conveyed to the mixer.
- d) The aggregates shall be placed on a dry hard patch of ground if available otherwise a platform of planks or plain galvanized iron sheets or alternatively on a floor of dry bricks or a thin layer of lean concrete.
- e) To minimize moisture variations, the stockpile shall be spread over as large an area as possible but kept low and fairly uniform in height preferably 1.25 to 1.50 metre and the lowest layer of about 30 cm height shall be allowed to act as drainage layer and not used till the end.

4.10 **Grit:-** It shall consist of crushed or broken stone and shall be hard, strong, dense, durable, clean, proper gradation and free from skin or coating likely to prevent adhesion of concrete. The grit shall have no deleterious reaction with cement. Grit shall generally be cubical in shape and as far as possible flaky elongated pieces shall be avoided. It shall generally comply with the provision of I.S. 383. Grit shall be obtained from the best black trap or equivalent hard stone approved by Engineer-in-charge.

M-4 Gravel:-

- The Gravel for filter shall consist of clean, hard, dense, durable natural gravel of approved quality. Predominantly flaky aggregate shall not be used. The percentage of deleterious substances in any size of gravel shall not exceed the following values by weight.

Material, passing IS Sieve No.8	3%
Clay Lumps	1%
Soft fragments	2%
Shale	1%
Other deleterious substances	1%

- The sum of percentages of all the deleterious substances shall not exceed 5% by weight. The Gravel shall satisfy the abrasion, soundness and water absorption test and any other general requirement as laid down in IS 383.
- Gravel shall be stored at site in such a manner so as to prevent intrusion of foreign matter.

M - 5 WATER:-

- Water used for mixing of concrete and concrete shall be clean and free from injurious amounts of deleterious materials, objectionable quantity of silt and traces of oil and injurious alkalis, salts, organic materials and other deleterious materials, which will either weaken the concrete or cause efflorescence or attached the steel in R.C.C. It shall be free from elements which significantly effect hydration, reaction or other unsightly deposits on concrete or concrete surface. Water shall not be salty. Water should not be too acidic or too alkaline (if tested by litmus paper, rapid change of the litmus papers indicates dangerous amount of acid or alkali present).

The sample of water taken for testing shall represent the water proposed to be used for concreting, due account being paid to seasonal variation. The sample shall not receive any treatment before testing other than that

envisaged in the regular supply of water proposed for use in concrete. The sample shall be stored in a clean container previously rinsed out with similar water. Frequency of test shall be one test per working season / on change of source of water / as directed by Engineer- in -charge as required. Container for transport and storage of the water shall be reasonable clean.

In case of doubt regarding development of strength of concrete, the suitability of water for making concrete shall be ascertained by obtaining the compressive strength of concrete and initial setting time of cement, which is compared by making concrete with distilled water.

Potable water is generally considered satisfactory for mixing and curing. The pH value of water should be in between 6.0 to 8.0. The turbidity in the water shall not be exceed 2000 ppm and shall be preferably a low as possible. The water shall be odourless&colourless. Hard and bitter water shall not be used for curing of work.

Where water is found to contain any sugar or an excess of acid, alkali or salt, the Engineer-in-charge will refuse to permit its use. As a guidance, the following table represents the maximum permissible values.

	Permissible limit (maximum) (mg/l = ppm)
Organic	200 mg/l
Inorganic	3000 mg/l
Sulphate (as SO ₃)	400 mg/l
Chlorides (as CL)	2000 mg/l for concrete not containing embedded steel(P.C.C.) & 500 mg/l for reinforced concrete work. (R.C.C.)
Suspend matter	2000 mg/l
Fluoride	1 mg/l

M - 6 Reinforcement steel: -T.M.T. Fe-500D

- T.M.T. (Thermo Mechanically Twisted) Fe-500D bar reinforcement for R.C.C. work shall confirm to IS 1786- 2008 & I.S. 456-2000 or relevant standards.
- All the reinforcement shall be clean and free from dirt, paint, grease, etc. at the time of placing.
- The T.M.T. Fe-500D bar reinforcement shall be stored above ground surface on a suitable platform skide or other support to avoid distortion rest corrosion.
- When steel is supplied by Department, agency shall submit written report at least once in three month regarding category wise pieces of bars less than 2.5 m in length to engineer. If not acceptable, it shall be property of Agency to dispose off the same & piece longer than 2.5 mt steel surplus shall be given back to department at issued rate in Schedule- A.
- Steel shall be of density 7850 kg/m³.
- Steel, if brought by Agency, shown in Schedule-B shall be of approved quality and tested before stack at site as per direction of in charge Engineer at his own cost from laboratory.
- Agency shall be bound to get written drawing of reinforcement of steel of each diameter from Engineer-in-Charge.
- Frequency of steel testing (physical property) is as under as per IS:1786-1985
-

Nominal Size	Quantity	
	For casts/heats below 100 tones	For casts/heats of 100 tones or more
For All Sizes	2 Per Cast	3 per cast

- Testing: The steel bought by the contractor shall be tested by the department as per IS: 432-1982 (A) Mechanical (Physical Properties) of T.M.T. bars (IS 1786-1985)

Sr. No.	Mechanical property	Proportion (Limit)(d= Diameter of bar)	
		Fe-500D	Fe-500
1	Yield (proof) stress Mpa (minimum)	500	500
2	Ultimate tensile stress	10%-----565N/mm ²	8%----545N/mm ²

	Mpa (minimum) % more than the actual 0.2% proof stress, but not less than		
2	Elongation percentage (minimum)	16.0	12.0
4	Bend up to including 22mm dia. of bar & Over 22mm dia. of bar (should not show any transverse crack)	5d 7d	4d 5d
5	Re-bend up to inclu. 10mm dia. of bar & Over 10 mm dia. of bar	5d 7d	5d 7d

- T.M.T (Thermo Mechanically Twisted) steel shall be purchased from "SAIL" or other authorized dealer and free from dust and shall be measured correct up to 100 mm length.
- For the purpose of payment, the bars shall be measured correct upto 10 mm length and it is converted to the weight payable at the rate specified below:

Table: Cross Sectional Area and Mass per Metre (IS 1786)

Nominal size mm	Cross-Sectional Area mm ²	Mass per Metre Run kg
6 mm	28.3	0.222 Kg/Rmt
8 mm	50.3	0.395 Kg/Rmt
10 mm	78.6	0.617 Kg/Rmt
12 mm	113.1	0.888Kg/Rmt
16 mm	201.2	1.58Kg/Rmt
20mm	314.3	2.47 Kg/Rmt
25 mm	491.1	3.85Kg/Rmt
28 mm	615.8	4.83Kg/Rmt
32 mm	804.6	6.31 Kg/Rmt
36 mm	1018.3	7.99 Kg/Rmt
40mm	1257.2	9.86 Kg/Rmt

Cutting, Bending and Binding:-

- The Contractor shall be responsible for the accuracy of the cutting, bending and placing of the reinforcement. Reinforcement shall be inspected for compliance with the requirements as to grade, size, shape, length, splicing and locations after it has been placed. No concreting shall be started unless the reinforcement as placed in the work is finally checked, recorded and certified by the Engineer-in-Charge. All bending shall be as per the IS 456 and IS 2502 and only cold bending shall be allowed.
- Before the reinforcement is placed, the surface of the bars and the surfaces of any metal bar supports shall be cleaned of the rust, loose scale, dirt, grease and other objectionable foreign substances. After being placed, the reinforcing bars shall be maintained in a clean condition until they are completely embedded in the concrete.
- Reinforcing bars shall be accurately placed and secured in positions so that there will be clear distance of at least 25 mm between the bars and any adjacent embedded metal work and the bars and fabric shall not be displaced during the placing of concrete. The Contractor shall also ensure that there is no disturbance of the reinforcing bars in concrete that has already been placed.
- Wire for binding reinforcement shall be of soft and annealed mild steel and shall conform to IS 280. Binding wire shall have tensile strength of not less than 56 kg/mm². The wire shall have minimum diameter of 1 mm. Chairs, hangers, spacers and other supports for reinforcement may be of concrete, metal or other approved material. The

minimum allowable clearance between parallel round bars shall not be less than $1\frac{1}{2}$ times the diameter of the larger bars and for square bars shall not be less than twice the side dimensions of the larger bars or $1\frac{1}{2}$ times the maximum size of aggregate whichever is greater. Bars crossing each other, where required shall be secured by binding wire in such a manner that they do not slip over each other at the time of fixing and concreting. Wire used for binding reinforcement shall not be measured for payment.

Splicing:-

- Where it is necessary to splice reinforcement the splices shall be made by lapping, by welding or by mechanical means.
- Joints or splices in reinforcing bars shall generally be made at the locations where neither shear nor bending moment is maximum, but the Contractor would be permitted to make joints splices at other positions provided that such positions are approved by the Engineer-in-Charge. The splices shall be in staggered fashion so that in the adjacent bars it shall not be closer than 8m in horizontal bars or 6m in vertical measured between mid points of laps. Splicing of bars shall not be permitted for length of bar less than 8m in case of horizontal bars and 6m in vertical bars.
- If the Contractor proposes to use welded splices in reinforcing bars, the equipment, the material and all welding and testing procedures shall be subject to the approval of the Engineer-in-Charge. The contractor shall also carry out test welds as required by the Engineer-in-Charge.
- In case of welded splices for reinforcing bars conforming to IS 1786 welding shall be done in accordance with IS9417. For reinforcing bars conforming to IS 432 (part-I) welding shall be done in accordance with IS 2751. Electrodes for manual metal arc welding shall conform to IS 814 (Part-I) and IS 814 (Part-II). Mild steel filler rods for Oxy-acetylene welding shall conform to IS 1278 provided they are capable of giving a minimum butt weld tensile strength of 41 kg/mm².
- Reinforcing bars 25 mm in diameter and less may be either lapped or butt welded, whichever is the most practicable.
- Reinforcing bars 28 mm in diameter and large may be connected by butt welding provided that lapped splices are permitted when found to be more practicable than butt welding and the lapping does not encroach on cover limitation or hinder the concrete or reinforcement placing.
- Butt welding of reinforcing bars shall be performed under cover from weather and may be performed either by the gas pressure or Flash pressure welding process or by the electric arc methods. Following requirements shall apply to all welding of reinforcing bars including butt welding and the preparation of welded reinforcement.
- Welded pieces of reinforcement shall be tested at the rate of 0.5 % of total number of joints welded. Specimens shall be taken from the actual site of work. Strength of the weld provided shall be at least 25 % higher than the strength of bar.
- If the Contractor proposes to use mechanical couplings for reinforcing bars, he shall submit samples of the proposed coupling to the Engineer-in-Charge for approval not less than 60 days prior to their proposed use.

Care of Placed Reinforcement and Concrete:-

- Where reinforcement bars are bent aside at construction joints and afterwards bent back into their original position care shall be taken to ensure that at no time the radius of the bend is less than 6 times diameter (6D) for deformed bars and 4 times diameter (4D) for plain mild steel bars.
- Care shall also be taken, when bending such bars to ensure that the concrete around the bars is not damaged. Care shall also be taken to remove the silted materials around the bars.

Cover and cover Block:-

- The clear cover and cover to the reinforcement shall be provided as shown in the drawing. In case it is not shown, the clear cover and cover block to be ascertained from the Engineer-in-Charge.
- To maintain the correct clear cover, cement mortar block of size 5 cm x 5 cm and thickness according to the clear cover as of the strength of the concrete shall be fasted. The cover block shall have binding wires rigidly inserted in them to tie it with the reinforcement. The cover block shall be sufficiently cured to attain the required strength.

M-7 BRICK

- The bricks shall be made from soil of even texture and shall be uniformly well burnt in approved kiln. It shall be uniform in size and shape and shall be free from impurities like particles of stone, lime, kanker and other foreign materials visible to naked eye on the surface or as seen on the fractured surface of brick obtained by breaking the sample. The brick shall give a ringing sound when struck and its texture shall show a homogenous, clean and dense structure and sharp edges.
- Brick shall be regular and uniform in size, shape and colour and uniformly well burnt throughout. The bricks shall be table / hand moulded and shall have plain rectangular faces with parallel sides and sharp, straight and right angle edges. The brick shall be free from cracks or any other types of flaws. They shall have a frog of 10 mm. depth on one of the main flat faces.
- The bricks shall be free from cinder, lump of lime, lamination, cracks, air holes, soluble salts causing effloresce or any other defect which may in any way impair the strength, appearance, durability or usefulness for the purpose intended.
- The bricks shall not break when dropped on its flat face in a saturated condition from a height of 60 cm. on other bricks.
- The size of the bricks shall be unless otherwise permitted by the Engineer-In-Charge depending on locally available bricks. Bricks of only one size shall be used in one work unless specially permitted by the Engineer-In-Charge. When bricks in sizes other than required for the works are permitted for use, the measurements to be paid shall be limited to dimensions with use of bricks specified above or their relevant dimensions for British size bricks whichever is less.
-
- The following tolerance limits are permissible in the standard size on any particular work.

•	Length	+ 4 mm.
•	Breadth	+ 2 mm.
•	Depth	+ 2 mm
- The bricks shall be true to shape and size and shall be burnt in kiln. The bricks shall have clear ringing sound when struck, should be of a uniform deep red or copper colour and should not absorb water more than 20% of the dry weight. The compressive strength of bricks when wet should be 35 kg per cm² minimum when tested as per IS:1077-1986 and the bricks shall not show decrease in strength by more than 24% when soaked in water thoroughly. One sample of brick shall be tested for every 25,000 bricks at the cost of the contractor. While sending the sample, it is necessary to send 10 bricks for determining the average crushing strength. The laboratory charges shall be borne by the contractor. The contractor shall make necessary arrangements for conveying the bricks to the laboratory. The bricks shall have a fine compacted texture with rectangular faces with parallel sides and straight edges and rectangular corners. This should conform to the standard brick vide Indian standard code 1077-1992. All rejected bricks and brickbats shall be stacked separately and disposed off within the time fixed by the Engineer-In-Charge. Only those whole bricks which conform to the specifications shall be accepted for the purpose of work. Later on any defect which may come to the notice of the NWRWS &K later on in the work executed and paid so far in the running bill, the contractor is liable to reimburse to the NWRWS & K.
- Ten samples for each supply may be tested for crushing strength and average crushing strength will be the guiding factor for rejection or otherwise. Bricks which do not comply with the test results and specifications shall be rejected and removed from the site of the work within 24 hours by the contractor at his own cost. The testing shall also be done if the engineer-In-Charge feels that the bricks are of inferior quality and doubtful in strength.
- The manufacturing process shall in general conform to IS : 2167-1971. Sampling and testing of the bricks, whenever required shall be done in accordance with IS:3495-1992 and IS - 5454 – 1978. the collection of samples and transporting up-to laboratory charges have to be borne by the contractor.

M-8 Ceramic Tiles

- Type: Glazed Ceramic Tile
- Thickness: **6 mm nominal**
- Water Absorption: $\leq 10\%$ (or as per manufacturer's specification)
- Surface Finish: Glossy / Matt (as specified)
- Size: As specified in drawings/BOQ
- Shade and Colour: As approved by Engineer/Architect
- Edge Type: Rectified / Non-rectified as specified
- Abrasion Resistance: As per applicable IS standards
- Chemical Resistance: As per manufacturer's test certificate

M-9 Kota Stone

- Material: Natural Kota Stone
- Thickness: **25 mm nominal**
- Type: Machine-cut / Mirror-polished / Honed finish (as specified)
- Colour: Blue, Brown or approved shade
- Size: As specified in drawings/BOQ
- Surface Finish: Smooth, even and free from cracks, cavities, laminations and other defects
- Water Absorption: As per relevant standards for natural stone
- Compressive Strength: As per applicable stone testing requirements
- Edges: Straight, true and machine dressed
- Material: Natural Kota Stone
- Thickness: **25 mm nominal**
- Type: Machine-cut / Mirror-polished / Honed finish (as specified)
- Colour: Blue, Brown or approved shade
- Size: As specified in drawings/BOQ
- Surface Finish: Smooth, even and free from cracks, cavities, laminations and other defects
- Water Absorption: As per relevant standards for natural stone
- Compressive Strength: As per applicable stone testing requirements
- Edges: Straight, true and machine dressed

TECHNICAL SPECIFICATION

CONTENT

SECTION	PARTICULARS
1	CARE AND DIVERSION OF CANAL/RIVER INCLUDING DEWATERING
2	EXCAVATION
3	PLAIN AND REINFORCED CONCRETE

1. CARE AND DIVERSION OF CANAL/RIVER INCLUDING DEWATERING

GENERAL:

The work in general shall be carried out in workmen like manner as well as the correct section batter and gradient as per drawing and to the entire satisfaction of the Engineer-in-charge or his authorized representative. The site shall be cleared off all rubbish materials and heaps etc. and shall be handed over in neat and good condition after completion of work. The work shall be carried out as per the specification written specially for the items of work and in case if dispute in the specifications the work shall be carried out as per specification given in P.W.D. Hand Book Volume no.1 and 2 and or as per relevant latest I.S.I, standard. The contractor or his authorized agent shall sign the working cross section as well as field books etc. in token of acceptance prior to starting the work. No dispute in regard of acceptance of levels shall be entertained at later stages. During the course of execution of work the contractor shall have to remove the silting or accumulation of such materials that might have accumulated due to any reason. No extra payment shall be made to the contractor on this account.

