

# **STANDARD BIDDING DOCUMENT**

## **PROCUREMENT OF**

### **CIVIL WORKS**

**Repairing of existing HDPE pipeline of dia.280 mm & supplying and fixing new valve (survey no-235 new) at village: Aanand Bhakhari, Taluka-Satlasana Dist- Mehsana at chainage 3280 mt. Kuda to Bhimpur Pipeline project by using HDPE 280 mm dia. pipe.**

## **COMPLETE BIDDING DOCUMENT**

**EXECUTIVE ENGINEER,  
UNIT-1(GWM)  
OPPOSITE GANPAT UNIVERSITY,  
KHERVA TA.&DIST.-MEHSANA-384012  
PHONE NO. 02762-286508  
Email- [eeunitkherva@gmail.com](mailto:eeunitkherva@gmail.com)**



**GOVERNMENT OF GUJARAT**  
**Gujarat Water Resources Development Corporation Ltd.**

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**INVITATION FOR BID  
(IFB)**

## NATIONAL COMPETITIVE BIDDING

1. The Executive Engineer Unit-1(GWM), Kherva(Mehsana) invites bids for the construction of works detailed in the table.

The bidders may submit bids for any or all of the following works.

### 1. TABLE

Pack age No.	Name of work	Approximate value of works (Rs.)	Bid security (Rs.)	Cost of document	Period of completion	Class of Registration
1	2	3	4	5	6	7
1	Repairing of existing HDPE pipeline of dia.280 mm & supplying and fixing new valve (survey no-235 new) at village: Aanand Bhakhari, Taluka-Satlasana Dist- Mehsana at chainage 3280 mt. Kuda to Bhimpur Pipeline project by using HDPE 280 mm dia. pipe.	628884.91	6288/-	900+162 GST= Rs. 1062/-	03 Months	E2 & above

2. Prospective / Interested bidder may download the Bid Documents from website <https://tender.nprocure.com> free of cost till the Time and Date as mentioned on online NIT at website <https://tender.nprocure.com>
3. 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 Kherva (Mehsana) and in favour of " Executive Engineer,Unit-1,Kherva(Mehsana) ". Once the Bid is received online, Bid Document / Tender Fee will not be refundable. As Per GoG R&B Department's Circular No. PARACH/ 102/000IB/221/(59)/C Dated.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,Unit-1,Kherva(Mehsana) 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. WRD GR No. PRC-102014-1-MICell-K.1 Dated: 29/10/2014**

4. 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.
5. ~~A pre bid meeting will be held on .....at .....hrs. at the office of GWRDC Ltd Sector 10 A G'nagar 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 **Rs.6288/-** 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 non-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 contractor 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 GoG NWRWS & 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. 050 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 Office of Executive Engineer, Unit -1 (GWM), Opp.- Ganapat University, Kherva, Ta.-Mehsana within 7 days from last day of submission of Bid.**

- (i) Scanned copy of demand Draft of Bid Document Fee /Tender Fee
- (ii) Scanned copy Bid Security / EMD or Valid EMD Exemption Certificate of Appropriate Class of Registration of Approved Contractors
- (iii) Scanned copy of valid Registration Certificate of Appropriate class
- (iv) Scanned copy GST Registration certificate and PAN card
- (v) Scanned copy of AFFIDAVIT (As per proforma)
- (vi) Scanned copy of Undertaking for bid validity (As per proforma)

**SECTION - 1**  
**INSTRUCTIONS TO BIDDERS**  
**(ITB)**

## Section 1: 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 **Repairing of existing HDPE pipeline of dia.280 mm & supplying and fixing new valve (survey no-235 new) at village: Aanand Bhakhari, Taluka-Satlasana Dist- Mehsana at chainage 3280 mt. Kuda to Bhimpur Pipeline project by using HDPE 280 mm dia. pipe..** (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 **E2 & above** registered agency.
- 3.2 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a 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 GoG NWRWS & 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 ) Subcontractors experience and resources shall not be taken in to 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 for 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.