1. CARE AND DIVERSION OF CANAL/RIVER INCLUDING DEWATERING GENERAL:

- 1.1 The contractor shall arrange for **land** for construct and maintain necessary proposed diversion by his own cost for temporary diversion up to completion of Barrage construction work. No claim shall be entertained on this account.
- 1.2 The contractor shall design, construct and maintain necessary diversion channel and other temporary diversions and protective works and make provisions for diversion of the canal flows and furnish, maintain and operate all necessary pumping and draining plants, for dewatering the various part of the works, and maintaining the foundations, sump drainage and grouting system and other parts of the work as free from water as required for approved construction operations.
- 1.3 The area shall also be maintained free of water after any part of the work is completed for inspection safety and installation by Government or any other reasons determined as necessary by the Engineer-in-charge. The contractor shall pump all water from the site of the weir and appurtenant works and shall keep the foundations free of water while excavation, grouting and concreting on placing masonry or as otherwise required for completing the work and shall be entitled to no claims or damages on account of or by reasons of any amount of water leaking through under on around the coffer dam, diversion channel and other diversion etc. During the monsoon season, the work in the CANAL/RIVER portion shall be closed and the floods will be passed over to the partly constructed masonry dam only and under no circumstances such flow will not flank the other part of the work.
The gorge portion is to be sealed by the earthen dam and the decision regarding sealing of gorge portion shall be made as per the phases of the work in consultation with Engineer-in-charge. The contractor should plan the work accordingly in consultation with the department.
- 1.4 The care and diversion work shall have to be reckoned and provided for any Eventualities like unseasonal floods etc.
- 1.5 Preliminary thought has been given to the diversion works and it is visualized that diversion channel together with an upstream and downstream coffer dam may be required to divert the post monsoon flow. The diversion is likely to be required for a work period of depending upon the progress of work achieved. The above Scheme is purely for general guidance only and any inference and conclusion reached there by the tendered are at his risk and responsibility.
- 1.6 The contractor will be free to suggest alternative arrangement which is considered suitable and safe and not likely to obstruct or delay the progress which may be approved at the description of the Engineer-in-charge. The contractor shall not be entitled to any extra claim on this account.
- 1.7 The contractor shall fully satisfy himself about the quantum of flow to be tackled and about the adequacy, efficiency, and safety of the care and diversion arrangement to be adopted by him.
- 1.8 The Engineer shall however have the right to direct to enlarge or strengthen the arrangements if he so consider in the interest of work. All such additions, modification etc. directed by the Engineer shall be promptly executed by the contractor and the same shall be deemed to be the part of the care and diversion arrangement and included in the agreed lump sum amount accepted for the item.
- 1.9 In case of the diversion arrangements getting washed out of largely damaged in pre-monsoon or post monsoon shown, the same shall be immediately repaired and redone by the contractor to its original same condition at his own cost. Necessary pumping of water, removal of site etc. shall also be executed promptly so as to cause the least delay in the progress of work. No claim shall be entertained on this account.
- 1.10 The contractor shall construct the diversion arrangements in such a way that no damage would be caused

to the permanent or temporary structure or other running works by dept or other agency.

If such damages are caused due to the flood water either during the monsoon or in the post monsoon period the same shall be made good at the contractor's cost.

- 1.11 The contractor shall construct and maintain the diversion channel, furnish install and operate all necessary pumping and other requirement, required for the dewatering of the dam spillway and stilling basin foundation galleries, shafts and other parts of the work and keep them free from water as required.
The contractor shall provide and maintain temporary bulk heads to protect shaft conduit for direct channel and other openings in the structure from possible flooding from any reason whatsoever, the cost of which shall be deemed to have been include under the item of care and diversion. The item and method of closure of the diversion channel and any other temporary openings shall be subject to the approval of the Engineer.
- 1.12 After having served their purpose the coffer dam, temporary bulk heads, etc. shall be removed or be burnt as directed by the Engineer from time to time. The removal of the temporary works, bulk heads, etc shall be so arranged as not to damage the permanent works and any damage resulting form these operations shall be made good by the contractor to the satisfaction of the Engineer. Any reasonable in flow of water from the works in other reaches shall be diverted by the contractor as part and partial of the item without any extra claim.
- 1.13 This item also include maintaining pumping out and keeping the galleries dry from all water from the gallery, sump accumulated due to seepage, drilling or grouting or any other cause during the construction period and till all the works are finally handed over to the Government.

2.0 Disposal of Excavated Stuff :

- 2.1 The material available from the excavation of diversion channel shall be disposed as under:
- 2.2 Rubble considered as useful by Engineer-in-charge for the work of masonry, or concrete of the weir and appurtant works shall be sorted out, carted and stacked at locations indicated by the Engineer and shall not be allowed to be used for coffer dam. The remaining materials of excavation excluding above can be used in the construction of coffer dam, free of charges, such of the material found in excess over the required in the construction of coffer dams, if found suitable in the opinion of the Engineer -in-charge shall be transported and laid in the permanent structure of dam and appurtant works. Payment for depositing of suitable material stated for use in the permanent structures of dam and appurtant works shall be carried under suitable items of depositions. No separate payment shall however be made for excavation work covered in the items of care and diversion.
- 2.3 The materials obtained from the dismantling of coffer dam shall be suitable disposed of as under.
The materials found suitable to the Engineer-in-charge shall be carted and deposited in the structure of dam and appurtant works which shall be paid under relevant item of deposition of excavated material.
The material not found useful shall be disposed of in downstream reach of CANAL/RIVER or such location as approved and directed by the Engineer-in-charge under no circumstances such materials shall be allowed to dumped across the CANAL/RIVER so as to obstruct the flow of the CANAL/RIVER or endanger any permanent structures or encroachment to the other works.

3.0 DEWATERING AND DIVERSION AS AND WHERE NEEDED:

The rates of the items in this tender also include arrangements for the diversion & Dewatering of water during construction of all parts of Barrage in the fair weather as well as in the monsoon during the entire period of construction. No payment shall be made for any part of earth work, concrete work or any other work or materials washed away or damaged during the monsoon or other period and it will have to make good by the contractor at his own expenses. It is the responsibility of the contractor to make good by the contractor at his own expenses. It is the responsibility of the contractor to make good or repair any Government property, material or work damaged during construction period. No extra payment shall be paid for dewatering in any item of work under this contract.

The rates are also inclusive of all labour, materials and plant necessary for the purpose of dewatering and diversion mentioned therein.

Executive Engineer
Sujlam Suflam Division No.2
Visnagar

2. CLEARING SITE, EXCAVATION FOR FOUNDATION.

- The item shall include excavation in wet, dry or slushy condition and removal of excavated materials and their stacking and disposal in a manner as per instructions as directed.

1.0 GENERAL REQUIREMENT:

- The contractor shall provide materials and labour necessary for execution and completion of the work in accordance with drawing and specifications.
- The contractor shall provide necessary protective measures for labour, materials and equipment to ensure safety against risk and accident. The contractor shall be liable to pay compensation for injury to life and damage to property if any caused due to any operation connected with the items.
- The contractor shall hand over the site of work in neat and tidy condition and shall remove all wastage arising from construction.

2.0 CLEARING THE SITE:

- The contractor shall clear the entire area required for the structure canal and shall remove all the traces, stumps, roots, bush wood, rubbish of all kinds, loose stones and all other objectionable materials. The contractor shall dispose of useless materials by burning or as ordered by the Engineer-in-Charge and convey the remaining materials and stack property within the lead specified in the items. The Government shall remain owner of all the materials so obtained. The contractor shall be responsible for safe guarding the area where debris is to be burnt.

3.0 SETTING OUT:

- The contractor shall provide necessary materials and labour and make all necessary arrangements to get line out from the Engineer-in-charge or his authorized representative. It shall be the responsibility of the contractor to install substance reference points, bench marks etc. at his own cost and maintain them during the construction period.

4.0 EXCAVATION:

4.1 CLASSIFICATIONS:

- **EXCAVATION IN OVERBURDEN:** This shall include all excavation in strata other than soft and hard rocks such as soil, clay sand soft murrum kankar, hard murrum and boulders or mixture of above strata through boring rig for diaphragm. Hard murrum and boulders shall include all kinds of disintegrated rock or shale or indurated sand or conglomerate interspersed with boulders less than 0.70 cubic meter and larger than 0.03 cubic mt. which do not need blasting and can be removed by pick bar and shovel.
- The contractor shall perform all Excavation in accordance with line, levels, width and depth is shown on the plan if the Execution of competent authority decided to take the foundation lower than the foundation level shown on the plan the same will have to be done by the contractor at the same rate quoted by him for the item if the last depth slab does not change and unless there is a change in strata for which rates as per corresponding item shall be paid if the excavation is to be carried out beyond the last depth slab of the item for which rate is quoted in tender, the rate for the year in which tender was accepted. The percentage above or below of the accepted tender shall also be applicable to these rates. The contractor shall have to present a clean, even and dry surface for the foundation to the satisfaction of the Engineer-in-charge for passing.

5.0 EXCESS EXCAVATION:

- The excavation beyond the lines and levels specified on plan shall not be measured and paid for unless it is ordered by the Engineer-in-charge in writing. If excess excavation is required to be filled it shall be filled by the contractor with concrete on masonry of the same type as used of foundation at his cost and risk.

6.0 DISPOSAL OF EXCAVATED MATERIALS:

- The contractor shall not sell or otherwise use or remove except for the purpose of this contract, the sand, clay, ballast, earth work or other sub-stances or materials which may be obtained from any excavation made for the purpose of this contract produce upon the site at time of delivery of the possession of the land, but all such substances, materials and produce shall be property of the Government and shall be disposed off in the manner and place shown in the drawings or as and where the Engineer may direct with all lead & lifts. The contractor shall however, use such of the excavated useful materials or stones, obtained from excavations, in masonry as well as in banking which the Engineer may direct and approve. The selection, sorting and stacking shall be done according to the directions of the Engineer-in charge free of charge by the contractor. The sorting of useful excavated materials as above must be inclusive in quoted rates.
- After sorting of useful materials is done, the rest of the materials which is declared not useful shall be disposed off in areas as directed with all leads and lifts.
- No materials shall be disposed where it will detract from the appearance or interfere with the accessibility of the complete structures. Waste shall be leveled and trimmed to reasonable regular lines and all the work shall be done with reasonable neatness, excavated materials shall not be carelessly thrown over the entire premises of work, but shall be deposited directly in permanent position, consistent with proper execution of work. The directives of Engineer-in-charge shall be binding in respect of location of disposing the waste materials.
- If for the convenience of the contractor and at the express permission of the Engineer part of whole of useful materials stack supplied at site is washed away to floods or any other reasons, the contractor shall make good for the credit which the Government could have drive, from the use of this material had the material been not washed away.

7.0 SORTING OF EXCAVATED MATERIALS:

- The excavated materials shall be properly sorted out according to classification of materials useful for various works.

8.0 STACKING OF EXCAVATED MATERIALS:

- The useful materials not used directly in the work shall be conveyed and stacked in place approved by the Engineer - in - charge according to the nature of materials in separate and regular stock or in uniform slacks as directed the excavated materials not required for back filling or for other use will be stacked in spoil banks in regular shape with a suitable slope or spread in other use will be stacked in spoil banks in regular shape with a suitable slope or spread in other approved location or as directed by the Engineer within the lead and lift specified in the items.

9.0 PAYLINE:

- The pay line shall slopping as 1:1 (H:V) in over burden and at 1/2 :1 (H:V) in soft rock and 1/4:1 (H:V) in hard rock.
- The basis for the width of excavation shall be foundation levels as marked into drawing (herein after termed as proposed foundation level)
- When the actual depth of foundation considered in same with the proposed foundation level, the pay line shall be the line starting from the limiting lines of structure of foundation level and slopping at the rates specified above.
- When the actual depth of foundation is taken lower than proposed foundation level, the pay line shall be the line starting from the limiting lines of structure at actual foundation level and sloping at the rates specified above.
- When the actual depth of foundation is taken above the proposed foundation level, the pay line shall be the line confirmed to appropriate slopes excavated on the basis of width required for proposed foundation levels, but ending at the level of actual foundation.
- No payment shall be made for any work done beyond the specified pay line. Not with standing the standards given above the contractor shall however be permitted to excavated at flatter slopes in interest of stability and safety of work without extra cost. The contractor shall take care to see that the slopes

excavated are stable and accident or slip does not occur.

- **UNDER CUTS AND OVER CUTS:** In the event of actual line of excavation being steeper than that specified under pay line above, payment shall be made for the actual line of excavation only. Over cut beyond specified pay line of excavation carried out by the contractor for any purpose or reasons unless at the specified direction of Engineer-in-charge shall be at expenses of contractor. Refilling required of such unauthorized excavation with concrete, masonry or other suitable materials, as may be directed by the Engineer in charge shall also be done by the contractor at his own expenses.

10.0 SLIPS: GOVERNMENT NOT RESPONSIBLE

- Adequate steps shall be taken to prevent slips. However, if slip occur, the slopes should be flattened or supported or other measures as required shall be taken for stabilizing in 3 slopes. The contractor shall clear the foundation trenches of slipped materials his own cost contractor shall be held responsible and liable to pay all claims under worker's compensation act.

11.0 Preparation of foundation:

- The bottom of the foundation shall be dressed perfectly in level or benched as directed and all loose and soft materials shall be removed before laying of foundation concrete.
- Before any concrete or masonry is laid the foundation shall well-watered and thoroughly rammed where the foundation is in strata other than rock, in case of rock, it shall be thoroughly cleared and wetted. Before laying the foundation concrete the contractor shall get the foundation approved from the Executive Engineer.

12.0 SILTING OF FOUNDATION PITS DUE TO FLOODS:

- If the foundation trenches get silted up due to intervening floods or other reasons, the contractor shall restores the foundations to the required dimension at his own cost.

13.0 DEWATERING AND DIVERSION:

- Surface or subsoil water met with during excavation for structure shall be diverted to nearby drain/nalla by cutting an open Canal within the canal section to be excavated. When the drain/nalla bed is higher than the subsoil water level met with, the bailing out by suitable means of pumping shall be resorted to for dewatering in sub soil water below the drain/nalla bed level. In case where topography of the areas is such that surface water including accumulation of rain water during monsoon period is not possible to drain off by excavating the Drain/ Canal, the bailing out by suitable means of pumping shall be resorted to and no separate payment will be made for dewatering by pumping and no distinction shall be made as to whether the material being excavated is dry moist, wet or slushy.
- The ground water table is subject to variation during the construction period and may vary for full depth of cutting. The Contractor shall have to carry out the excavation work in such conditions during the construction period. The rate for related items shall be inclusive of this type of varied conditions of the ground water table and no extra payment shall be made for fluctuations and variations in the ground water conditions.
- **For dewatering and Diversion work contractor shall apply Care and Diversion Section.**

Executive Engineer
Sujlam Suflam Division No.2 Visnagar

3. PLAIN AND REINFORCED CONCRETE

3.1 Scope of work:

- This section covers specifications for Item Nos:- 8,9
- This specifications cover the requirement of plain and reinforced concrete for use in structures, such as PCC in foundation, CC work of Structure etc. The work covered under this section consists of furnishing all materials including formwork, equipment, labour for the manufacture, transport, placing, vibrating, finishing and curing of the concrete for the structures and performing all the operations necessary and ancillary there to, including dewatering and desilting as required.

3.2 Description of items:

- Providing and laying in position CC 1:3:6, CC 1:2:4

3.3 Applicable Publications:

- All items of concrete works, concrete, its constituents, methods & procedures of manufacture shall conform to the latest Indian Standard Specifications & other technical publications listed below unless otherwise specified.

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3.3.1 Indian Standards

1	IS :303	Specification for plywood for general purposes (Second revision) (Amendment No.1 to4)
2	IS:432	Specification for mild steel and medium (Part-1-1982) tensile steel bars and hard drawn steel wire for concrete reinforcement(3rd revision)
3	IS-516	Method of test for strength of concrete (Amendment No.1)
4	IS :883	Code of practice for design of structural timber in building (third revision)
5.	IS:2505	General requirements for concrete vibrators: immersion type.
6	IS :2506	General requirements for screed board concrete vibrators.
7	IS:3370	Code of practice for concrete structures for the storage of liquids (part I to IV)
8	IS :3535	Method of sampling hydraulic cement (First revision)
9	IS :3558	Code of practice for use of immersion vibrators for consolidating concrete.
10	IS :4656	Specification for form vibrators for concrete.
11	IS :4925	Specification for concrete batching & mixing plant.
12	IS :4990	Specification for plywood for concrete shuttering work (First revision (Amendment No.1)
13	IS :5242	Method of taste for determining shear strength of metal (1st revision).
14	IS :12269	Specification for 53 grade ordinary Portland cement
15	IS :8989	Safety code for erection of concrete frame structures.
16	IS :9077	Code of practice for corrosion protection of steel reinforcement in RB and RCC construction .

17	IS:12269	Specification for 53 grade ordinary Portland cement.
18	SP:16(S & T)	Design aids for reinforced concrete to IS : 456.

Only latest version of I.S. shall be followed. In addition to above relevant Indian standards referred to section 3 shall also apply. Other Specifications are as mentioned in Item Wise Technical Specification.

Schedule of Testing for Materials

Sr. No.	Particulars of Materials	Parameter of Testing	
		Qty	No of Tests
1	Cement	Up to 50 MT	1
		51 to 100 MT	2
		101 to 200 MT	3
		201 to 300 MT	4
		301 to 500 MT	5
		501 to 1000 MT	6
2	Sand/Fine Aggregate	Refer Technical Specification for Materials = M-2	
3	Coarse Aggregate	Refer Technical Specification for Materials = M-3	
4	Water	For each source	1
5	Steel...under 10 mm dia.	Refer Technical Specification for Materials = M-6	
	Steel...10 to 16 mm dia.		
	Steel...over 16 mm dia.		
6	Cement Concrete (For Compressive Strength)	1 to 5	1
		6 to 15	2
		16 to 30	3
		31 to 50	4
		51 and above	4 plus One additional sample for each addl. 50cum. or part thereof.

Item Wise Technical Specification

Item No.1 : Dismantling masonry in lime or cement & stacking of useful and un-useful material from the dismantled materials as directed under detailed specification etc.
comp.(a) Brick

- [1] The item shall include dismantling cement or lime mortar brick masonry with plaster include stacking of dismantled material outside.
- [2] The brick masonry work should be dismantled as per instruction Engineer-in-charge. During dismantling care should be taken to see that no other area of work should be damage.
- [3] The material obtained by dismantling shall be stacked out side as per instruction of Engineer-in-charge.
- [4] The useful materials shall be stacked out side separately as per instruction of Engineer-in-charge.
- [5] The measurement shall be on **cubic meter basis** of existing VRB brick masonry work as directed by Engineer-in-charge.

Item No.2 : Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats architraves, holdfasts and other attachment etc. complete and stacking them within all lead and lift.(i) Not exceeding 3 Sq.M. in area.

- **Scope**

This item covers complete dismantling and removal of existing doors, windows, ventilators including shutters, chowkhats (frames), architraves, holdfasts, hinges, fittings, fasteners, and all connected fixtures of timber or steel construction from masonry or RCC openings.

- **Materials**

No new materials required. Salvaged materials shall be handled as per classification (reusable/scrap).

- **Execution**

Dismantling shall be carried out in a systematic manner using appropriate hand tools to prevent damage to adjoining masonry, RCC members, plaster surfaces, and finishes. Holdfasts embedded in masonry shall be exposed by carefully chiseling surrounding mortar and cut using hacksaw or cutting tools. Frames shall be loosened uniformly to avoid cracking of masonry edges. Shutters shall be detached by removing hinges and fittings. All nails, screws, and fixtures shall be extracted. Openings shall be left clean and true. Salvaged materials shall be stacked neatly at designated locations within specified lead and lift, segregated based on usability. Unserviceable debris shall be removed from site and disposed properly. Safety measures such as barricading, PPE, and dust control shall be maintained throughout the operation. as directed by Engineer-in-charge.

Measurement

Measurement and payment shall be on Each basis.

Item No.3: Providing and fixing 1 Metre high fencing with 1.3 Metre long M.S. Angle posts 40mm x 40 mm x6 mm (Y shape) and oil painting 3 coats fixed at 2.5 Mt,C/c. with Four Horizontan lines and two diagonals of galvanised steel barbed wire weighting 9.38 Kg. per 100 Metre, with 600 mm dia concertine wire on top and fixed to posts including fixing etc complete.

- **Scope**

Providing and fixing barbed wire fencing 1.00 m high with 1.30 m long M.S. angle posts of size 40 mm × 40 mm × 6 mm (Y-type), including erecting and aligning posts at 2.50 m centre-to-centre spacing or as specified by engineer in charge, and applying three coats of approved oil paint over a coat of primer as directed by the Engineer-in-Charge.

- **WORKMANSHIP :**

The fencing shall consist of four horizontal and two diagonal strands of galvanized steel barbed wire conforming to relevant IS specifications and weighing 9.38 kg per 100 m, securely fastened to the posts with binding wire, clips, staples, or other approved fixtures as directed by the Engineer-in-Charge.

The item shall also include providing and fixing 600 mm diameter galvanized concertina coil wire at the top of the fencing, complete with all accessories, clamps, ties, straining arrangements, labour, tools and plant, transportation, loading, unloading, and all incidental charges necessary to complete the work as directed by the Engineer-in-Charge.

- **Mode of Measurement:**

The length of completed fencing shall be measured in running metres along the centre line of the fence. The rate shall include the cost of all materials, labour, fixing posts, painting, barbed wire, concertina wire, fixing accessories, and all operations necessary for complete execution of the work. No separate payment shall be made for wastage, overlaps, cutting, tying, or incidental works required for completion.

Item No.4: Providing and fixing pre-cast Rubber Dye / steel Dyeinter locking concrete block 60mm thick with grade of concrete M300 pneumatic compressed / vibrated mechanically and as per approved design confirming to IS 15658 : 2006 including 35 mm Sand layer for leveling and filling the joint with sand in roper line and level as per guidelines of IRC : SP 63-2018 etc. Complete.

- **Scope**

Providing and laying precast concrete interlocking paver blocks of 60 mm thickness, manufactured by rubber mould/die or steel mould/die, made from M-30 grade concrete, machine pressed, pneumatically compacted and vibrated, conforming to IS 15658:2006 and of approved shape, size, colour, and pattern.

- **WORKMANSHIP :**

The work shall include preparation of the surface, laying a **35 mm thick bed of coarse sand** for levelling, laying the paver blocks true to line, grade, and cross-fall, cutting blocks where required, compacting the laid surface with suitable plate compactor, and filling joints with fine sand. The paver blocks shall be laid in proper line and level as per approved drawings and in accordance with the provisions of **IRC: SP:63-2018**, including all labour, materials, tools and plants, handling, transportation, and all incidental charges necessary to complete the work as directed by the Engineer-in-Charge.

- **Mode of Measurement:**

The finished surface area of interlocking concrete block pavement shall be measured in **square metres**. The rate shall include the cost of paver blocks, sand bedding layer, joint filling sand, laying, compaction, cutting, wastage, labour, tools and plants, and all operations necessary for completion of the work. No extra payment shall be made for cutting of blocks, edge adjustments, joint filling, or compaction.

Item No.5: Providing and fixing pre-cast kerb block M250 Grade including levelling and filling the joint with Cement mortar CM 1:3 with line and level as per guidelines.

- **Scope**

Providing and fixing precast cement concrete kerb blocks of approved size and shape, manufactured from **M-25 grade concrete**, including necessary excavation, preparation of bed, laying, alignment, and fixing true to line, level, grade, and curvature as shown in the drawings or as directed by the Engineer-in-Charge.

- **WORKMANSHIP :**

The work shall include jointing the kerb blocks with **cement mortar 1:3 (1 cement : 3 fine sand)**, filling and finishing joints, curing, and making good all disturbed surfaces. The item shall also include all materials, labour, tools and plants, handling, loading, unloading, transportation, and all incidental charges required to complete the work in accordance with approved specifications and directions of the Engineer-in-Charge.

- **Mode of Measurement:**

The completed length of kerb blocks fixed in position shall be measured in **running metres** along the centre line of the kerb. The rate shall include the cost of precast M-25 concrete kerb blocks, excavation, bed preparation, cement mortar jointing, alignment, levelling, curing, labour, tools and plants, transportation, and all incidental works necessary for satisfactory completion of the item as directed by Engineer In-charge. No separate payment shall be made for cutting, fitting, joint filling, or wastage.

Item No.6: Excavation in all sorts of soil (including wet and slushy condition of soil) with yellow, sandy, gravelly soil including soft murrum & H.M. including sorting & stacking and depositing the excavated stuff in uniform layers as and where directed upto lead of 30 m and lift as shown below including clearing the site etc. compute (including dewatering)

(B) For foundation trenches of C.D. work (a) 0 to 3 Mt. depth.

Item shall include in all kinds of hard and soft soils, such as clay, silt, gravelly, sandy, soft & hard murrum, stiff clay, kankar or other materials which can be excavated by pick and shovel, loose stones less than 0.03 cm. which do not require breaking shall be treated as soils.

The site be cleared of all obstruction loose stones and materials rubbish of all kind and levelled properly. Contractor shall provide pegs, nails string labourers skilled or unskilled and necessary equipment required for line out.

All foundation pits and trenches shall be taken down to such steps as shown in drawing or as directed by the Engineer-in-charge. The bottom of the foundation trenches shall be dressed perfectly, levelled & water removed before foundation concrete is laid. The site of trenches shall be vertical. Before any filling in foundation with concrete commenced the foundation shall got approved.

Such excavation below design foundation level shall be filled in with foundation concrete without any extra payment.

The rates include site clearance such as clearing of shrubs, wood under growth & small trees and providing necessary shoring and strutting for maintaining the profile of foundation true to the section. If required the contractor shall also take care to see that the steps of excavation are stable, so that no accident or slip would occurs. However, if the contractor carries out the excavation of steps for the conveyances and safety with the permission of Engineer-in- Charge. No extra payment shall be made for such extra excavation. The extra excavation thus done on site shall have to be refilled with excavated materials as directed by the Engineer in change for which no extra payment shall be made.

The foundation pits and trenches, after completion of masonry up to ground level, shall be back filled to the original surface with excavated materials well-watered and rammed in the manner as directed by the engineer-in-charge. The excavated stuff shall be laid within distance of 50 m. from the foundation edge leaving 2m space from the edge of foundation excavation. However, there will be no objection in laying the excavated materials if suitable in plinth, if adjoining block in layers as required the masonry work is completed up to plinth level and foundation trenches are back filled. However, if the material is used as specified above the plinth filling the measurement of such materials are as under item. The line out pegs fixed for foundation excavation shall be maintained till the foundation concreted & plinth masonry area laid.

Mode of Measurement and Payment:

No deduction will be made for materials being excavated are dry, moist or not. Measurement shall be taken by a steel tape and shall be paid on **C. M. basis** of excavation done and full rates for the work done shall be payable only after the items completed in all respect including back filling the pits or trenches with excavated stuff. Till the back filling is completed, payment shall be made at a part rate equal to 90% of the tendered rate.

Item No.7: Earth work in embankment from borrow pits in all sorts of soil and soft murrum or other suitable strata as directed including breaking the clods and dressing to the design sections including cutting the proud section with lead as under and all lift including site clearing etc. complete. (c) 200 to 1000 Mt.

- 1) The item shall include the work of site clearance without any extra payment as described under standard specification.
- (2) The item shall include embankment in all sort of soils
- (3) The contractor shall obtain materials outside the borrow pits from nearby Govt. or panchayat land if available. However, department is not responsible if no such area is made available to the contractor and in that case contractor will have to make his own arrangement to get borrow area for borrowing earth of approved quality when by making temporary arrangement with the private

land owners within 1000 mts. in such cases, the contractor shall make his own arrangement and be responsible for payment of rents compensation etc. for the land so used and he shall not be entitling for any extra claim. The department shall remain identified regarding any claim, that may be made by private owners in this respect. In case contractor shall bring the earth outside 1000 mt. lead. The department shall not be responsible for any extra payment or claim. The contractor shall be fully responsible for the procurement of earth without any extra claim.

- (4) This includes embankment for drain section as per drawing.
- (5) The work shall be executed as per drawing of drain section.
- (6) The payment shall be made on Cross Section and level (Initial & Final) basis in cubic meter.

The rate of procurement includes clearing, jungles, dog billing, fixing profiles, erecting necessary pillars of stones for bench marks, for leveling purpose, excavating earth from borrow pits breaking clods, conveying and spreading earth up to 1000 mt. lead and all lift, finishing the entire embankment to the proper profile camber, grade and slopes. The rate also includes all labour, materials tools, equipment and incidentals necessary to complete the work to the specifications.

Mode of Measurement and Payment:

Shall be paid on **C. M. basis** as per Completed work.

Item No.8: Providing and laying foundation concrete of proportion as under by using cement, sand and machine crushed course aggregate laid in situ including necessary temping, smooth finishing, watering and curing as directed with all leads and lifts etc complete. (a) PCC 1:3:6

Cement sand and crushed metal and water shall confirm to the relevant specification of the materials. The proportion of cement concrete shall be one part of cement, two parts of sand and four part of crushed metal by volume.

Mixing shall be done in a mechanical mixture water cement ration and slump shall be as direction of Engineer in Charge, waterproofing agent like shop water shall be added while preparing the mixture without any extra cost.

The centering and formwork shall be including all sorts of shuttering, poles, stubs and plain wooden or iron plate sheets. It shall be constructed as to remain rigid during and after placing of concrete. The joint shall be tight enough to prevent leakage of cement slurry. The centering shall be got checked and approved by the Engineer in charge before placing of concrete is commenced. The centering surface shall be cleaned and oil with non-straining oil such as linseed oil. The dismantling of centering shall be done after getting written permission of the Engineer in charge and shall be carried out carefully without damaging concrete and without causing undue stocks or vibration to the works.

The contractor shall make necessary arrangement for conveyance of concrete by erecting suitable scaffolding gangways etc.

The form centering reinforcement shall check and passed by the Engineer in charge and reinforcement measured and recorded before concreting

1. Proportion of cement concrete:

Cement concrete shall be of C.C. 1:3:6 grades.

2. Materials for concrete

Cement, sand and coarse aggregate shall confirm to the relevant specification of the materials.

Section - II.

3. Mixing:

For all work, concrete shall "be mixed in Concrete **Mixer or Flory** which along with other accessories shall be kept in first class working condition and so maintained throughout the construction. Measured quantity of aggregate, sand, cement required for each batch shall be poured into the drum of the mechanical mixer while it is continuously running. After about half a minute of dry mixing, measured quantity of water required for each batch of concrete mix shall be added gradually and mixing continued for another one and a half minute. Mixing shall be. continued till materials are uniformly distributed and uniform colour of the entire mass is obtained and each

individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after all ingredients have been put into the mixer.

When hand mixing is permitted by the Engineer-in-charge for small jobs or for certain other reasons, it shall be done on the smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platform shall be so arranged that no foreign material gets mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall be placed in a uniform layer on top of the measured quantity of fine and coarse aggregate, which shall also be spread in a layer of uniform thickness on the mixing platform. Dry coarse and fine aggregate and cement shall then be mixed thoroughly by turning over to get a mixture to uniform colour. Specified quantity of water shall then be added gradually through a rose-can and the mass turned over till a mix of required consistency is obtained. In hand mixing, quantity of cement shall be increased by 10 percent above that specified.

Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to by the Engineer-in-charge the first batch of concrete from the mixture shall contain only two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

4. Transporting and laying:

The method of transporting and placing concrete shall be as approved. Concrete shall be so transported and placed that no contamination segregation or loss of its constituent material takes place. All form work shall be cleaned and made free from standing water, dust, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Engineer-in-charge has been obtained.

Concreting shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer. Except where otherwise agreed to by the Engineer-in-charge concrete shall be deposited in horizontal layers to a compacted depth of not more than 0.45 meter when internal vibrators are used and not exceeding 0.30 meter in all other cases.

Unless otherwise agreed to by the Engineer-in-charge, concrete shall not be dropped into place from a height exceeding 2 meters. When trucking or chutes are used they shall be kept close and used in such a way as to avoid segregation. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept clean, thoroughly wetted and covered with a 13 mm. thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13 mm. layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of any particles of coarse aggregate. The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150 mm. in thickness and shall be well rammed against old work, particular attention being given to corners and close spots.

All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrators unless, otherwise permitted by the Engineer-in-charge for exceptional cases, such as concreting under water, where vibrators cannot be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of breakdowns.

Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream up to form an even surface. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of water to dry mixture. During compaction, it shall be observed that needle vibrators are not applied on reinforcement which is likely to destroy the bond between concrete and reinforcement.

5. Curing:

Immediately after compaction, concrete shall be protected from weather, including rain, running water, shocks, vibration, traffic, rapid temperature changes, frost and drying out process. It shall be covered with wet sacking, hessian or other similar absorbent material approved, soon after the

initial set and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonry work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14 days.

6. Mode of Measurement and Payment: -

Measurement shall be taken in **cubic meter** basis for the finished work.

Item No.9: Providing and laying CC 1:2:4 grade using cement, sand & crushed metal including providing & erecting necessary form work, centering, vibrating, smooth finishing, watering & curing as directed with all leads & lifts etc. complete. (a) Sub structures

Cement sand and crushed metal and water shall conform to the relevant specification of the materials. The proportion of cement concrete shall be one part of cement, two parts of sand and four part of crushed metal by volume.

Mixing shall be done in a mechanical mixture water cement ratio and slump shall be as direction of Engineer in Charge, waterproofing agent like shop water shall be added while preparing the mixture without any extra cost.

The centering and formwork shall be including all sorts of shuttering, poles, stubs and plain wooden or iron plate sheets. It shall be constructed as to remain rigid during and after placing of concrete. The joint shall be tight enough to prevent leakage of cement slurry. The centering shall be got checked and approved by the Engineer in charge before placing of concrete is commenced. The centering surface shall be cleaned and oil with non-straining oil such as linseed oil. The dismantling of centering shall be done after getting written permission of the Engineer in charge and shall be carried out carefully without damaging concrete and without causing undue stocks or vibration to the works.

The contractor shall make necessary arrangement for conveyance of concrete by erecting suitable scaffolding gangways etc.

The form centering reinforcement shall check and passed by the Engineer in charge and reinforcement measured and recorded before concreting

1. Proportion of cement concrete:

Cement concrete shall be of C.C. 1:2:4 grades for C.D. works of drain with distribution system.

2. Materials for concrete

Cement, sand and coarse aggregate shall conform to the relevant specification of the materials.

Section - II.

3. Mixing:

For all work, concrete shall "be mixed in Concrete **Mixer or Flory** which along with other accessories shall be kept in first class working condition and so maintained throughout the construction. Measured quantity of aggregate, sand, cement required for each batch shall be poured into the drum of the mechanical mixer while it is continuously running. After about half a minute of dry mixing, measured quantity of water required for each batch of concrete mix shall be added gradually and mixing continued for another one and a half minute. Mixing shall be continued till materials are uniformly distributed and uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after all ingredients have been put into the mixer.

When hand mixing is permitted by the Engineer-in-charge for small jobs or for certain other reasons, it shall be done on the smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platform shall be so arranged that no foreign material gets mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall be placed in a uniform layer on top of the measured quantity of fine and coarse aggregate, which shall also be spread in a layer of uniform thickness on the mixing platform. Dry coarse and fine aggregate and cement shall then be mixed thoroughly by turning over to get a mixture to uniform colour. Specified quantity of water shall then be added gradually through a rose-can and the mass turned over till a mix of required consistency is obtained. In hand mixing, quantity of cement shall be increased by 10 percent above that specified.

Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to by the Engineer-in-charge the first batch of concrete from the mixture shall contain only two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

4. Transporting and laying:

The method of transporting and placing concrete shall be as approved. Concrete shall be so transported and placed that no contamination segregation or loss of its constituent material takes place. All form work shall be cleaned and made free from standing water, dust, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Engineer-in-charge has been obtained.

Concreting shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer. Except where otherwise agreed to by the Engineer-in-charge concrete shall be deposited in horizontal layers to a compacted depth of not more than 0.45 metre when internal vibrators are used and not exceeding 0.30 meter in all other cases.

Unless otherwise agreed to by the Engineer-in-charge, concrete shall not be dropped into place from a height exceeding 2 meters. When trucking or chutes are used they shall be kept close and used in such a way as to avoid segregation. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept clean, thoroughly wetted and covered with a 13 mm. thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13 mm. layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of any particles of coarse aggregate. The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150 mm. in thickness and shall be well rammed against old work, particular attention being given to corners and close spots.

All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrators unless, otherwise permitted by the Engineer-in-charge for exceptional cases, such as concreting under water, where vibrators cannot be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of breakdowns.

Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream up to form an even surface. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of water to dry mixture. During compaction, it shall be observed that needle vibrators are not applied on reinforcement which is likely to destroy the bond between concrete and reinforcement.

5. Centering and shuttering:

Centering and shuttering shall be made with timber or steel plate close and tight to prevent leakage of mortar with necessary prompts, bracing and wedges, sufficiently, strong and stable and should not yield during laying concrete and made in such a way that they can be slacked and removed gradually and slowly without disturbing concrete. No plastering should be made on the concrete surface. A coat of oil washing should be applied over the shuttering or paper should be spread to have a smooth and finished surface and prevent adherence of concrete. For slabs and beams small camber should be given in centering 1 cm to 2.5 cm with a maximum of 4 cm. Centering and shuttering should not be removed before 14 days in general (10 days for roof slabs and 14 days for beams). The centering and shuttering shall be removed slowly & carefully so that no parts damaged or disturbed.

6. Curing:

Immediately after compaction, concrete shall be protected from weather, including rain, running water, shocks, vibration, traffic, rapid temperature changes, frost and drying out process. It shall be covered with wet sacking, hessian or other similar absorbent material approved, soon after the initial set and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonry work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14 days.

7. Mode of Measurement and Payment: -

Measurement shall be taken in **cubic meter** basis for the finished work and no deduction shall be made for volume of steel. Steel reinforcement shall be measured under a separate item in Tone. Plastering if any, shall not be included in the measurement. The rate for R.C.C. work shall be for the complete work excluding steel but including centering and shuttering and all tools & plants.