Year	Financial Year	Multiplying factor
Base year of inviting tender	2023-2024	1.00
-1	2022-2023	1.10
-2	2021-2022	1.21
-3	2020-2021	1.33
-4	2019-2020	1.46
-5	2018-2019	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 figures 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..... Lakhs for works in progress and completed in all classes of 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 Rs..... Lakhs 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 subcontractor, 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 construction 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, types 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 **Rs.40.72 Lakhs (25 percent of the value of the contract / contracts applied.)**~~

- ~~4.5.7. The audited balance sheets for the last five years 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 reasons 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 evaluation. An affidavit by bidder along with certificate from bank must be produced in such cases. In case of Joint Venture agreement, this provision shall be applicable for both lead partner and JV partner.~~

**#4.6 JOINT VENTURE: (Maximum 2 Members i.e. 1 Lead & 1 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 (b) & 4.5.6 above. The joint venture must collectively satisfy the criteria of para 4.5.3(b) & 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.~~
- ~~(iii) The lead partner and the joint venture must collectively satisfy the criteria of para 4.5.3 (a) 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 several 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 abandoning the works, not properly completing the contract, inordinate delay in completion, litigation history, or financial failures etc.; and/ or~~
- ~~— Participated in the previous bidding for the same work and had quoted 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 addenda issued in accordance with Clause 10:

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](http://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 online only.

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

Section	Particulars	Volume No.
	<b>Invitation for Bids (IFB)</b>	
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 Clause 20.
- 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 16 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 in column 4 of the table of IFB for this particular work. 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 01 Crore and above)** 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. Date: 11/03/2024 or as per their latest amendment.
- 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 period 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. Deadline 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 right and obligation 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 being 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 each 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 all 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 in to account in Bid evaluation.
- 29.4. The estimated effect 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 in to 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 his 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 (hereinafter 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 forth in 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 upto 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) This Additional Performance Security shall be treated as part of the Performance Security.
- (B) The Performance Security shall be valid beyond 60(sixty) days of the Defects Liability Period and the Additional Performance Security shall be valid beyond 28 (twenty-eight) days of Project Completion Date.

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. Date 21/04/2023 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, Unit-1, Kherva(Mehsana)	[ Cl.1.1]
2.	The last five financial years.	
	<del>2025-2026</del>	
	<del>2024-2025</del>	
	<del>2023-2024</del>	
	<del>2022-2023</del>	
	<del>2021-2022</del>	
3.	<del>This Annual Financial Turnover Amount is Rs. .... Lakhs</del>	[Cl.4.5.3 (a)]
4.	Value of Work is <b>Rs. 628884.91</b>	
5.	Deleted	
6.	The cost of electric work is Rs. Nil	
7.	The cost of water supply / sanitary works is Rs. Nil	
8.	<del>Liquid assets and / or availability of credit facilities is</del>	[Cl.4.5.6 ]
9.	<del>Price level of the financial year 2025-2026</del>	[Cl. 4.5.2]
10.	<del>The pre-bid meeting will take place at</del> No Pre Bid	[Cl. 9.2.1]
11.	<del>The technical Bid will be opened at the office of the Superintending Engineer, G.W.M.Wing, Gandhinagar on dt ..... at Gandhinagar</del>	
12.	Address of the Employer: Executive Engineer , Unit-1, Oppo. Ganpat University, Kherva(Mehsana)	
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 Superintending Engineer , G.W.M. Wing, Data Centre Building, Sector-8, Gandhinagar, As stated	[Cl. 23.1 ]
16.	The Bank Draft in favor of Executive Engineer Unit-1, Kherva(Mehsana)	
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>
<del>Base year of inviting tender</del>	<del>2023-2024</del>	<del>1.00</del>
<del>-1</del>	<del>2022-2023</del>	<del>1.10</del>
<del>-2</del>	<del>2021-2022</del>	<del>1.21</del>
<del>-3</del>	<del>2020-2021</del>	<del>1.33</del>
<del>-4</del>	<del>2019-2020</del>	<del>1.46</del>
<del>-5</del>	<del>2018-2019</del>	<del>1.61</del>



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

**~~[Reference CL. 4.5.5]~~**

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

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

## **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.50 lakhs.
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 marksheet, 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 of 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 and will be used for employment of required qualified staff for the work.