Item No.10: Providing and laying HYSD/TMT Fe 415, 500D steel bar reinforcement for R.C.C. works and anchor bar with providing binding wires including cutting, bending, welding, binding in position hooking, placing in position with all leads & lifts etc. complete.(C) TMT Fe 500 steel bars

The steel shall confirm to IS: 432-1991, 2502-1963, 5525-1969, 2751-1979 or its latest edition as per section II. The H.Y.S.D. / TMT Fe 500D steel round or ribbed for steel shall be purchased by the contractor from the steel authority of India or other original production company and shall produce payment voucher to the Engineer-in-charge. Where the provision in schedule "A" is not made.

The steel shall be got tested from the approved laboratory or as directed by the Engineer-in-charge.

SAMPLAING

The sample or samples for testing may be taken by the contractor or his representative for the purpose of testing in the presence of Engineer-in-charge. The samples shall be taken within one week of the delivery and test shall be made within two weeks of delivery.

Round H.Y.S.D. steel or tore steel shall be purchased as per requirement where not provided in Schedule "A" The inferior quality then required the steel shall be not used and removed from the site store. The steel shall be free from corrosion, dust and other corrosion materials.

STORAGE:

The steel shall be stored in such a manner as to accept for proper inspection reinforcement shall include cutting, binding, and bending with annealed wire and placing in position as directed by Engineer-in-charge as per drawing.

Mild steel shall be stored above ground surface upon suitable platform skids to avoid distortion and sage and to avoid corrosion due to contact with ground.

Reinforcement bars shall be cut accurately to the length and cold bent to the shape as shown in the drawing. The bends for strips and ties shall be made around a pin of diameter not less than four times the maximum thickness of the bars. Bends for all other four bars shall be made a rounds\ a pin of diameter not less than 5 times the minimum thickness of bars.

The surface of reinforcement shall be cleaned of scales, dust and other objectionable or oily substance. Reinforcement shall be laid accurately in position and secured in such a way that there will be no movement of bars when concrete is placed. Wire for tying reinforcement at inter section shall be soft annealed wire or 16 B.W.G.

For maintaining cover to reinforcement as shown on the drawing or as directed precast C.C. Block or M. S. Pins for required thickness shall be provided for which no extra will be paid for.

Bars spacing as indicated on the drawing or as specified by the Engineer shall only be allowed. The lapped ends shall be so placed to ensure full bond with concrete on each bar, splicing shall not be done in the reason of maximum bending movement and spacing of adjacent bars shall be avoided as far as possible suitable splice length as permitted by the Engineer-in-charge or as shown out. The drawing shall be provided where ever needed also splices shall be suitably staggered.

Bars above 25 mm diameter may be welded without loss strength instead of being lapped or permitted or directed by the engineer. The bars to spilled shall be lap welded or but welded electric welding in the manner specified in I.S.I. code regarding such welding.

Suitable means shall be provided for holding the bars securely in position during the welding process. Ends of bars to be spliced shall be cleaned of all dirt, scales, dust, paint and foreign matters before working. All welding confirms to the standard welding code of practice.

The welding joint shall be staggered in approved manner. Three percent of welded shall be tested for tensile strength and other test specified in relevant I.S.I. specification at contractor's cost before

placing reinforcement and the strength shall not be less than the standard specified for the grade of steel. The welded joints shall be paid in terms of length of the bars equal to 40 times the diameter of the bars.

Before starting concreting contractor shall make certain that the measurement for the reinforcement placed in position have been recorded and that Engineer certifies to the correctness of the reinforcement used. Noncompliance of this requirement by the contractor might mean no payment or part payment for steel at the discretion of the Engineer.

The payment for steel used shall be in the basis of actual length of bars used and placed as soon in bar bending schedules, including hooks bend and laps. The length of the bars shall be measured to the nearest 100mm via. 2001 mm to 2049 mm will be measured as 2000 mm and 2050 mm and above 2099 will be measured as 2100 mm. The rate quoted in the tender will include the cost of supplying, cutting, bending, cleaning and straightening the coils and rods, fixing and maintaining in position the reinforcement.

Mode of Measurement and Payment:

All steel will be paid on the basis of weight in **(Metric Ton)** computed as specified hereinafter but no payment shall be made for supplying and stacking material wires, ties, supports, separators, chairs, anchor rods, pins, binding wire, tack weld etc. used for lying reinforcement and keeping it in position.

For purpose of payment of steel, unit weight as per actual issue shall be considered. However, in case of different unit weight considered at the time of issue at different times the weighted average of different unit considered for issue. Payment shall be made on Metric ton on basis of completed accepted work. The rate includes the cost of steel, binding, placing in position with annealed wire.

Item No.11: Providing burnt brick masonry 2nd class in cement mortar in 1:5 proportion for foundation & superstructure upto 6.00 mt. height including striking out joints 20mm deep curing watering finishing joints and providing scaffolding as directed as comp.

MATERIALS :

i) CEMENT :Specification M-1 of specification of material section shall apply. ii) WATER :Specification M-5 of specific- at in of material section shall apply. iii) SAND :Specification M-2 of specification of material section shall apply. Except sand shall be used after screening from proper number mesh as directed. iv) BRICKS :Specification M-7 of material section shall apply. Bricks shall be common brunt brick having compressive strength of not less than 35.0 kg/cm² and shall not be over brunt or under brunt.

GENERAL :

The brick masonry work shall be carried out in C.M. 1:5 by weigh batching or by volume proportion and mixing of ingredients. The general technical specifications for brick masonry work shall apply here.

SCOPE OF WORK :

The general scope of work including. providing materials, transportation, labours, scaffolding and using equipment as required together with finishing to the required profile as per item description or as per approved working drawing and curing the brick masonry work for superstructure up to 6.0mt.height.

WORKMANSHIP :

Workmanship of the work under this item of work shall be as describe in general technical specification of brick masonry work. The work shall be carried out with best workmanship manner as directed by engineer in charge.

MODE OF MEASUREMENT AND PAYMENT :

The payment shall be made in cubic meter basis for the work completed. The rates are inclusive of scaffolding required for the work No deduction shall be made from the quantity of brick works nor extra

i) Opening each up to 0.1 sq mt. Ii) Drain holes and recesses for cement concrete blocks. Iii) Building in masonry, pipes up to 300mm diameter. Iv) Forming chases in masonry up to section of 350 sq.cm.

Item No.12: Providing cement plaster of cement & sand to brick masonry including racking out joint with scaffolding finishing watering curing etc. complete.(b) 12 mm thick C.M. 1:3

MATERIAL :

- i) **CEMENT** :Specification M-1 of specification of material section shall apply.
- ii) **WATER** :Specification M-5 of specification of material section shall apply.
- iii) **SAND** :Specification M-2 of specification of material section shall apply, except sand shall be used after proper screening only.

GENERAL :

The general technical specification for plastering and pointing shall apply. Cement plastering work is to be carried out in cement mortar proportion 1:3 by volume to brick masonry with 12mm thickness

SCOPE OF WORK :

The scope of work includes providing all materials, labours, necessary scaffolding and tools and plants required for caring out the work including curing for 7 days. During this period, it shall be protected from all damages.

WORKMANSHIP :

The general technical specification for plastering and pointing shall apply. Cement plaster work is to be carried out in cement mortar proportion 1:3 by volume to brick masonry. First surface preparation is to be carried out as mention in general technical specification by racking out the joints 20mm deep and washing and moisturizing the same. The mortar shall be pressed into the racked out joints. Then plaster is to be done as mention in application of plaster in general technical specification with thickness of plaster 12mm in single coat.

MODE OF MEASUREMENT AND PAYMENT. :

The rate are inclusive of cost of all materials, labour, scaffolding, curing etc complete. The work shall be measured in square meter basis.

Item No.13: Applying two coats of putty & two coats of primer of approved brand and manufacture on new wall surface togive an even shade including thoroughly brushing thesurface free from mortar dropping and other foreign matter and sand papered smooth.

- **Scope**

Surface finishing using putty and primer prior to painting.

- **Materials**

Wall putty, primer, sandpaper etc. as approved by Engineer In charge.

Execution

Surface shall be thoroughly cleaned and free from dust, grease, and loose particles. First coat of putty shall be applied uniformly and allowed to dry, followed by sanding. Second coat shall be applied to fill minor undulations and achieve smoothness. After drying and sanding, two coats of primer shall be applied uniformly. Surface shall be free from streaks and irregularities **as directed by Engineer-in-charge.**

- **Measurement**

Measured in square meters.

Item No.14: Wall painting (two coats) with plastic emulsion paint of approved brand and manufacture on undecorated wall surface to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth.

- **cope**

Finishing of walls with plastic emulsion paint.

- **Materials**

Plastic emulsion paint, application tools etc. as approved by Engineer In charge.

- **Execution**

Prepared surface shall receive two coats of plastic emulsion paint applied by brush or roller. Paint shall be applied evenly to achieve uniform shade without streaks, patches, or marks. Proper drying time shall be maintained between coats. Edges, corners, and junctions shall be carefully finished. **as directed by Engineer-in-charge.**

- **Measurement**

Measured in square meters.

Item No.15: Providing and fixing rolling shutters of approved make made of 80 mm wide M.S. laths inter-locked together through their entire length and jointed together at the ends by end locks mounted on specially designed pipe shaft with bracket plates, guide channels and arrangements for inside and outside locking with push-pull operation including the cost of hood cover and spring etc. complete. (A) Shutter having width below 3.5 M.

- **Scope**

Providing and fixing rolling shutters of approved make, manufactured from **80 mm wide M.S. steel laths**, machine rolled and interlocked throughout their entire length and secured at the ends with end locks.

- **Execution**

The shutter shall be mounted on a specially designed **M.S. pipe shaft** with necessary brackets, bracket plates, ball bearings, guide channels, suspension springs, locking arrangements for both inside and outside operation, and push-pull type manual operation. The work shall include providing and fixing the **hood cover**, top cover, locking devices, handles, fixtures, fasteners, and all accessories required for smooth and efficient operation of the shutter. The shutter shall be erected complete in position, true to line and level, including all labour, materials, tools and plants, transportation, loading, unloading, and incidental charges necessary for completion of the work as directed by the Engineer-in-Charge.

- **Mode of Measurement:**

The area of the rolling shutter shall be measured in **square metres based on the clear opening size of the shutter (width × height)**. The rate shall include the cost of all materials, fabrication, pipe shaft, springs, guide channels, bracket assemblies, hood cover, locking arrangements, erection, fixing in position, labour, tools and plants, and all incidental works required for complete installation. No separate payment shall be made for brackets, springs, hood cover, locking devices, end locks, guide channels, or wastage.

Item No.16: Applying general insecticide pest control treatment to floors, cupboards etc including labour materials etc.complete. Using Imidacloprid 30.5 SCas Per IS 6313 part-II(0.075% concentration by mass) is recommended 10.5 ml chemical diluted with 5 liters of water application 0.5 litre chemical /Sqm of surface is recommended asper I.S.

1. Scope of Work:

This work covers the treatment of soil and masonry around and under the plinth area of an existing structure for protection against subterranean termites.

It includes supplying and applying approved chemical emulsion by spraying, rodding, or injection methods to form a continuous chemical barrier between soil and the building structure.

2. Reference Standards:

- **IS:6313 (Part–III) – 2001** – *Code of Practice for Anti-termite Measures in Existing Buildings (Post-Construction Treatment)*
- **IS:8944 – 1978** – *Specification for Chlorpyrifos Emulsifiable Concentrate*
- **IS:264 – 1976** – *Safety Code for Use of Pesticides*

3. Materials:

a) Chemical:

- Approved chemical: *Chlordane 20 EC* or *Chlorpyrifos 20 EC* (emulsifiable concentrate) conforming to IS:8944.
- The chemical shall be supplied in sealed original containers bearing manufacturer's name, date of manufacture, batch number, and expiry date.

b) Water:

- Clean potable water free from impurities, oils, or suspended matter for dilution.

c) Mixing Ratio:

- The chemical emulsion shall be prepared at **1% concentration by weight**, i.e. **1 litre of 20 EC chemical + 19 litres of water = 20 litres of 1% emulsion.**

4. Application Method:

a) Preparation:

- Identify all wall-floor junctions, cracks, gaps around pipes, conduits, and expansion joints.
- Clean the area thoroughly of dust, debris, and organic matter.
- Ensure the soil or surface is absorbent but not waterlogged.

b) Treatment:

- Apply the prepared 1% chemical emulsion using a **hand pressure pump or mechanical sprayer.**
- In areas where the surface is already paved, drill holes of **12 mm diameter** at intervals of **150 mm center to center**, to a depth reaching the soil, and inject the emulsion under pressure.
- Holes shall then be properly sealed with **cement mortar (1:2)** after injection.

5. Application Rates:

Location	Application Method	Recommended Rate
Horizontal surface of plinth area / soil below floor	Spraying or injection	5 litres per sq.m
Vertical surfaces of foundation / wall and floor junction	Rodding or injection	7.5 litres per sq.m
External perimeter of building	Continuous rodding or trenching	7.5 litres per sq.m

6. Workmanship:

- The chemical shall be mixed just before application to maintain its effectiveness.
- Treatment shall be applied by trained personnel wearing protective gear.
- Ensure complete and uniform coverage to form a continuous chemical barrier without gaps.
- All drilled holes and cracks shall be sealed after completion.
- The treated surface shall not be disturbed or washed for at least **24 hours** after treatment.

7. Safety Precautions:

- The chemical shall be handled carefully using **gloves, goggles, masks, and boots.**
- Avoid contact with eyes, skin, and mouth.
- Do not spray near open flames or sources of drinking water.
- Dispose of leftover solution safely as per manufacturer's instructions.
- Keep all chemical containers away from children, pets, and food items.

8. Measurement:

- Measurement shall be made in **square metres (m²)** of surface treated.
- The rate includes cost of all labour, materials, tools, equipment, chemical, water, and other incidental works required for complete execution.

Item No.17: Dismantling tiled of stone floors laid in mortar including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.

- [1] The item shall include dismantling tiled of stone floors laid in cement mortar or lime mortar include stacking of dismantled material outside.
- [2] The tiled of stone floors should be dismantled as per instruction Engineer-in-charge. During dismantling care should be taken to see that no other area of work should be damage.
- [3] The material obtained by dismantling shall be stacked out side as per instruction of Engineer-in-charge.
- [4] The useful materials shall be stacked out side as per instruction of Engineer-in-charge.
- [5] The measurement shall be on **Square meter basis** of work carried out as directed by Engineer-in-charge.

Item No.18: Providing and laying Ceramic tiles 6mm thick in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand) finishing with flush pointing in white cement.

1.0. Materials Water shall conform to M-5 Cement shall conform to M-1 **Ceramic tiles** tiles shall conform to M-8

2.0. Workmanship

2.1. Preparation of Surface:

In case of brick masonry wall, the joints shall be raked out to a depth of least 15 mm. while the masonry is being laid. In case of concrete wall the surface shall be chiseled and roughed with wire brushes. The surface shall be cleaned and wetted thoroughly before commencing the laying work.

2.2. Laying ;

2.2.1. The wall surface shall be covered with 12 mm. thick plaster of cement mortar 1:3 mix and allowed to harden. The plaster shall be roughened with wire brushes both way. The back of tiles shall be floated with grey cement slurry set and edges with white cement slurry in bedding mortar. The tiles shall be gently tapped in position on after the other keeping the joints as thin as possible. Top of skirting or dedo shall be truly horizontal and the joints vertical or as per required pattern.

2.2.2. Risers of steps, skirting and dedo shall rest on top of treads or flooring. Where full size tiles cannot be fixed, They shall be cut to the required size and the edges be smoothened.

2.2.3. The joints shall be cleaned and flush pointed with white cement. The surface shall be kept wet for seven days. After curing the surface shall be washed clean.

3.0. Mode of measurements and payment

3.1. The rate shall include the cost of all materials and labour required for various operations described above. Risers of steps: skirting and dedo shall be measured in **square meters**, length and height shall be measured along the finished face of the skirting or dedo including curves, where special such as covers, internal and external angles, etc., used. The length and height shall be measured correct to the centimeter except in case of risers and skirting where height shall be measured correct to 3 mm

3.2. The rate shall be for a **unit of one sq. meter.**

Item No.19: Providing and laying polished Kota stone slab flooring over 20mm (Average) thick base of cement mortar 1:6 (1-cement: 6-coarse sand) or L.M. 1:1.5 (1-Lime putty 3 :1.5 coarse sand) laid over and jointed with grey cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. complete. (A) 25mm thick

1.0. Materials Water shall conform to M-5 Cement shall conform to M-1 Kota stone shall be of 25 mm thickness and conform to M-9

2.0. Workmanship

2.1. Preparation of Surface:

In case of flooring, the surface shall be raked out to a depth of least 20 mm. while the flooring is being laid. In case of IPS, the surface shall be chiseled and roughed with wire brushes. The surface shall be cleaned and wetted thoroughly before commencing the laying work.

2.2. Laying ;

2.2.1. The floor surface shall be covered with 20 mm. thick of cement mortar 1:6 mix and allowed to harden. The floor shall be roughened with wire brushes both way. The back of stone shall be floated with grey cement slurry set and edges with grey cement slurry in bedding mortar. The stone shall be gently tapped in position on after the other keeping the joints as thin as possible. Top of skirting or dedo shall be truly horizontal and the joints vertical or as per required pattern.

2.2.2. Where full size stone cannot be fixed, They shall be cut to the required size and the edges be smoothened.

2.2.3. The joints shall be cleaned and flush pointed with grey cement. The surface shall be kept wet for seven days. After curing the surface shall be rubbed and polishing shall be done as per instruction of Engineer in charge.

3.0. Mode of measurements and payment

3.1. The rate shall include the cost of all materials and labour required for various operations described above.

3.2. The rate shall be for a **unit of one sq. meter.**

Item No.20: Providing and fixing wash down water closet (European type, W.C. Pan) with integral P or S trap including jointing the trap with soil pipe in Cement Mortar 1:1 (1-Cement : 1-fine sand) (Seal and cover to be measured and paid for separately)(A) vitreous China Pattern : (i) in white colour.

- **Scope of Work**

Providing and fixing **wash down type European Water Closet (W.C. Pan)** of approved make, manufactured from first-quality **vitreous china**, white colour, complete with **integral P-trap or S-trap** as specified.

- **Material**

The W.C. pan shall be smooth glazed, non-absorbent, free from cracks, crazing, chips and other manufacturing defects, and shall conform to relevant IS specifications. The pan shall be fixed in proper position and level, and the integral trap shall be connected to the soil pipe using **Cement Mortar 1:1 (1 Cement : 1 Fine Sand)** to form a watertight and durable joint.