**SECTION - 2**

**QUALIFICATION INFORMATION**

## 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 0 \_\_\_\_\_ 20  
~~Work performed in the last five years~~ 20 \_\_\_\_\_ 20  
~~( in Rs. Lakhs)~~ 20 \_\_\_\_\_ 20  
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 a nominated sub-contractor, will also be considered provided the sub-contract involved execution of all main items of work described in the bid document, provided, further that all other qualification criteria are called (in the same name and style) 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 Work	Name of The Employer	Quantity of work performed	Remarks*(in dicat e contract Ref)
20__-20__				
20__-20__				
20__-20__				
20__-20__				
20__-20__				

~~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 financial year in which bids are received.~~

~~1.5 Availability of key items of Contractors Equipment for carrying out the works (Ref. Clause 4.5.5). The Bidder 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
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 (in case 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.~~

<b>Other Party (ies)</b>	<b>Employer</b>	<b>Cause of Dispute</b>	<b>Amount Involved</b>	<b>Remarks showing Present Status</b>

- ~~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 \* .....)~~

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- ~~1.13 Proposed work method and schedule. The Bidder should attach 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 the requirements of Clause 4 of the Instructions to the Bidders, if applicable.

(i) Affidavit

~~(ii) Undertaking~~

\* Fill the name of Consultant

**~~SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR  
AVAILABILITY OF CREDIT FACILITIES~~**

~~(CLAUSE 4.5.6 OF ITB)~~

~~BANK CERTIFICATE~~

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

~~If the contract for the work, namely \_\_\_\_\_ is awarded to the  
above firm, we shall be able to provide overdraft/credit facilities to the extent of  
Rs. \_\_\_\_\_ 40.50 lacs \_\_\_\_\_ 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 hereby 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 works 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 Undersigned understands 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 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

**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 hereunder

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 thereafter 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 Compensations 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. Heading 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 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 or 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 Contractor 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 otherwise 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 Contractor in preparing the Bid shall rely on 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 Contractor 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 Ground Water Management Wing, Gandhinagar.** 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 Ground Water Management Wing, Gandhinagar.
- 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 Ground Water Management Wing, Gandhinagar., 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 Ground Water Management Wing, Gandhinagar., 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 Disputers**

- 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 otherwise 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 as under....

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 Check Dam/ Canal / Drainage / Road Structure tender amount from RS. 50,000 to 10,00,000, the defect liability period shall be 12 months from the certified date of completion.  
~~(2) For WRD work except likes Check Dam/ 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 Check Dam/ 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 Check Dam/ 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, whichever 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) Dated 13/12/2013

33.2 ~~For Road works:-~~

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

- (a) ~~For resurfacing work of road free maintenance guarantee period one year from the date of completion.~~
- (b) ~~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 15 days by the contractor at his risk and cost as per the direction of Engineer in charge. The contractor needs to do 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 earthwork in embankment / cutting for side shoulders, side gutters, kilometer / indicator / guard stones, sign boards 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 contractor shall have to set up 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 cross checked 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. Tests**

- 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 the amount of work done for works upto Rs. 10 crore of estimate cost should be deducted from R.A. Bill of the contractor for testing the quality of material workmanship. ~~Whereas for estimated cost of works more than 10 crore, the charges for testing of quality of material workmanship shall be deducted from R.A. bill of contractor as per actual charges.~~ As Per GoG NWRWS & K Department's Circular No. PARCH/132023/401/MICELL Dated: 05/10/2023

- ~~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 rate as 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 as under.

(i) 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.

(ii) 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 into account for fixing the rate in S.O.R. referred to above.

- (iii) 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 authorities 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 thereof before the rates shall have been determined as lastly herein 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 the relevant amounts and under conditions set forth in 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 Events unless 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 occurs and 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, fuels 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 Contractor furnishes an irrevocable and unconditional Bank guarantee for an equal amount substantially in the format of Bank Guarantee for Performance Guarantee enclosed with SBD and valid up to 60 day 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 thereof.

## 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 Date by the date stated in the Contract Date, against provision by the Contactor 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 valuations 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 date of expiry of Defects Liability Period 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.