- **Execution:**

The work shall include all necessary materials, labour, alignment, jointing, testing and cleaning, complete as directed by the Engineer-in-Charge.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply and fixing of vitreous china W.C. pan with integral P/S trap, jointing with soil pipe in cement mortar 1:1, testing, commissioning, labour, tools and all incidental materials required for complete installation.

Rate shall exclude: Plastic/thermoset seat and cover, flushing cistern, flush pipe and other accessories unless specifically included in separate items.

Item No.21: Providing and fixing 12.5 Litres low level flushing cistern with a pair, of C.I. or Mild brackets, complete with fittings such as lead valve less syphon, 15mm nom. nalsize brass ball valve with polythene float, C.P brasshandle unions and couplings for connections, with inlet,outlet and overflow pipes, 40mm dia. Porcelainenamelled flush bend including cutting holes in wallsand making good the same connecting the flush bendwith cistern and closet (overflow pipe to be measured and paid for separately)(A) Vitreous China (I) In white colour

1. Scope of Work

The work shall consist of providing, handling, transporting, storing, fixing, testing and commissioning a **12.5 litre capacity low-level flushing cistern** of approved quality vitreous china in white colour, complete with all accessories, fittings, supporting brackets, flushing mechanism, inlet and outlet connections, flush bend and all incidental works necessary for satisfactory operation of the flushing system.

The item shall include supply of all materials, labour, tools, tackles, scaffolding, consumables, cutting chases/openings in walls, making good damaged portions, testing and commissioning complete in all respects as directed by the Engineer-in-Charge.

2. Materials

Flushing Cistern

The cistern shall be:

- Low-level type.
- Capacity: 12.5 litres.
- Material: First quality vitreous china.
- Colour: White.
- Glazing: Uniform, smooth, non-absorbent and free from cracks, pinholes, crazing, warping and manufacturing defects.
- Resistant to staining, discoloration and chemical attack.
- Provided with all necessary holes, bosses and fixing arrangements.

The cistern shall be capable of delivering the designed flush volume efficiently without leakage.

Supporting Brackets

The cistern shall be supported on one pair of brackets manufactured from:

- Cast Iron (C.I.) or
- Mild Steel (M.S.)

Brackets shall:

- Be of adequate size and strength.
- Be capable of carrying the full load of the cistern when filled with water.
- Be fixed securely to walls using approved anchor fasteners.
- Be painted with one coat of metal primer and two coats of synthetic enamel paint where required.

Flushing Mechanism

The cistern shall be fitted with a valve-less siphon assembly.

Requirements:

- Efficient flushing action.
- Smooth operation.
- Leak-proof performance.
- Corrosion-resistant components.
- Easily removable for maintenance.

The siphon shall provide complete discharge of the flushing volume without undue noise or vibration.

Ball Valve Assembly

The inlet control valve shall comprise:

- 15 mm nominal bore brass ball valve.
- Heavy-duty polyethylene float.
- Brass spindle and lever assembly.

The valve shall:

- Operate smoothly.
- Automatically maintain the designed water level.
- Shut off completely without leakage.
- Withstand normal operating water pressure.

Operating Handle

The flushing handle shall be:

- Chromium-plated brass.
- Smooth operating type.
- Corrosion resistant.
- Securely fixed to the cistern body.

Chrome plating shall be uniform and free from peeling, pitting or defects.

Unions, Couplings and Connections

All unions, couplings, nuts and threaded fittings shall be:

- Brass or approved non-corrosive metal.
- Properly machined.
- Leak-proof under operating pressure.

All threaded joints shall be sealed using approved PTFE tape or equivalent sealing compound.

Flush Bend

The flush bend shall be:

- 40 mm diameter.
- Porcelain enamelled.
- Smooth internally and externally.
- Free from cracks, dents and manufacturing defects.

The bend shall provide a watertight connection between cistern and water closet.

Inlet, Outlet and Overflow Fittings

The cistern shall be provided with:

- Inlet connection.
- Outlet connection.
- Overflow arrangement.

The overflow fitting shall be compatible with the cistern design and prevent flooding in the event of malfunction of the ball valve.

Note: Overflow pipe shall be measured and paid separately.

Installation

Preparation

Before installation:

- The location shall be verified.
- Wall surfaces shall be checked for soundness.
- Dimensions shall be confirmed with drawings and site conditions.

Fixing

The cistern shall be fixed:

- At the specified low-level position.
- Truly horizontal and vertical.
- Firmly anchored to the wall.

Brackets shall be securely fixed using approved anchor bolts, expansion fasteners or grouted bolts.

No movement shall be observed after installation.

Connection to Water Closet

The flush bend shall be connected:

- Between the cistern outlet and closet inlet.
- With proper alignment.
- Without imposing stress on fittings.

All joints shall be watertight.

Cutting and Making Good

The contractor shall:

- Cut holes, recesses and openings as required.
- Carefully avoid damage to structural members.
- Restore disturbed surfaces to original condition.

Making good shall include:

- Masonry repairs.
- Plaster repairs.
- Finishing to match adjacent surfaces.

Workmanship Requirements

Workmanship shall be of the highest standard.

The completed installation shall:

- Be neat and aesthetically acceptable.
- Be free from leakage.
- Operate smoothly.
- Be properly aligned and levelled.
- Have all exposed fittings cleaned and polished.

Damaged or defective materials shall be replaced at no extra cost.

Mode of Measurement

Measurement shall be made on **number basis (Each)** for the complete flushing cistern installation.

The measured item shall include: Vitreous china cistern, Brackets, Valve-less siphon, Brass ball valve, Polyethylene float, CP brass handle, Unions and couplings, Inlet and outlet fittings, 40 mm porcelain enamelled flush bend, Fixing accessories, Labour.

The rate shall include: Cost of all materials, Transportation, Labour, Tools and plants, Fasteners and consumables, cutting and making good, Testing and commissioning, all incidental charges required for completion of the work.

The item shall be complete in all respects and ready for use.

Item No.22: Providing and fixing washbasin with single hole for pillar tap with C.I. or M.S. brackets painted white including cutting holes and making good the same but excluding fittings.(A) Vitreous China:(ii) Flat Back washbasin 550mm x v 400mm size. (i) In white colour.

Scope of Work

The work shall consist of providing, transporting, handling, storing and fixing a **Vitreous China Flat Back Wash Basin of size 550 mm × 400 mm**, white colour, complete with C.I. (Cast Iron) or M.S. (Mild Steel) supporting brackets, cutting holes in walls wherever required and making good the same after installation.

The basin shall be provided with a **single tap hole suitable for a pillar tap**. The item shall include all materials, labour, tools, equipment, fasteners and incidental works necessary for proper installation and satisfactory performance.

The rate shall exclude sanitary fittings such as pillar tap, waste coupling, bottle trap, angle valve, connection pipes and other accessories unless otherwise specified.

Material

The wash basin shall be manufactured from:

- First quality vitreous china.
- Non-absorbent ceramic body.
- White glazed finish.

- Free from cracks, chips, pinholes, crazing, warping and other manufacturing defects.

Type

- Flat Back Wash Basin.
- Wall-mounted type.
- Single tap hole for pillar tap.
- Suitable for domestic, commercial and institutional buildings.

Dimensions

- Length: 550 mm
- Width: 400 mm
- Tolerance: As permitted by relevant BIS specifications.

Finish

The basin shall have:

- Uniform white glaze.
- Smooth, glossy and impervious surface.
- Rounded edges and corners.
- Easy-to-clean hygienic finish.

The glaze shall be resistant to:

- Staining.
- Household chemicals.
- Moisture penetration.
- Discoloration.

Supporting Brackets

Material

Brackets shall be:

- Cast Iron (C.I.) or
- Mild Steel (M.S.)

as approved by the Engineer-in-Charge.

Fixing Accessories

The following shall be included:

- Rag bolts or anchor fasteners.
- Screws and washers.
- Wall plugs.
- Nuts and bolts.
- Packing materials.
- Other fixing hardware required for complete installation.

All fasteners shall be corrosion resistant.

Workmanship

The installation shall be carried out by skilled plumbers and technicians.

The completed wash basin installation shall:

- Be rigid and stable.
- Be free from visible defects.
- Have uniform bearing on supports.
- Be clean and properly aligned.
- Have neat appearance without damage to glaze.

Any damaged basin shall be replaced at the contractor's expense.

Mode of Measurement

Measurement shall be made on **Number (Each)** basis for each wash basin installed.

The item shall include:

- Vitreous China Flat Back Wash Basin.
- Single tap hole.
- C.I. or M.S. brackets painted white.
- Fasteners and fixing accessories.
- Labour.
- Cutting holes in walls.
- Making good damaged portions.
- Handling, transportation and installation.

Item No.23: Providing and fixing screw down bib taps of following size.(A) Brass screw down bib tap polished bright. (i)15mm dia.

• Scope

Providing and fixing **15 mm diameter brass screw-down bib tap** of approved make, conforming to relevant IS specifications, manufactured from high-quality brass with **polished bright finish**.

• Materials

The bib tap shall be of heavy-duty construction with precision-machined spindle, renewable washer, threaded inlet and smooth operating mechanism, suitable for domestic and commercial water supply systems. The tap shall provide positive shut-off, leak-proof performance and durability under normal operating water pressure.

• Execution

The work shall include fixing the bib tap to the water supply line, providing necessary sealing materials, tightening, testing for leakage and commissioning complete as directed by the Engineer-in-Charge.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply of 15 mm dia. polished brass screw-down bib tap, fixing accessories, sealing materials, installation, testing, commissioning, labour, tools and all incidental materials required for complete and satisfactory operation.

Item No.24: Providing and fixing C.P. brass towel rail complete with C.P. brass brackets fixed to wooden plugs with C.P. brass screws.(B) 600mm x 20mm size.

- **Scope**

Providing and fixing **600 mm long × 20 mm diameter Chromium Plated (C.P.) Brass Towel Rail** of approved make and quality, manufactured from high-grade brass tubing with a durable chrome-plated finish.

- **Execution**

The towel rail shall be complete with matching **C.P. brass brackets**, securely fixed to the wall using approved wooden plugs, C.P. brass screws and all necessary fixing accessories. The chrome plating shall be smooth, corrosion-resistant and free from peeling, pitting or other surface defects.

The work shall include drilling holes, fixing brackets, mounting the towel rail, alignment, tightening of fixtures and making the installation complete in all respects as directed by the Engineer-in-Charge.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply of 600 mm × 20 mm C.P. brass towel rail, C.P. brass brackets, wooden plugs, C.P. brass screws, fixing accessories, installation, labour, tools and all incidental materials required for complete and satisfactory fixing.

Item No.25: Providing erecting and fixing double coated ISI water tank of required capacity each with all necessary fittings and connection etc. complete on terrace

- **Scope**

Providing, transporting, erecting and fixing **double-layer (double-coated) ISI marked water storage tank** of the specified capacity, manufactured from UV-stabilized, food-grade polyethylene and suitable for potable water storage.

- **Materials**

The tank shall be of seamless, rotationally moulded construction with adequate strength, durability and resistance to weathering, corrosion and algae formation. The tank shall be complete with inlet, outlet, overflow, drain and vent connections, threaded inserts, cover/lid and all necessary fittings and accessories.

- **Execution**

The tank shall be installed on the terrace on a prepared and level platform, properly aligned and connected to the water supply and distribution system. All pipe connections shall be made watertight and tested for leakage.

The work shall include transportation, lifting, positioning, fixing, connection to existing pipework, testing and commissioning complete as directed by the Engineer-in-Charge.

Measurement Unit: paid per ltr. storage capacity of tank installed

Rate shall include: Supply of ISI marked double-layer water tank of specified capacity, all fittings and accessories, transportation, lifting, installation on terrace, pipe connections, testing, commissioning, labour, tools and all incidental works required for complete and satisfactory operation.

Item No.26: Supplying & erecting approved make self-priming domestic monoblock water pump with 1 H.P motor, suitable for operation on 230 volts, 50c/s. AC supply with metallic flange, and M.S. impeller delivery and following discharge (a) 40 LPM at 24 mtrs. head suitable for 25mm dia. Delivery (Cat II) Including Cost of Labour.

- **Scope**

Providing, supplying, erecting, testing and commissioning **self-priming domestic monoblock water pump** of approved make, having **1 HP motor**, suitable for operation on **230 Volts, Single Phase, 50 Hz AC supply**.

- **Materials**

The pump shall be of robust construction with **metallic flange, M.S. impeller**, self-priming centrifugal design, and capable of delivering **40 litres per minute (LPM) at a total head of 24 metres**, suitable for connection to **25 mm diameter delivery pipe**. The motor shall be energy-efficient, continuous-duty rated, and provided with adequate protection against overload and voltage fluctuations as per manufacturer's standards.

- **Execution**

The work shall include installation on existing/provided foundation, alignment, connection to suction and delivery lines, electrical connections, testing, trial run and commissioning complete. The pump shall operate smoothly without excessive noise, vibration or leakage.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply of 1 HP self-priming monoblock pump, transportation, handling, erection, alignment, connection to piping system, testing, commissioning, labour, tools, tackles and all incidental materials required for complete and satisfactory operation..

Item No.27: Providing and fixing to wall ceiling and floor 6.0 Kg. F/Cm2 working pressure poluthene pipes of the following outside Dia. Low densidy, complete with special falnge compression type fittings, wall clips etc. including making good the wall ceiling and floor. (B) 25mm

&

Item No.28: Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm² working pressure poluthene pipes of the following outside Dia. Low density, complete with special falnge compression type fittings, wall clipsetc. including making good the wall ceiling and floor. (C) 32mm

Specifications for Item No. 27 & 28 are as below.

1.0. Materials: 1.1. The low density polythene pipe of specified diameter with 6Kg./Sq.Cm & 10Kg./Sq.Cm. working pressure shall conform to I.S. 3076-1968. The specials and fitting required shall be of best quality.

2.0. Workmanship:

2.1. The P. V. C. Pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid P. V. C. Pipes, due allowance shall be made particularly in over ground pipe lines for any change in length of pipe line which may occur during, installation or when pipe line is in service.

2.2. Above ground installation of rigid P.V.C. pipe should be undertaken after preparations are observed for their protection against direct sun rays and mechanical damage.

2.3. The rigid P.V.C. pipe lines should not be kept exposed above ground when it passes through public places, railway lines, road side and footpaths.

2.4. P.V.C. pipes shall be supported at the following intervals: 20 mm dia. 500 mm. 32 mm. dia. 900 mm. 25 mm. dia. 750 mm.

2.5. Closer support spacing shall be provided if recommended by the manufacture.

2.6. The guide lines indicated by the manufacturer regarding, handling, transportation, storing laying and jointing of pipes shall be kept in view during execution.

2.7. P.V.C. pipes shall be fixed on wall with wooden plugs and suitable plastic clamps.

2.8. Jointing the pipes :

2.8.1 The pipes and sockets shall be accurately cut. The ends of the pipes and fittings should be absolutely free from dirt and dust. The outside surface of the pipes and the inside of the fittings shall then be roughened with emery paper, and then solvent cement joint. Since solvent cement is aggressive to P.V.C., care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes rags, or paper impregnated with cement should not be buried in the trenches. They should be gathered, not left scattered about, as they can prove to be a hazard to animals, which may chew them.

2.8.2. If manufacture recommends its own methods of jointing, the same shall be adopted after necessary approval from the Engineer- in-charge.

2.9. Laying pipes in Trenches :

2.9.1. The pipe shall be laid over uniform relatively soft fine grained soil found to be free of presence of hard objects such as large flints, rocky projections, large tree roots etc. The width of the trenches shall be minimum width required for working.

2.9.2. The pipes laid underground shall not be less than one meter from the ground level. The pipe shall be positioned in the trenches so as to avoid any induced stresses due to deflection. Any deviation required shall be obtained by using proper type of rubber ring joints.

3.0. Mode of measurements & payment:

3.1. The description of each item shall unless otherwise stated, be held to include where necessary, conveyance, and delivery, handling, unloading, storing fabrication, hoisting, all labour for finishing to required shape and size; testing, fitting in position, straight, culling and waste, return of packing etc.

3.2. The length shall be measured on running meter basis of finished work. The length shall be taken along the center line of the pipe and fittings. The pipes fixed to walls, ceiling, floors etc. shall be measured and paid under this item.

3.3. All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwise stated:

- (i) Dimension shall be measured to the nearest 0.01 meter,
- (ii) Area shall be worked out to the nearest 0.01 sq. meter.

3.4. All measurements of culling shall unless otherwise stated be held to include the consequent waste.

3.5. In case of filling of unequal bore, the largest bore shall be measured for the test.

3.6. Testing of pipe lines filling sand joints include for providing all plant and appliances necessary for obtaining access to work to be tested and carrying out the tests.

3.7. **The rate shall be for a unit of one Running meter.**

Item No.29: Providing and fixing cast iron spigot and socket soil, waste and ventilating pipes of the following nominal size. (C) 100mm dia. I

Scope of Work

The work shall consist of providing, transporting, handling, storing, laying, jointing, fixing, testing and commissioning **100 mm diameter Cast Iron (C.I.) Spigot and Socket Soil, Waste and Ventilating (SWV) Pipes**, complete with all necessary fittings, supports, clamps, cutting, threading (where required), jointing materials, testing and commissioning, in accordance with the drawings and directions of the Engineer-in-Charge.

The work shall include all labour, materials, tools, equipment, staging, scaffolding and incidental works necessary for satisfactory completion.

Material Requirements

Cast Iron SWV Pipe

The pipe shall be:

- Cast Iron Spigot and Socket type.

- Nominal Diameter: 100 mm.
- Centrifugally cast or conforming to approved manufacturing standards.
- Uniform in section and thickness.
- Free from cracks, blowholes, porosity, sand holes, warping and other defects.
- Internally and externally coated with approved bituminous paint or manufacturer's protective coating.

The pipe shall have smooth internal surfaces to ensure efficient flow and prevent deposition.

Jointing Materials

Lead Caulked Joint

Unless otherwise specified, joints shall be formed by:

- Packing tarred gasket/jute spun yarn into the socket.
- Pouring molten lead into the annular space.
- Caulking the lead tightly using proper caulking tools.

The lead shall:

- Be clean and free from impurities.
- Completely fill the joint space.
- Produce a watertight and gastight joint.

Alternative Jointing

Where specified in drawings or approved by the Engineer:

- Rubber ring joints.
- Mechanical joints.
- Elastomeric seal joints.

may be used in accordance with manufacturer's recommendations.

Installation Requirements

General

Pipes shall be installed:

- Along the alignment shown in drawings.
- True to line and gradient.
- In a neat and workmanlike manner.
- Without imposing stress on joints.