## **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 the rebates 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 a reconstructions 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 fundamental breach 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 levels and to deprive the Borrower of the benefits of free and 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 deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract data. Additional Liquidated 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 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 thereunder, 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 thereunder, 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/bye 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 Contractor including his amount of performance security. The Employer/Engineer shall also have the right to recover from the Contractor 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 CONSTRUCTIONS 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 may be.
  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 miscarriage 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 deductions 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 promotions 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 thereof 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) (GWM Wing G'nagar ) 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 (GWM Wing G'nagar ) , 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 #Managing Director, GWRDC**, 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 Contractor 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 Unit-1, Kherva	
	Address: Opposite Ganpat Univercity, Kherva	
	Name of authorized Representative (will be intimated later)	
2.	The Engineer is .....	
	Name of Authorized Representative: .....	
3.	The Defects Liability Period is — years from the date of completion.	[CL.1.1&33]
4.	The Start Date shall be 1 <sup>st</sup> 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 <b>03(Three) Months</b> after start of work with the following milestones:	[CL.1.1,17&2]
	Milestone dates: <u>Physical works to be completed Period from the start date</u> Milestone 1 i.e. 25 % 23 days. Milestone 2 i.e. 50 % 45 days. Milestone 3 i.e. 75 % 68 days. Milestone 4 i.e. 100% 90 days.	[CL.2.2& 49.1]
6.	The Site is located at Village- Aanand Bhakhari, Taluka-Vadnagar-Satlasana, Dist.-Mehsana (As per attached list)	[CL.1.1]
7.	The name and identification number of the Contract is:	[CL.1.1]
8.	The works consist of HDPE Pipe, Excavation, valves, chmaber etc. with items as per B.O.Q. The works shall, inter alia, include the following, as Specified or as directed:	[CL.1.1]
	<b>(A) WRD Works</b> Site clearance; setting – out and layout; providing, supplying, lowering HDPE pipe & construction of sluice valve chamber, Airvent kundi Pipe pushing-Road crossing & ROU etc. <b>(B) Road Works :</b> <del>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 other 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.</del>	



## ( C ) Bridge Works

~~provision of foundations, piers abutments and bearing; prestressed/reinforced cement concrete superstructure; wearing coat, hand railings, expansion joints, approach slabs, drainages spouts/ downtake 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 works on 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: As per clause 2-3

[CL.2.3(9)]

- Agreement
- Letter of Acceptance, notice to proceed with works
- Contractor's Bid Contract Data
- Conditions of Contract including Conditions of Contract
- Specifications
- Drawings
- Bills of quantities and
- Any other document listed in the Contract Data as forming part of the Contract.

11. The law which applies to the Contract is the law of Union of India [CL.3.1]
12. The language of the Contract documents is English [CL.3.1]
13. ~~Limit of subcontracting 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 death is Rs. 5 lakhs per occurrence with the number of occurrences limited to four. After each occurrence, the contractor will pay an additional premium necessary to make insurance valid for four occurrences always. [CL13]

17. Site Investigation report [CL.14]
18. The Site Possession dates shall be Work Oder Date [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. 27.1]
20. The period between program updates will be 15 days. [CL.27.3]
21. The amount to be withheld for late submission of an updated programme shall be Rs. 1 lakhs [CL. 27.3]
22. The following events shall also be Compensation Events [CL. 44]
 

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 landslide
  - (vi) 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. 46]
24. **The formula (e) for adjustment of prices are as under:** [CL.47]
  - ✓ 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:
 
$$V_L = 0.85 \times (P_1/100) \times R \times (L_i - L_0)/L_0$$

$V_L$  = 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.

$P_1$  = 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

$S_0$  = 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 Rebars** 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.

$B_0$  = 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 15<sup>th</sup> 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

$$V_f = 0.85 \times (P_f/100) \times R \times (F_i - F_0)/F_0$$

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

$F_0$  = 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 15<sup>th</sup> 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 spare procured by the Contractor 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 wholesale 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 - $P_l$	25 %
2. Cement - $P_c$	15 %
3. Steel - $P_s$	7 %
4. Bitumen - $P_b$	0.00 %
5. POL - $P_f$	0.00 %
6. Plant & Machinery Spares $P_p$	0.47 %
7. Other Materials - $P_m$	52.53 %
	-----
Total	100 %

25. The proportion of payments retained (retention money) shall be 6% {CL. 48} from each bill subject to a maximum of 5% of final contract price.