The installation shall permit free flow of sewage, waste water and vent air.

Vertical Stacks

Vertical soil and vent stacks shall:

- Be fixed plumb.
- Be securely supported with holder bats, clamps or brackets.
- Be anchored at each floor level or as specified.

Maximum spacing of supports shall comply with CPWD specifications.

Horizontal Pipes

Horizontal pipes shall:

- Be laid to the required slope.
- Be adequately supported by hangers or brackets.
- Avoid sagging or settlement.

Minimum gradient shall comply with design requirements.

Pipe Supports

Supports shall consist of:

- Mild steel clamps.
- Holder bats.
- Wall brackets.
- Structural supports.

Supports shall be:

- Galvanized or painted for corrosion protection.
- Adequately sized to carry pipe loads.

Cutting and Fitting

Where required:

- Pipes shall be cut square.
- Ends shall be properly dressed.
- Damaged portions shall not be used.
- Openings through walls and slabs shall be neatly formed.

All penetrations shall be made good after installation.

Workmanship

The workmanship shall ensure:

- Accurate alignment.
- Uniform gradients.
- Sound and leak-proof joints.
- Proper support spacing.
- Neat appearance.

Pipes showing cracks, damage or defective coatings shall be rejected.

Exclusions

Unless specifically stated in the Schedule of Quantities, the following shall be measured separately:

- Fittings (bends, tees, junctions, etc.).
- Excavation and backfilling.
- Masonry or concrete encasement.
- Special supports.
- Access doors and inspection chambers.

Mode of Measurement

Measurement shall be made in **running metres (RM)** along the centre line of the pipe actually installed.

The length measured shall include:

- Straight pipe lengths.
- Socket portions.

The rate shall include: Supply of 100 mm diameter C.I. SWV pipes, Transportation and handling. Jointing materials (lead, yarn, rubber rings as applicable), Labour for laying and fixing, Supports, clamps and holder bats, Cutting and fitting. Testing and commissioning, Tools, plants and scaffolding, All incidental charges necessary for complete installation, The work shall be complete in all respects and ready for service.

Item No.30: Providing and fixing in position cowl vent to pipes. (C) 100mm dia

Scope of Work

The work shall consist of providing, transporting, handling, fixing and commissioning a **100 mm diameter Cast Iron (C.I.) Vent Cowl** at the top of the vent pipe complete with all necessary fittings, fastening arrangements, labour, tools, equipment and incidental works required for proper installation and satisfactory performance of the sanitary venting system.

The vent cowl shall be installed as shown on drawings and as directed by the Engineer-in-Charge.

Material Requirements

Vent Cowl

The vent cowl shall be:

- Cast Iron (C.I.) construction.
- Nominal Diameter: 100 mm.
- Suitable for fixing on 100 mm vent pipe.
- Designed to prevent entry of rainwater, birds, insects, leaves and foreign matter.
- Capable of permitting free circulation of air through the vent system.

The cowl shall be of approved design and manufacture.

Workmanship

Installation shall be carried out by skilled personnel.

The completed work shall ensure:

- Proper alignment.
- Secure fixing.
- No obstruction to airflow.
- Weatherproof installation.
- Neat appearance.

Any damaged or defective cowl shall be replaced at no additional cost.

Mode of Measurement

Measurement shall be made on **Number (Each)** basis.

Each vent cowl fixed and accepted shall constitute one unit.

The rate shall include: Supply of 100 mm diameter Cast Iron vent cowl. Transportation, handling and storage. Jointing materials. Labour for fixing. Fasteners and accessories. Scaffolding and lifting arrangements. Testing and inspection. All tools, plants and incidental charges required for complete installation. The item shall be complete in all respects and ready for service.

Item No.31: Providing and fixing plastic seat and cover for washdown water closer with C.P. brass hinges and rubber buffers. (B) Black plastic seal and cover.

• Scope

Providing and fixing **black plastic seat and cover** for washdown water closet (W.C.), manufactured from high-quality, rigid and durable plastic, resistant to moisture, staining and normal cleaning chemicals.

• Execution

The seat and cover shall be complete with **chromium-plated (C.P.) brass hinges**, rubber buffers and all necessary fixing accessories. The assembly shall be designed to fit standard washdown W.C. pans and shall provide smooth operation, proper alignment and secure fixing.

The work shall include supplying, fixing, adjusting and testing the seat and cover complete as directed by the Engineer-in-Charge.

• Measurement Unit: Each (No.)

Rate shall include: Supply of black plastic seat and cover, C.P. brass hinges, rubber buffers, fixing accessories, installation, adjustment, labour, tools and all incidental materials required for complete and satisfactory fixing.

Item No.32: Providing and fixing 600mm x 450mm bevelled edge mirror of superior glass mounted on 6mm thick A.C. sheet or plywood sheet and fixing to wooden plug with C.P. brass screws and washers.

- **Scope**

Providing and fixing **600 mm × 450 mm size bevelled edge mirror** made from superior quality float glass with clear, distortion-free reflection and silver-backed protective coating.

- **Execution**

The mirror shall be mounted on **6 mm thick asbestos cement (A.C.) sheet or approved plywood backing board** and securely fixed to the wall using approved wooden plugs, **chromium-plated (C.P.) brass screws and washers**. The bevelled edges shall be uniformly finished and free from chips, cracks or defects.

The work shall include supply of mirror, backing sheet, fixing accessories, drilling holes, wall fixing, alignment, cleaning and all labour and materials required for complete installation as directed by the Engineer-in-Charge.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply of mirror, 6 mm thick backing board, wooden plugs, C.P. brass screws and washers, fixing, alignment, cleaning, labour, tools and all incidental materials required for complete and satisfactory installation.

Item No.33: Providing and fixing screw down bib taps of following size.(A) Brass screw down bib tap polished bright. (ii)20mm dia.

- **Scope**

Providing and fixing **20 mm diameter brass screw-down bib tap** of approved make, conforming to relevant IS specifications, manufactured from high-quality brass with **polished bright finish**.

- **Materials**

The bib tap shall be of robust construction with precision-machined spindle, renewable washer, and threaded inlet suitable for water supply applications. The tap shall ensure smooth operation, positive shut-off and leak-proof performance under normal operating pressure.

- **Execution**

The work shall include supplying, fixing, jointing to the water supply pipeline, providing necessary sealing materials, testing for leakage and commissioning complete as directed by the Engineer-in-Charge.

Measurement Unit: Each (No.)

Rate shall include: Supply of 20 mm dia. polished brass screw-down bib tap, all fixing accessories, jointing materials, installation, testing, commissioning, labour, tools and all incidental works required for complete and satisfactory operation.**.

Item No.34: Providing and fixing chromium plated brass half turn flush cock of approved quality including fixing in pipeline etc. complete.(i) 20mm dia.

- **Scope**

Providing and fixing **20 mm diameter half-turn flush cock** manufactured from high-quality brass and finished with durable **chromium plating**, of approved make and quality, conforming to relevant IS specifications.

- **Materials**

The flush cock shall be of quarter/half-turn operation type, suitable for water supply and flushing applications, with smooth operation, leak-proof performance and corrosion-resistant construction. The fitting shall be complete with all necessary nuts, washers, unions, sealing materials and accessories required for connection to the existing pipeline system.

- **Execution**

The work shall include cutting and threading of pipe wherever required, fixing, jointing, testing for leakage and commissioning, complete as directed by the Engineer-in-Charge.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply of 20 mm dia. CP brass half-turn flush cock, all fittings and accessories, installation, jointing, testing, commissioning, labour, tools and incidental materials required for complete and satisfactory operation.

Item No.35: Providing and fixing PVC SWR Nahni trap IS 14735 for drain 100 mm diameter with jali of the following nominal diameter of self cleansing design with C.I screed down or hinged grating including the cost of cutting and making good the walls.

- **Scope**

Providing and fixing **100 mm diameter PVC SWR Nahani Trap** conforming to **IS 14735**, of self-cleansing design, complete with removable **PVC/C.I. grating (jali)** and all necessary fittings and accessories. The trap shall be manufactured from virgin uPVC, resistant to corrosion, chemicals and sewage effluents, and shall provide an effective water seal to prevent the passage of foul gases.

- **Execution**

The work shall include cutting openings in floors/walls wherever required, fixing the trap in proper line and level, jointing with SWR pipe system as per manufacturer's recommendations, testing for water tightness, and making good the disturbed surfaces to match the existing finish.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply, installation, jointing, fittings, grating/jali, cutting and making good, testing and commissioning complete.

Item No.36: Providing and fixing S.W. gully trap with C.I. grating brick masonry chamber and water tight C.I. cover with frame of 300mm x 300mm size (inside) with standard weight. (i) Square mouth traps. (A) 100mm x 100mm size P type.

- **Scope**

Providing and fixing **100 mm × 100 mm P-type square mouth Stoneware (S.W.) gully trap** conforming to relevant IS specifications, complete with **Cast Iron grating**, brick **masonry chamber**, and **300 mm × 300 mm (inside clear dimensions) watertight Cast Iron cover and frame of standard weight.**

- **Material:**

The gully trap shall be of first-quality glazed stoneware, free from cracks and defects, and shall provide an effective water seal to prevent the passage of foul gases. The brick masonry chamber shall be constructed in cement mortar as specified, with properly finished internal surfaces. The C.I. grating, cover and frame shall be of approved quality and securely fixed.

- **Execution**

The work shall include excavation, bedding, laying, jointing with adjoining drain/sewer pipes, construction of masonry chamber, fixing of grating, cover and frame, testing for watertightness, backfilling, disposal of surplus earth, and making good all disturbed surfaces, complete in all respects as per drawings and specifications.

Measurement Unit: Each (No.)

Rate shall include: Supply of gully trap, C.I. grating, C.I. cover and frame, brick masonry chamber, excavation, bedding, jointing, testing, backfilling, labour, tools and all incidental works required for complete installation.

Item No.37: Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS: 513/CRCA/ aluminium die cast powder coated and high U.V. & corrosion resistance with diffuser with company mark/name 160V to 270V, Power Factor more than 0.9, THD < 15%, CCT 3000 K to 6500K, Luminaire efficacy > 85 lumens/watt ,LED LED dCANAL/RIVER efficiency > 85 % (fitting required LM-79 & LM-80 ertificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings.The Engineer incharge may select any wattage capacity between the ranges shown.)(A) Tube Light with integral dCANAL/RIVER (v) 36-40 Watts, Surge-2 KV, IP-20, conventional 4 feet Cat-III

- **Scope**

Providing, supplying, erecting, testing and commissioning **LED indoor tube light fitting** of approved make, **36–40 Watts**, conventional **4 feet length**, complete with integral LED driver and all mounting accessories.

- **Material:**

The luminaire shall be manufactured from **CRCA steel conforming to IS 513 or die-cast aluminium housing**, powder-coated with high UV and corrosion-resistant finish. The housing shall act as an effective heat sink and be provided with a suitable diffuser for uniform light distribution. LEDs shall be mounted on a single MCPCB and shall be of high efficiency and long life.

The fitting shall operate on **160–270 V AC, 50 Hz**, with **power factor ≥ 0.90 , THD $\leq 15\%$, CCT between 3000K and 6500K, luminaire efficacy ≥ 85 lumens/Watt, LED/channel efficiency $\geq 85\%$, surge protection of 2 kV, and IP20 protection**. The luminaire shall bear the manufacturer's name/mark and be supported by valid **LM-79 and LM-80 test certificates**.

- **Execution**

The work shall include fixing, wiring connections, mounting accessories, testing and commissioning complete as directed by the Engineer-in-Charge.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply of LED tube light fitting with integral driver, mounting hardware, wiring connections, fixing, testing, commissioning, labour, tools and all incidental materials required for complete installation and satisfactory operation.

Item No.38: Providing & erecting Approved make Ceiling Fan with double ball bearing ISI mark with Condenser 230 volt A.C.50 Hz 1200 mm sweep complete having 3 blades aluminium body and blade sets having ornamental design shanks , canopy erected with earthing. [Make shall be approved by Engineer in Charge]

- **Scope**

Providing, supplying, erecting, testing and commissioning **1200 mm sweep ceiling fan** of approved make, conforming to relevant IS specifications and bearing **ISI certification mark**, suitable for operation on **230 V, single phase, 50 Hz AC supply**.

- **Material:**

- **Make:** Subject to approval by the Engineer-in-Charge.

- **Execution**

The fan shall be equipped with a **double ball-bearing motor**, capacitor (condenser), three aerodynamically balanced aluminium blades, aluminium body, decorative blade shanks and matching canopy. The fan shall be designed for smooth, quiet and vibration-free operation with high air delivery and energy-efficient performance.

The fan shall be complete with all accessories required for installation, including down rod, shackle, canopy, terminal cover, fixing hardware and earthing connection. The fan shall be installed, tested and commissioned to ensure proper operation and safety.

Measurement Unit: Each (No.)

Rate shall include: Supply of ceiling fan complete with capacitor, blades, canopy, shanks and accessories, erection, wiring connections, earthing, testing, commissioning, labour, tools and all incidental materials required for complete installation and satisfactory operation.

Item No.39: Supplying and erecting 19 / 20 mm. nominal bore Medium Class M.S. Pipe down rod erected duly painted for fan complete with proper insulation without leakage and earthing.

- **Scope**

Providing, supplying and erecting **19 mm / 20 mm nominal bore Medium Class Mild Steel (M.S.) Pipe Down Rod** for suspension of ceiling fan, of required length, complete with fan hook arrangement, coupling, lock nuts, bushes and all necessary accessories.

- **Execution**

The down rod shall be straight, free from defects, and finished with one coat of approved metal primer and two coats of synthetic enamel paint or equivalent protective coating. Proper insulation shall be provided at electrical entry points to prevent abrasion and electrical leakage. The installation shall ensure mechanical rigidity, safe suspension of the fan and continuity of earthing.

The work shall include cutting, threading, painting, fixing, connection with fan and ceiling hook/clamp, testing for mechanical stability and electrical safety, complete as directed by the Engineer-in-Charge.

- **Measurement Unit:** Rmt.

Rate shall include: Supply of medium-class M.S. pipe down rod, threading, painting, insulation, fixing accessories, coupling, lock nuts, earthing continuity, installation, testing, labour, tools and all incidental materials required for complete installation.

Item No.40: Providing Fan clamp of 30 x 5 mm flat of required length & 10 mm M.S. Bolt & Nuts erected with necessary hook of 10 mm M.S. Round Bar.

- **Scope**

Providing and fixing **fan clamp** fabricated from **30 mm × 5 mm M.S. flat** of required length, complete with **10 mm diameter M.S. bolt, nuts and washers**, and **10 mm diameter M.S. round bar hook** for suspension of ceiling fan.

- **Execution**

The clamp shall be securely fixed to the structural member/slab as approved, ensuring adequate strength and stability to safely support the fan under operating conditions. All mild steel components shall be free from defects and protected against corrosion by one coat of metal primer and two coats of approved paint or equivalent protective treatment.

The work shall include fabrication, drilling, bending, fixing, fastening, painting, testing for stability, and all accessories, labour, tools and incidental materials required for complete installation.

- **Measurement Unit:** Each (No.)

Rate shall include: Supply of M.S. flat, M.S. hook, bolts, nuts, washers, fabrication, fixing, protective coating, labour, tools and all incidental works necessary for complete installation.

Item No.41: Point wiring for FAN with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (Green) both are of .ISI marked 1.1 KV Grade FRLS PVC insulated multi strand copper wires up to 10 mtr length, in below type of pipe erected with 6A Modular type switch and hum free EME step type electronic fan regulator mounted and accessories with earth continuity of following type erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured/metallic/white front plate modules erected on / in wall / ceiling as per pipe erected. with necessary ceiling rose / H.D.Connector as directed.

(f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling

Complete

Cat. III

- **Scope**

Providing and installing **fan point wiring** using **2 × 1.5 sq.mm FRLS PVC insulated multi-strand copper conductors** and **1 × 1.5 sq.mm green insulated copper earth conductor**, conforming to IS standards and rated for **1100 V grade**, for a circuit length up to **10 metres**.

- **Execution**

The wiring shall be drawn through **medium-class rigid PVC conduit** with all necessary accessories such as bends, couplers, junction boxes and fittings, concealed in walls, ceilings or slabs. The point shall be controlled through a **6A modular switch** and **hum-free electronic step-type fan regulator (EME type or equivalent approved make)** mounted on PVC/metallic/wooden box with single mounting base frame and textured/metallic/white front plate.

The work shall include complete wiring, conduit system, earthing continuity conductor, switch, regulator, ceiling rose/heavy-duty connector, concealed installation, chasing and making good, testing and commissioning, complete as directed by the Engineer-in-Charge.

- **Measurement Unit: Per Point**

Rate shall include: FRLS copper wiring, earth wire, medium-class rigid PVC conduit and accessories, 6A modular switch, electronic fan regulator, mounting box, base frame, front plate, ceiling rose/heavy-duty connector, concealed installation, chasing and making good, testing, commissioning, labour, tools and all incidental materials required for complete and satisfactory operation.

Item No.42: Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate , modules erected with necessary connections as per site situation directed by Engineer In charge.

(1)One No. SP 6 Amp. Cat.III

(2) One No 5 pin plug Cat. III

(8) Computer RJ-45 socket

(10) 6/16Amp. Universal socket. Cat.III

(11) 6 Amps. Bell Push Cat. III

**(13) 6A/10A/16A/20A/25A/32A Single pole
Modular MCB Switch Cat.III**

1. SP 6 Amp Modular Switch – Category III

Providing and fixing **6 Amp Single Pole (SP) modular switch** of approved make, mounted on PVC/metallic/wooden box with single mounting base frame and textured/metallic/white front plate. The switch shall conform to relevant IS standards and be suitable for 240V AC operation. The work shall include all wiring connections, fixing accessories, testing and commissioning complete.

Unit: Each (No.)

2. 5-Pin Modular Socket – Category III

Providing and fixing **5-pin modular socket outlet** of approved make, suitable for 6A, 240V AC supply, mounted on PVC/metallic/wooden box with mounting frame and front plate. The socket shall conform to relevant IS standards and shall include all necessary connections, fixing accessories, testing and commissioning complete.

Unit: Each (No.)

3. Computer RJ-45 Data Socket – Category III

Providing and fixing **RJ-45 Computer Data Socket (LAN Outlet)** of approved make, suitable for Cat-5e/Cat-6 structured cabling system, mounted on PVC/metallic/wooden box with mounting frame and front plate. The item shall include termination of data cable, testing of connectivity and complete installation as directed by the Engineer-in-Charge.

Unit: Each (No.)