26. Amount of Liquidated damages for delay in completion of works **0.1% of contract value per day for work**
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. 51 & 52}

### **#Nature of Advances**

### **Amount (Rs.) Conditions to Be fulfilled**

~~Mobilization 10% of the contract unconditional Price be drawn~~ ~~On submission of 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.~~

- ~~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

- ~~Secured Deleted Advance for Non-persish able material Brought to site~~

~~(The advance payment will be paid to the Contractor no later than 28 days after fulfillment of the above conditions).~~

1. The amount of the advance payment are: {CL. 51 & 52}

2.

### **#Nature of Advances**

### **Amount (Rs.) Conditions to Be fulfilled**

~~3. Mobilization 10% of the contract unconditional Price be drawn~~ ~~On submission of 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.

4. 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

5. Secured ~~Deleted~~ Advance for  
Non-persish able material Brought to site

(The advance payment will be paid to the Contractor no later than 28 days  
after fulfillment of the above conditions).

- iii Secured ~~Deleted~~  
Advance for Non-persish able 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. 51.3}**

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. 52}

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

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. 58}
35. The date by which “as– built” drawings (in scale as directed) in 2 sets {CL. 58} are required within 28 days of the issue of certificate of completion of the whole or section of the work, as the case may be.
36. The amount to be withheld for failing to supply “as built” drawings report/L.S. of Pipe line/KMZ File {CL. 58} by the Date required is Rs 1.25 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 20 per cent.



**SECTION - 5**  
**TECHNICAL SPECIFICATION**

## **STANDARD GENERAL TECHNICAL SPECIFICATIONS:**

- 1.1 All the items occurring in the work and as found necessary during actual execution shall be carried out in workman like manner as per specifications below and as per written orders of the Engineer-in-charge.
- 1.2 A work order book as prescribed by the Engineer-in-charge shall be maintained on the site of work and the contractor shall carryout field compliance properly.
- 1.3 The contractor shall engage authorized representative who shall be responsible and competent for managing the work. He shall take orders from the Engineer-in-charge and shall be responsible for carrying out the same.
- 1.4 Quantities specified in the tender may vary at the time of actual execution and the contractor shall have not to claim for compensation on account such variation.
- 1.5 No trees shall be cut without permission of Engineer-in-charge.
- 1.6 Diversion for roads, if necessary, shall be provided and maintained during the currency of the contract without any extra cost to the Department.
- 1.7 The work shall be executed strictly in accordance with plans & specifications. Only the best materials and sound construction shall be executed in a through workman like manner.
- 1.8 The drawing prepared and trial pits taken are for general guidance and indication and changes either minor or major are likely to take place. No claim for extra payment shall be made by the contractor for such changes.
- 1.9 The quantities in the Bill of Quantities are only estimate quantities and during execution they may increase or decrease. Any claim put forward for this variation in quantity shall not be entertained.
- 1.10 The test of materials shall be carried out as per prescribed frequency as instructed by EIC. The rejected materials shall be removed from the site within 24 hours. If they are not removed within this period, the same will be removed at the contractor's risk and cost by the Department.
- 1.11 The work is an important work, and this fact shall be constantly borne in mind by the contractors and his workers. Works not specified above shall be carried out according to P.W.D. Handbook or according to instructions of the Executive Engineer.
- 1.12 The work requires constant attention for line, levels, and workmanship and hence the contractor shall have to keep the experienced technical staff on the work. The contractor has to supply the necessary materials and labour for the line and levels work at his own cost.
- 1.13 The contractor unless otherwise specified and providing in the contract shall pay all duties, tolls, quarry fees, royalties and taxes on all materials and articles they may use.

The rate quoted by the contractor shall be considered inclusive of all such duties, fees, royalties, taxes etc.

- 1.14 In the specification “as directed / approved” shall be taken to mean “as directed / approved “by the Engineer - in - Charge.
- 1.15 Wherever a reference to any India Standard appears in the specifications, it shall be taken to mean as reference to the latest edition of the same in force on date of agreement.
- 1.16 In “Mode of Measurement ” in the specifications, wherever a dispute arises in the absence of specification of a particular point or aspect, the provision on these particular points or aspect in the relevant Indian Standard shall be referred to.
- 1.17 All measurement and computations, unless otherwise specified, shall be carried out nearest to the following limits: -
- |     |                                  |       |         |
|-----|----------------------------------|-------|---------|
| (1) | Length, Width and Depth (Height) | 0.01  | Meter.  |
| (2) | Areas                            | 0.01  | Sq. Mt. |
| (3) | Cubic Contents (Except Wood)     | 0.01  | Cmt.    |
| (4) | Cubic Contents (Woodwork)        | 0.001 | Cmt.    |
- In recording dimensions of work in measurement book the sequence of length, width and height (depth) or thickness shall be followed.
- 1.18 The distance with constitutes lead shall be determined along the shortest practical route and not necessarily the rout actually taken. The decision of the Engineer - in - Charge in this regard shall be taken as final.
- 1.19 Where no lead is specified, it shall mean “all leads ”.
- 1.20 Lift shall be measured as per current practice for relevant item under direction or decision by Engineer-in-charge.
- 1.21 Definite particulars covered in the items of work, though not mentioned or include in it, specifications shall be deemed to be included therein.
- 1.22 Reference to specifications of materials as made in the detailed specification of the items of work is in the form of a designation containing the number of the specification of the material and prefix "M" i.e. “M-1 “etc.
- 1.23 Approval to the samples of various materials given by the Engineer-in-charge shall not absolve the contractor from the responsibility of replacing defective material brought on site or materials used in the work found defective at a later date. The contractor shall have no claim to any payment or compensation whatsoever on account of any such materials being rejected by the Engineer - in - Charge.
- 1.24 The contract rate of the item of work shall be for the work completed in all respects.
- 1.25 No collections of materials shall be made before it is got approved from the Engineer - in - charge.

- 1.26 Collection of approved materials shall be done at site of work in a systematic manner. Materials shall be stored in such a manner as to prevent damage, deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work.
- 1.27 Materials if and when rejected by the Engineer-in-charge, shall be immediately removed from the site of work.
- 1.28 No materials shall be stored prior to, during and after execution of a structure in such a way as to cause or lead to damage or overloading of various components of the structure.
- 1.29 All works shall be carried out in a workman like manner as per the best technique for the particular item.
- 1.30 All tools, templates, machinery and equipment for correct execution of the work as well as for check line, levels, alignment of the works during execution shall be kept in sufficient number and in good working condition on the site of work.
- 1.31 The contractors shall be responsible for observing the rules and regulations imposed under the “Mine and Minerals Act “and such other laws and rules prescribed by Govt. from time to time.
- 1.32 All necessary safety measures and precaution (including these laid down in the various relevant Indian Standards) shall be taken to ensure the safety of men, materials and machinery on the works and also of the work itself.
- 1.33 Approval to any of the executed item for the work does not in any way relieved the contractor of his responsibility for the correctness, soundness, strength of the structure as per the drawings and the specifications.

**1.34 Setting Out Works**

In the vicinity of **Village Aanand Bhakhari** the bench marks fixed by the Survey of India and temporary bench marks established by the GWRDC, which will serve as control points for these works. The Contractor shall establish sufficient number or reference benchmarks for facilitating setting out of works and taking levels for purpose of measurements.

Before starting any work, the Contractor shall erect reference benchmarks, reference lines and check profiles at convenient locations approved by the Engineer-in-Charge. The benchmark shall be 20 cm. x 20 cm. x 60 cm. with 40 cm. embedded in the firm ground and 20 cm projecting above ground. The word “BM” showing value of RL shall be conspicuously carved and painted on the benchmark. The reference line shall comprise the base line properly dog belled on the ground with the numbered concrete/masonry pillars suitably spaced.

The check profiles shall be located 30 m apart or closer as directed by the Engineer-in-

Charge so as to ensure execution of all slopes, steps and elevations to the profile or profiles indicated in the approved drawings. All-important levels and all control points with respect to benchmarks and reference lines shall be fixed and co-related by the Engineer-in-Charge.

All equipment's (Total Station or DGPS or Auto Level etc. with all equipment) materials and labour for setting out works including construction of bench marks, reference lines, check profiles and surveys, as may be required at the various stages of construction, shall be supplied by the Contractor at his own cost. The cost of such work shall be deemed to have been included in the rates of the items in the Schedule-B.