4. 6/16 Amp Universal Socket – Category III

Providing and fixing **6/16 Amp Universal Modular Socket** of approved make, suitable for operation on 240V AC supply, mounted on PVC/metallic/wooden box with mounting frame and front plate. The socket shall accommodate multiple plug configurations and shall include all necessary connections, testing and commissioning complete.

Unit: Each (No.)

5. 6 Amp Bell Push – Category III

Providing and fixing **6 Amp modular bell push switch** of approved make, mounted on PVC/metallic/wooden box with mounting frame and front plate. The bell push shall be suitable for doorbell and signalling circuits and shall include complete wiring connections, testing and commissioning.

Unit: Each (No.)

6. Single Pole Modular MCB Switch (6A/10A/16A/20A/25A/32A) – Category III

Providing and fixing **Single Pole Modular MCB Switch** of approved make and specified current rating (6A, 10A, 16A, 20A, 25A or 32A), conforming to relevant IS standards, mounted on PVC/metallic/wooden box with mounting frame and front plate. The MCB shall provide protection against overload and short circuit and shall be complete with all terminations, testing and commissioning.

Mode of Measurement : Measured and paid as per Each (No.)

Rate for all items shall include: Supply, fixing, mounting box, base frame, front plate, terminals, accessories, wiring connections, testing, commissioning, labour, tools and all incidental materials required for complete installation.

Item No.43: Point wiring for Light / Fan/ Bell/ Primary Point with 2-1.5 sq. mm & earth wire of 1.5 sq. mm (green) both are of ISI marked 1.1 kv grade FRLS PVC insulated multi strand copper wires upto max length of 10 mt, in below type of pipe erected with 6A Tissino Type ISI marked flush type switch / bell push and accessories erected on Metal /PVC/Wooden Box covered with 3 mm thick PC(Polycarbonate) /Acrylic/Laminated sheet. with Lamp Tholder/ceiling necessary H.D.Connector as directed. (f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete

Cat. III

- **Scope**

Providing and installing point wiring for **light, fan, bell or primary point** using **2 × 1.5 sq.mm FRLS PVC insulated, multi-strand copper conductors** and **1 × 1.5 sq.mm green insulated copper earth wire**, all conforming to IS specifications and rated for **1100 V grade**, from the point control switch to the outlet point, for a maximum circuit length of **10 metres**.

- **Execution**

The wiring shall be drawn through **medium-class rigid PVC conduit** with all required accessories such as bends, couplers, junction boxes and saddles, concealed in walls, ceilings or slabs. The point shall be controlled through a **6A flush-type modular switch/bell push (Tissino type or equivalent approved make)** mounted on a metal/PVC/wooden box and covered with **3 mm thick polycarbonate (PC), acrylic or laminated sheet**.

The work shall include supply and fixing of switch box, switch, ceiling rose/lamp holder, heavy-duty connectors, conduit system, wiring, earthing conductor, cutting chases, making good plaster, testing and commissioning complete as directed by the Engineer-in-Charge.

Measurement Unit: Per Point

Rate shall include: Conduit, FRLS copper wires, earth wire, switch, switch box, cover plate, ceiling rose/lamp holder, connectors, concealed installation, chasing and making good, testing, commissioning, labour, tools and all incidental materials required for a complete point wiring installation.

Item No.44: providing and erecting Approved make RCCBs conforming to IS: 12640 and having sensitivity of 30 mA and Short Circuit withstand capacity of 10 KA and suitable for operation on single phase 240 V,50Hz. having characteristic of quick action & tripping with all advance feature & do not incorporate any electronic component. for following Max. rating erected as directed

(ii) 40Amps. DP Cat. III

- **Scope**

Providing, erecting, testing and commissioning **40 Amp, Double Pole (DP) RCCB** conforming to **IS 12640**, suitable for operation on **240 V, single phase, 50 Hz AC supply**, complete with all mounting accessories and connections.

- **Materials**

The RCCB shall have a **rated residual operating current (sensitivity) of 30 mA**, **short-circuit withstand capacity of 10 kA**, and shall provide protection against earth leakage and indirect contact hazards. The device shall be of **electro-mechanical type**, incorporating **quick-make, quick-break mechanism** with instantaneous tripping characteristics and shall **not contain any electronic components** in the tripping circuit.

- **Execution**

The RCCB shall be **Category III**, suitable for installation in distribution boards, and shall be provided with a test button for periodic functional testing. The unit shall be of approved make, factory tested, and comply with all applicable safety and performance requirements.

The work shall include fixing, termination of incoming and outgoing conductors, testing, commissioning, and all accessories required for complete installation.

Measurement Unit: Each (No.)

Rate shall include: Supply, erection, testing and commissioning of 40A DP RCCB, mounting hardware, interconnections, terminations, labour, tools, testing equipment and all incidental works required for complete and satisfactory operation.

Item No.45: Providing and fixing in position Heavy-Duty Domal 27x65 Series Aluminum Sliding Window three track System containing Glass Shutters, 3-4mm Thick Sunglass (Heat-reflective/Tinted), Mosquito Shutter with SS Mesh etc with necessary fittings, and installation complete as directed.

- **Scope**

Providing, fabricating and fixing **Heavy-Duty Domal 27 × 65 Series Aluminium Sliding Window** of approved make and profile section, comprising a **three-track sliding system** with glass shutters and mosquito mesh shutter, complete in all respects.

The window frame and shutters shall be manufactured from high-quality extruded aluminium sections with approved surface finish. Glass shutters shall be glazed with **3–4 mm thick heat-reflective/tinted sun control glass (Sunglass)**. The mosquito shutter shall be fitted with **stainless steel (SS) mesh** of approved quality, securely fixed within the aluminium frame.

- **Execution**

The work shall include all necessary rollers, locking arrangements, handles, guides, weather strips, rubber gaskets, screws, sealants, corner cleats, fixing brackets and other accessories required for smooth operation and proper weatherproofing. The window shall be installed true to line, level and plumb, ensuring smooth sliding action and secure locking.

All joints shall be neatly finished and watertight. The contractor shall make good any damage to adjacent surfaces resulting from installation.

Measurement Unit: Square Metre (m²)

Rate shall include: Supply of aluminium sections, glass, SS mesh, fabrication, assembly, fittings and accessories, transportation, installation, sealing, testing for smooth operation, making good disturbed surfaces, labour, tools and all incidental works required for complete installation as directed by the Engineer-in-Charge.

Item No.46: Providing and fixing aluminium section of desire size including Glass & Supplying & erecting approved make low noise decorative exhaust fan(200mm with 1350RPM) having square frame ABS body with inbuilt lowers & square frame with necessary fittings, and installation complete as directed.

- **Scope**

Provide and fix aluminium section of the required size with glass, and supply and erect an approved-make low-noise decorative exhaust fan complete with all necessary fittings, accessories, wiring connections and installation.

- **Material**

Aluminium frame sections shall be of approved make, suitable for the opening size and service conditions. The frame shall be securely fixed, properly aligned and finished, and shall include glazing with approved quality glass of specified thickness.

Exhaust Fan

Decorative exhaust fan shall be 200 mm sweep, approximately 1350 RPM, low-noise type, with square-frame ABS body and inbuilt louvers. The fan shall be of approved make and suitable for continuous ventilation service.

- **Execution**

The fan shall be mounted within the aluminium-and-glass assembly as indicated, connected to the electrical supply, and tested for proper operation. The work shall include all screws, fasteners, sealants and incidental materials required for a complete installation.

- **Measurement and Rate**

Measurement shall be on a complete unit basis. The rate shall include supply, fabrication, glazing, fan supply, fixing, electrical connection, testing, commissioning and all incidental works necessary to complete the installation as directed by the Engineer-in-Charge.

Item No.47: Providing & laying Selection no. 1 grass turf with earth 50mm to 60mm thickness of existing ground prepared with proper level and ramming with required tools wooden and than rolling the surface with light roller make the surface smoothen and light watering the same maintenance for 30 days or more till the grass establish properly, as per direction of officer in charge (I) Lawn grass

- **Scope**

Providing and laying **Selection No. 1 lawn grass turf** of approved quality, with turf and attached earth layer **50 mm to 60 mm thick**, on a properly prepared subgrade. The ground shall be cleared of weeds, stones and debris, brought to the required levels and slopes, lightly rammed, and dressed to receive the turf.

- **Execution**

The turf shall be laid closely with joints properly butted, watered immediately after laying, and rolled with a light roller to achieve a firm, smooth and even surface. Any gaps, unevenness or damaged turf shall be rectified as directed by the Engineer-in-Charge.

The work shall include preparation of ground, supply and laying of turf, rolling, watering, replacement of dead or damaged grass, weeding, and maintenance for a minimum period of **30 days or until the grass is fully established**, whichever is longer.

Measurement Unit: Square Metre (m²)

Rate shall include: Supply of lawn grass turf, ground preparation, laying, levelling, rolling, watering, maintenance, replacement of failed patches, labour, tools, equipment and all incidental works required for complete establishment of the lawn.

SECTION-6
FORM OF BID

SECTION-6

FORM OF BID

Description of the Works:

-BID

To :

Address :

1. We offer to execute the Works described above and remedy any defects therein in conformity with the conditions of Contract, specification, drawings, Bill of Quantities and Addend a for the sum(s) of

(-----)

2. We under take, if our Bid is accepted, to commence the Works as soon as reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works in the Contract within the time stated in the document.
3. We agree to abide by this Bid for the period of 120 Days from the date fixed for receiving the same, and it shall remain binding upon it and may be accepted at any time before the expiration of that period.
4. Unless and until a formal Agreement is prepared and executed this Bid, together with our written acceptance thereof, shall constitute a binding contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this----- day of -----20

Signature-----in the capacity of-----

-----duly authorized to sign bids for and on behalf of-----

(in block capitals or typed)

Address

Witness

Address

Occupation

SECTION-7
BILL OF QUANTITIES

BILL OF QUANTITIES

Preamble

1. The bill of Quantities shall be read in conjunction with the Instructions to Bidder, Conditions of Contract, Technical Specifications and Drawings.
2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices tendered in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.
3. The rates and prices tendered in the priced Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all constructional plant, layout, supervision, materials, erection, maintenance, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract.
4. The rates and prices shall be quoted entirely in Indian Currency.
5. A rate or prices shall be entered against each item in the Bill Quantities, whether quantities are stated or not. The cost of Items against which Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities (in case of Item rate contract).
6. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Bill of Quantities, and where no Items are provided the cost shall be deemed to be distributed among the rates and prices entered for the related items of Work.
7. General direction and descriptions of work and materials are not necessarily repeated or summarized in the Bill of Quantities. References to the relevant sections of the contract documentation shall be made before entering rates or prices against each item in the Bill of Quantities.
8. The method of completed work of payment shall be in accordance with the specification for Road and Bridge works. For building works specifications for building are to be followed.
9. Errors will be corrected by the Employer for any arithmetic error or pursuant to **Clause 29** of the Instructions to Bidder.
10. Rock is defined as all materials which, in the opinion of the Engineer, required blasting, or the use of metal wedges and sledge hammers, or the use of compressed air drilling for its removal, and which cannot be extracted by ripping with a tractor of at least 150 kw with a single rear mounted heavy duty ripper.

BILL OF QUANTITIES

Name of Work:-Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana

(A) Percentage Rate Tender(Up to INR 50Cr.)

Item No.	Description of Item (with brief specification and reference to book of specifications)	Quantity	Unit	Rate In figures	Amount
1	Dismantalling masonry in lime or cement & stacking of useful and unuseful material from the dismantalled materials as directed under detailed specification etc. comp.(a) Brick	5.28	Cum	497.20	2625.22
2	Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats architraves,holdfasts and other attachment etc. complete andstacking them within all lead and lift.(i) Not exceeding 3Sq.M. in area.	2.00	Each	191.85	383.70
3	Providing and fixing 1 Metre high fencing with 1.3 Metre long M.S. Angle posts 40mm x 40 mm x6 mm (Y shape) and oil painting 3 coats fixed at 2.5 Mt,C/c. with Four Horizontan lines and two diagonals of galvanised steel barbed wire weighting 9.38 Kg. per 100 Metre, with 600 mm dia concentine wire on top and fixed to posts including fixing etc complete.	158.00	Rmt.	731.00	115498.00
4	Providing and fixing pre-cast Rubber Dye / steel Dyeinter locking concrete block 60mm thick with grade ofconcrete M300 pnumatic compressed / vibratedmechanically and as per approved design onfirming toS 15658 : 2006 including 35 mm Sand layer for levellingand filling the joint with sand in roper line and level asper guidlines of IRC : SP 63-2018 etc. Complete.	1055.15	Sq.mt.	699.84	738436.18
5	Providing and fixing pre-cast kerb block M250 Grade including levelling and filling the joint with Cement mortar CM 1:3 with line and level asper guidelines	77.00	Rmt.	304.00	23408.00
6	Excavation in all sorts of soil (including wet and slushy condition of soil) with yellow, sandy, gravelly soil including soft murrum & H.M. including sorting & stacking and depositing the excavated stuff in uniform layers as and where directed upto lead of 30 m and lift as shown below including clearing the site etc. compute (including dewatering) (B) For foundation trenches of C.D. work (a) 0 to 3 Mt. depth	71.25	Cum	79.00	5628.75
7	Earth work in embankment from borrow pits in all sorts of soil and soft murrum or other suitable strata as directed including breaking the clods and dressing to the design sections including cutting the proud section with lead as under and all lift including site clearing etc. complete. (c) 200 to 1000 Mt.	566.00	Cum	88.00	49808.00
8	Providing and laying foundation concrete of proportion as under by using cement, sand and machine crushed course aggregate laid in situ including necessary temping, smooth finishing, watering and curing as directed with all leads and lifts etc complete. (a) PCC 1:3:6	229.72	Cum	3979.00	914055.88
9	Providing and laying CC 1:2:4 grade using cement, sand & crushed metal incuding providing & erecting necessary form work, centering, vibrating, smooth finishing, watering & curing as directed with all leads & lifts etc. complete. (a) Sub structures	86.68	Cum	5418.00	469632.24
10	Providing and laying HYSD/TMT Fe 415, 500D steel bar reinforcement for R.C.C. works and anchor bar with providing binding wires including cutting, bending, welding, binding in position hooking, placing in position with all leads & lifts etc. complete.(C) TMT Fe 500 steel bars	1.26	MT	71366.00	89921.16

11	Providing burnt brick masonry 2nd class in cement mortar in 1:5 proportion for foundation & superstructure upto 6.00 mt. height including striking out joints 20mm deep curing watering finishing joints and providing scaffolding as directed as comp.	9.24	Cum	4182.00	38641.68
12	Providing cement plaster of cement & sand to brick masonry including racking out joint with scaffolding finishing watering curing etc. complete.(b) 12 mm thick C.M. 1:3	35.60	Sq.Mt.	196.80	7006.08
13	Applying two coats of putty & two coats of primer of approved brand and manufacture on new wall surface to give an even shade including thoroughly brushing the surface free from mortar dropping and other foreign matter and sand papered smooth.	690.94	Sq.Mt.	40.59	28045.25
14	Wall painting (two coats) with plastic emulsion paint of approved brand and manufacture on undecorated wall surface to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth.	690.94	Sq.Mt.	82.97	57327.29
15	Providing and fixing rolling shutters of approved make made of 80 mm wide M.S. laths inter-locked together through their entire length and jointed together at the ends by end locks mounted on specially designed pipe shaft with bracket plates, guide channels and arrangements for inside and outside locking with push-pull operation including the cost of hood cover and spring etc. complete. (A) Shutter having width below 3.5 M.	5.25	Sq.Mt.	3554.40	18660.60
16	Applying general insecticide pest control treatment to floors, cupboards etc including labour materials etc.complete. Using Imidacloprid 30.5 SCas Per IS 6313 part-II(0.075% concentration by mass) is recommended 10.5ml chemical diluted with 5 liters of water application 0.5 litre chemical /Sqm of surface is recommended as per I.S.	84.00	Sq.Mt.	80.62	6772.08
17	Dismentaling tiled of stone floors laid in mortar including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.	99.00	Sq.Mt.	49.18	4868.82
18	Providing and laying Ceramic tiles 6mm thick in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand) finishing with flush pointing in white cement.	21.00	Sq.Mt.	994.37	20881.77
19	Providing and laying polished Kota stone slab flooring over 20mm (Average) thick base of cement mortar 1:6 (1-cement: 6-coarse sand) or L.M. 1.1.5 (1-Lime putty 3 :1.5 coarse sand) laid over and jointed with grey cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. complete. (A) 25mm thick	78.00	Sq.Mt.	1019.00	79482.00
20	Providing and fixing wsh down water closet (European type, W.C. Pan) with integral P or S trap including jointing the trap with soil pipe in Cement Mortar 1:1 (1-Cement : 1-fine sand) (Seal and cover to be measured and paid for separately)(A) vitreous China Pattern :(i) in white colour	1.00	Each	1356.81	1356.81
21	Providing and fixing 12.5 Litres low level flushing istern with a pair, of C.I. or Mild brackets, complete with fittings such as lead valve less syphon, 15mm nominal size brass ball valve with polythene float, C.P brass handle unions and couplings for connections, with inlet, outlet and overflow pipes, 40mm dia. porcelain enamelled flush bend including cutting holes in wall and making good the same connecting the flush bend with cistern and closet (overflow pipe to be measured and paid for separately)(A) Vitreous China (I) In white colour	1.00	Each	2370.39	2370.39
22	Providing and fixing washbasin with single hole for pillar tap with C.I. or M.S. brackets painted white including cutting holes and making good the same but excluding fittings.(A) Vitreous China:(ii) Flat Back washbasin 550mm x v 400mm size. (i) In white colour.	1.00	Each	1519.50	1519.50

23	Providing and fixing screw down bib taps of following size.(A) Brass screw down bib tap polished bright. (i)15mm dia.	4.00	Each	186.83	747.32
24	Providing and fixing C.P. brass towel rail complete with C.P. brass brackets fixed to wooden plugs with C.P. brass screws.(B) 600mm x 20mm size.	1.00	Each	616.42	616.42
25	Providing erecting and fixing double coated ISI watertank of required capacity each with all necessary fittings and connection etc. complete on terrace	1000.00	Ltr	3.95	3950.00
26	Supplying & erecting approved make self-priming domestic monoblock water pump with 1 H.P motor, suitable for operation on 230 volts, 50c/s. AC supply with metallic flange, and M.S. impeller delivery and following discharge (a) 40 LPM at 24 mtrs. head suitable for 25mm dia. Delivery (Cat II) Including Cost of Labour.	1.00	Each	6977.08	6977.08
27	Providing and fixing to wall ceiling and floor 6.0 Kg. F/Cm ² working pressure poluthene pipes of the following outside Dia. Low density, complete with special flange compression type fittings, wall clip etc. including making good the wall ceiling and floor. (B) 25mm	20.00	Rmt.	106.50	2130.00
28	Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm ² working pressure poluthene pipes of the following outside Dia. Low density, complete with special flange compression type fittings, wall clip etc. including making good the wall ceiling and floor. (C) 32mm	20.00	Rmt.	123.47	2469.40
29	Providing and fixing cast iron spigot and socket soil, waste and ventilating pipes of the following nominal size. (C) 100mm dia. I	15.00	Rmt.	892.39	13385.85
30	Providing and fixing in position cowel went to pipes. (C) 100mm dia	1.00	Each	505.17	505.17
31	Providing and fixing plastic seat and cover for washdown water closer with C.P. brass hinges and rubber buffers. (B) Black plastic seal and cover.	1.00	Each	291.33	291.33
32	Providing and fixing 600mm x 450mm bevelled edge mirror of superior glass mounted on 6mm thick A.C. sheet or plywood sheet and fixing to wooden plug with C.P. brass screws and washers.	1.00	Each	859.41	859.41
33	Providing and fixing screw down bib taps of following size.(A) Brass screw down bib tap polished bright. (ii)20mm dia.	4.00	Each	214.81	859.24
34	Providing and fixing chromium plated brass half turn flush cock of approved quality including fixing in pipeline etc. complete.(i) 20mm dia.	2.00	Each	254.78	509.56
35	Providing and fixing PVC SWR Nahni trap IS 14735 for drain 100 mm diameter with jali of the following nominal diameter of self cleansing design with C.I. screed down or hinged grating including the cost of cutting and making good the walls.	2.00	Each	586.60	1173.20
36	Providing and fixing S.W. gully trap with C.I. grating brick masonry chamber and water tight C.I. cover with frame of 300mm x 300mm size (inside) with standard weight. (i) Square mouth traps. (A) 100mm x 100mm size P type.	2.00	Each	1292.19	2584.38
37	Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS: 513/CRCA/ aluminium die cast powder coated and high U.V. & corrosion resistance with diffuser with company mark/name 160V to 270V, Power Factor more than 0.9, THD < 15%, CCT 3000 K to 6500K, Luminaire efficacy > 85 lumens/watt, LED LED dCANAL/RIVER efficiency > 85 % (fitting required LM-79 & LM-80 certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings.The Engineer	8.00	Each	535.30	4282.40

	incharge may select any wattage capacity between the ranges shown.)(A) Tube Light with integral dCANAL/RIVER (v) 36-40 Watts, Surge-2 KV, IP-20, conventional 4 feet Cat-III				
38	Providing & erecting Approved make Ceiling Fan with double ball bearing ISI mark with Condenser 230 volt A.C.50 Hz 1200 mm sweep complete having 3 blades aluminium body and blade sets having ornamental design shanks , canopy erected with earthing. [Make shall be approved by Engineer in Charge]	4.00	Each.	2311.89	9247.56
39	Supplying and erecting 19 / 20 mm. nominal bore Medium Class M.S. Pipe down rod erected duly painted for fan complete with proper insulation without leakage and earthing.	3.60	Rmt.	108.07	389.05
40	Providing Fan clamp of 30 x 5 mm flat of required length & 10 mm M.S. Bolt & Nuts erected with necessary hook of 10 mm M.S. Round Bar.	4.00	Each	98.98	395.92
41	Point wiring for FAN with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (Green) both are of .ISI marked 1.1 KV Grade FRLS PVC insulated multi strand copper wires up to 10 mtr length, in below type of pipe erected with 6A Modular type switch and hum free EME step type electronic fan regulator mounted and accessories with earth continuity of following type erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured/metallic/white front plate modules erected on / in wall / ceiling as per pipe erected. with necessary ceiling rose / H.D.Connector as directed. (f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete	4.00	Pt.	674.68	2698.72
42	Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate , modules erected with necessary connections as per site situation directed by Engineer In charge.				
	(1)One No. SP 6 Amp. Cat.III	10.00	Each	151.50	1515.00
	(2) One No 5 pin plug Cat. III	12.00	Each	151.50	1818.00
	(10) 6/16Amp. Universal socket. Cat.III	6.00	Each	199.98	1199.88
	(11) 6 Amps. Bell Push Cat.III	2.00	Each	151.50	303.00
	(13) 6A/10A/16A/20A/25A/32A Single pole Modular MCB Switch Cat.III	4.00	Each	310.07	1240.28
43	Point wiring for Light / Fan/ Bell/ Primary Point with 2-1.5 sq. mm & earth wire of 1.5 sq. mm (green) both are of ISI marked 1.1 kv grade FRLS PVC insulated multi strand copper wires upto max length of 10 mt, in below type of pipe erected with 6A Tisino Type ISI marked flush type switch / bell push and accessories erected on Metal /PVC/Wooden Box covered with 3 mm thick PC(Polycarbonate) /Acrylic/Laminated sheet. with Lamp Tholder/ceiling necessary H.D.Connector as directed.	34.00	Each	390.87	13289.58
	(f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete				
44	providing and erecting Approved make RCCBs conforming to IS: 12640 and having sensitivity of 30 mA and Short Circuit withstand capacity of 10 KA and suitable for operation on single phase 240 V,50Hz. having characteristic of quick action & tripping with all advance feature & do not incorporate any electronic component. for following Max. rating erected as directed (ii) 40Amps. DP Cat. III	4.00	Each	2235.13	8940.52

45	Providing and fixing in position Heavy-Duty Domal 27x65 Series Aluminum Sliding Window three track System containing Glass Shutters, 3-4mm Thick Sunglass (Heat-reflective/Tinted), Mosquito Shutter with SS Mesh etc with necessary fittings, and installation complete as directed.	15.47	Sqm	7748.00	119861.56
46	Providing and fixing aluminium section of desire size including Glass & Supplying & erecting approved make low noise decorative exhaust fan(200mm with 1350RPM) having square frame ABS body with inbuilt lowers & square frame with necessary fittings, and installation complete as directed.	1.00	Each	3014.00	3014.00
47	Providing & laying Selection no. 1 grass turf with earth 50mm to 60mm thickness of existing ground prepared with proper level and ramming with required tools wooden and than rolling the surface with light roller make the surface smoothen and light watering the same maintenance for 30 days or more till the grass establish properly,as per direction of officer in charge (I) Lawn grass	277.50	Sq.Mt.	269.00	74647.50
				Total Rs.	2956230.73

I/We am/are willing to carry out the work at... .. %above/below percent (Should Be written in figures and words) of the estimated rate mentioned above. Amount of my/ our tender works out as under.

Estimated amount put to tender

Estimated amount put to tender

Deduct.....%below

Add.....%Above

Net

Net

In words

In words

(B) — For Item Rate Tender (For above INR 50Cr.):

Item No	Description of Item(with-brief specification and reference to book of specifications)	Quantity	Unit	Rate		Amount
				In figures	In Words	

(A) Total Tendered Amount

(B) Rebate on above tendere damount (if any)%(in figure).....
(in-
words).....

(C) Net Tendered Amount(A-B)(in figure).....
(in-
words).....

#

1	The Contractor shall exhibit aboard with brief details of work as directed by the Engineer-In-Charge for which no extra payment shall be made.
2	The labourcess will be deducted as per prevailing rules i.e. 1% of the work done.
3	GST and Income tax TDS will be deducted at a source while making payments of bills

4	<p>In all R.C.C. Items in Rate Analysis Standard Cement Consumption has been taken as per Govt. G.R.NO.:MIS102010/17/K1 Dated:30/07/2018 as stated in S.O.R. therefore in R.C.C. items where there is a change as per actual mix design the cost of difference of Cement consumption have been deducted fromt the rate of original item at the rate of input rate mentioned in all the tender.</p>
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SECTION-8

SECURITIES AND OTHER FORMS

BIDSECURITY (BANK GUARANTEE)

WHEREAS, ----- (name of Bidder) (hereinafter called the “The Bidder”) has submitted his bid Dated----- (Date) for the construction of----- (Name of Contractor here in after called “the Bid”)

KNOWALLPEOPLE by these presents that We-----
(name of Bank) of----- (name of country) having our
registered office at----- (here in after called
“the bank”) are boundun to----- (name of Employer)
(here in after called “The Employer”) in the sum of----- *

for which payment well and truly to be made to the said Employer the Bank itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this----- day of----- 20

THE CONDITIONS of these obligations are:

(1) If after Bid opening the Bidder withdraws his bid during the period of Bid validity specified in the Form of Bid;

Or

(2) If the Bidder has been notified of the acceptance of his bid by the Employer during the period of Bid Validity:

A. Fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required ;or

B. Fails or refuse to furnish the Performance Security ,in accordance with the Instructions to Bidders ;or

C. Does not accept the correction of the Bid Price pursuant to Clause 27 (Correction of Errors)

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the employer having to substantiate his demand, provided that in his demand the Employer will not ethatthe amount claimed by him is due to him owing to the occurrence of one or any ofthethree conditions, specifying the occurred conditions or conditions.

This Guarantee will remain in force upto and including the date----- **
days after the deadline for submission of Bids as such the deadline is stated in the
Instructions to Bidders or as it may be extended by the Employer, notice of
which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should
reach the Bank not later than the above date

DATE----- SIGNATURE-----

WITNESSES _____ SEAL _____

L

(Signature, name and address)

- * The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in Clause 16.1 (Bid Security) of the Instructions to Bidders.
- ** **45 days** after the **end of the validity period** of the Bid. Date should be inserted by the Employer before the Bidding documents are issued.

PERFORMANCE SECURITY

TO,

------(Name of Employer)
------(Address of Employer)

WHEREAS -----(name and address of Contractor)(here after called “the Contractor”)has under taken, in pursuance of Contracts No.-----dates-----to execute-----
----- (name of Contract and brief description of Works) (hereinafter called “The Contract”)

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract.

ANDWHEREAS we have agreed to give the Contractors such a bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, upto a total of-----
(amount of guarantee)*----- (in words),such sum being payable in types and proportions of currencies in which the Contract prices is payable, and we under take to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of -----
(amount of guarantee)as a fore said without your needing to prove or to show grounds or reasons for your demand for the sum specified there in.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting is with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract to of the Works to be performed there under or of any of the Contract documents which may be made between your and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such charge, addition or modifications.

This guarantee shall be valid until 60 days from the date of expiring of the Defect Liabilities period.

Signature and Seal of the guarantor-----

Name of Bank-----

Address -----

Date -----

*An amount shall be inserted by the Guarantor, representing the percentage the Contract price specified in the Contract denominated in Indian Rupees.

ADDITIONAL PERFORMANCE SECURITY

[Clause 34.1.(A)]

TO,

----- (Name of Employer)
----- (Address of Employer)

WHEREAS ----- (Name and address of Contractor) (here after called "The Contractor") has undertaken, in pursuance of Contracts No. ----- dates ----- to execute ----- (Name of Contract and brief description of Works) (hereinafter called "The Contract")

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractors such a bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of -----
(amount of guarantee) ----- (in words), such sum being payable in types and proportions of currencies in which the Contract price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of -----
(amount of guarantee) as afore said without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting it with the demand

We further agree that no change or addition to or other modification of the terms of the Contract to of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such charge, addition or modifications.

This guarantee shall be valid until **28 days** from the project completion date.

Signature and Seal of the guarantor -----

Name of Bank -----

Address -----

Date -----

BANK GUARANTEE OR ADVANCE PAYMENT

TO,

------(Name of Employer)

------(Address of Employer)

------(Name of Contractor)

Gentlemen:

In accordance with the provisions of the Conditions of Contract, sub-clause 51.1(“Advance Payment”)of the abovementioned Contract,-----
----- (name and address of Contractor)(here in after called ----- “the Contractor”)shall deposit with (name of Employer)a bank guarantee his proper and faithful performance under the said Clause of the Contract in an amount of------(amount of Guarantee)*-
-----in words).

We,the -----(bank of financial institution), as instructed
By the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to-----
(name of Employer)on his first demand without what so ever right of obligation on our part and without this first claim to the Contractor, in the amount not exceeding---
------(amount of ------(in
guarantee)*words)

We further agree that no change or addition to or other modifications of the terms of the Contractor or Works to be performed there under or of any of the Contract documents which may be made between------(name of Employer) and the Contractor, shall in any way release us from any liability under this guarantee, and wehere by waive notice of any such change, addition or modifications.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until ----- (name of employer) receives full repayment o f the same amount from the contractor.

YOUR’S TRULY

Signature and Seal _____
Name of Bank/Financial Institution _____
Address _____
Date _____

** An amount shall be inserted by the Guarantor, representing the percentage the Contract price specified in the Contract denominated in Indian Rupees.

Letter of Acceptance

(Letter head paper of the Employer)

_____(date)
To,
_____(Name and address of the Contractor)

Dear Sirs,

This is to notify you that your Bid dated _____ for execution of the _____ (Name of the contract and identification number, as given in the Instructions to Bidders) for the Contract Price of Rupees _____ (.....)(amount in words and figures) as corrected and modified in accordance with the Instructions to Bidders* is here by accepted by our agency.

You are requested to furnish performance security, in the form detailed in para 34.1 of ITB for an amount equivalent to Rs. _____ Within **10 days** of the receipt of this letter of acceptance up to beyond **60 days** from the date of expiry of defects Liability period i.e. up to _____ and the Additional Performance Security for an amount equivalent to Rs. _____ Shall be valid beyond 28 (twenty-eight) days of Project Completion Date i.e. upto _____ and sign the contract, failing which action as stated in Para 34.3 of ITB will be taken.

Yours Faithfully

Authorized Signature Name
and title of Signatory Name
of Employer

* Delete "Corrected and" or and modified if only one of these actions applies. Delete as corrected and modified in accordance with the Instructions to Bidders, if corrections or modifications have not been affected.

Issue of Notice to proceed with the work

(Letter head of the Employer)

To, _____(date)

_____(Name and address of the Contractor)

Dear Sirs,

Pursuant to your furnishing the requisite security in ITBC clause 34.1 and signing
of the Contract for the construction of _____

_____At a bid Price of Rs.
_____.

You are hereby instructed to proceed with the execution of the said works in accordance
with the contract documents.

Yours faithfully

(Signature, name and title of signatory authorized To
sign on behalf of Employer)

AGREEMENT FORM

This agreement, made on the _____ day of _____ between _____ (name and address of Employer) (Here in “the Employer”) and _____ (name and address of contractor) hereinafter called “the Contractor” of the other part.

Whereas the Employer is desirous that the Contract or execute

Name and identification number of contract (hereinafter called “the works”) and the employer has accepted the Bid by the Contractor for the execution and completion of such works and there medying of any defects there in, at a cost of Rs.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the conditions of contract hereinafter referred to and they shall be deemed to form and be read construed as part of this Agreement.
2. In Consideration of the payment to be made by the Employer to the contractor as here in after mentioned, the Contractor hereby covenants with the Employer to executive and complete the works and remedy any defects therein in conformity in all aspects with the provisions of the contracts.
3. The employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying the defects where in contract price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the contract.
4. The Following documents shall be deemed to form and be ready and construed as part of this Agreement viz
 - i) Letter of Acceptance
 - ii) Notice to proceed with the works:
 - iii) Contractor’s Bid

- iv) Conditions of contract: General and Special
- v) Contract Data
- vi) Additional conditions
- vii) Drawings
- viii) Bill of Quantities and
- ix) Any other documents listed in the Contract
Data as forming part of the Contract.

In witness where of the parties there to have caused this Agreement to be executed the
day and year first before written

The Common seal of _____

Was hereun to affixed in the presence of :

Signed, sealed and Delivered by the said _____

In the presence of

Binding signature of Employer _____

Binding Signature of Contractor _____

UNDERTAKING (For Investment)

I, the undersigned do hereby undertake that our firm M/s
.....would invest a
minimum cash up to **25%** of the value of the work during implementation of the contract.

(Signed by an Authorized officer of the firm)

Title of officer

Name of firm

DATE

UNDERTAKING
(For Validity)

I, the under signed do here by under take that our firm M/s.....
.....agree to a bid by this bid for a period.....days
For date fixed for receiving the same and it shall be binding on us and may be accepted at any
time before the expiration of that period.

(Signed by an Authorized officer of the firm)

Title of officer

Name of firm

DATE

SECTION-9
DRAWINGS

SECTION-10
DOCUMENTS TO BE FURNISHED BY BIDDER

Cement Consumption Statement

Name of Work:- Restoration work for canal chowki, store room & surrounding area with fencing work for on compound wall near ch 210.230 km of Sujlam Suflam canal at village Dela Ta.Di.Mehsana

Cement Consumption Statement

Item NO	Name of work	Quantity	Unit	Rate of Cement Consumption (bag/unit)	Total Cement Requirement (bags)
8	Providing and laying foundation concrete of proportion as under by using cement, sand and machine crushed coarse aggregate laid in situ including necessary temping, smooth finishing, watering and curing as directed with all leads and lifts etc complete. (a) PCC 1:3:6	229.72	Cum.	4.56	1047.52
9	Providing and laying CC 1:2:4 grade using cement, sand & crushed metal including providing & erecting necessary form work, centering, vibrating, smooth finishing, watering & curing as directed with all leads & lifts etc. complete. (a) Sub Structures	86.68	Cum.	6.60	572.08
11	Providing burnt brick masonry 2nd class in cement mortar in 1:5 proportion for foundation & superstructure upto 6.00 mt. height including striking out joints 20mm deep curing watering finishing joints and providing scaffolding as directed as comp.	9.24	Cum.	1.25	11.55
12	Providing cement plaster of cement & sand to brick masonry including racking out joint with scaffolding finishing watering curing etc. complete.(b) 12 mm thick C.M. 1:3	35.60	Sq.Mt.	0.12	4.27
18	Providing and laying Ceramic tiles 6mm thick in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand) finishing with flush pointing in white cement.	21.00	Sq.Mt.	0.13	2.73
19	Providing and laying polished Kota stone slab flooring over 20mm (Average) thick base of cement mortar 1:6 (1-cement: 6-coarse sand) or L.M. 1:1.5 (1-Lime putty 3 :1.5 coarse sand) laid over and jointed with grey cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. complete. (A) 25mm thick	78.00	Sq.Mt	0.21	16.38
				Total Quantity.	1654.53
				Say....	82.73 MT

Signature of the Contractor

Deputy Executive Engineer
Sujlam Suflam Sub Dn-5
Mehsana

Executive Engineer
Sujlam Suflam Dn-2
Visnagar