All equipment's shall be of standard and approved make and precision, and shall be made available well in advance of starting of the work. All equipment's shall be maintained, repaired and got tested and certified as and when required for its accuracy from the standard test houses or from the manufacturers and to the satisfaction of the Engineer-in-Charge. Cost of all above shall be deemed to have been included in the rates of the items included in the Schedule-B.

### **1.35 Preparation of Site**

#### **1.35.1 Clearing the site**

- a) The Contractor shall clear the entire working land width required for setting out of the work incl. removing all tree stumps, roots, bushes, brushwood, rubbish of all kinds, loose stones, and all other objectionable materials cutting of trees etc. The Contractor shall dispose of all such materials as directed by the Engineer-in-Charge.
- b) No separate payment will be made for complying the requirements of this paragraph for borrow area and all cost shall be deemed to have been included in rates quoted in Schedule-B.

### **1.36 Recording of Cross Sections**

- a) After clearing the site and prior to the beginning of excavation work, earthwork and any other works, Initial cross sections levels of existing ground shall be taken by contractor with Total Station or DGPS or Auto Level at every 30m intervals or closer depending on the nature of ground, normal to axis of works up to sufficient distance outside the limits of the work. Levels on this cross section shall be taken at 5m or closer intervals for structure works, they shall be taken at 3 m or closer intervals as directed by Engineer-in-Charge and submit initial level sheet with cross-section and longitudinal section for ready reference and these levels have been entered with ink in the field books by the Engineer-in-Charge or his representative not below rank of Assistant Engineer in presence of the Contractor or his authorized agent if he so desires and these shall be binding on the Contractor. The contractor or his authorized agent shall sign the field

book in token of acceptance of levels. These cross sections shall form the basis of all future measurements and payments. The original cross sections duly signed by the Contractor and the Engineer-in-Charge shall be preserved in safe custody by the Engineer-in-Charge. Each dimension shall be measured to the nearest 0.01 m. Any dimension greater than 25 m shall be measured with a precision of 0.1 m. Areas shall be computed to 0.01 m<sup>2</sup> and volume shall be computed to 0.01 m<sup>3</sup>.

- b) No separate payment shall be made to the Contractor for the labour, equipment (Total Station or DGPS or Auto Level etc.) and materials required for taking the cross sections.

### **1.37 Planning**

Prior to the commencement of the work, all relevant data shall be collected by the Contractor and drawing prepared by him showing the locations of the excavation stripping and filling. On these drawing both the excavation and filling should be shown in separate reaches and the quantity of material to be excavated and filled shall be stated clearly in these reaches. This information would be useful to ensure economic hauls throughout the work. Where the material to be excavated consists of different types and if the various types have to be used separately in the fill or dumped to spoil tip, the quantities of each class of material in each area should be shown on drawings. From the nature of material to be excavated and the method of its disposal the type of excavation, the length of haul and the amount of compaction necessary, it should be possible to select the most suitable type of plant for a particular job. The Contractor shall present his planning of the work along with required details to the Engineer-in-Charge at least 15 days before starting the work. The contractor shall be allowed to excavate as per the sequence of excavation as directed by the Engineer-In-Charge.

**1.37 The work site is located within agricultural land and may be surrounded by private farms. The contractor shall, at his own cost and responsibility, make all necessary arrangements for access to the work site, including obtaining permissions from landowners, temporary pathways, crossings, protection of standing crops, movement of machinery, labour, and transportation of earth/materials to the work location. Any damage caused during transportation or execution shall be made good by the contractor at his own expense. No separate payment shall be made for such arrangements.**

**Signature of Contractor**

**Executive Engineer**

**MATERIAL SECTION**

**SPECIFICATION OF PRINCIPAL MATERIALS**

## **CHAPTER-IV**

### **:: SPECIFICATION OF MATERIALS::**

The following specifications are only for the principal materials of construction which are included in the details specifications of items and indicated the requirements of qualities of materials. They are given as guide and neither includes all the materials of construction nor exhibits all their desirable qualities. This should be supplemented by detailed specifications as per relevant IS Code unless otherwise not mentioned. The rate of all items is inclusive of all materials inclusive of all lifts and leads for the material unless otherwise specified in detailed specifications.

#### **M.1 WATER**

The water to be used shall be potable water, clean & free from objectionable quantities of silt, organic matters alkali, salts and other injurious materials and shall be as per I, S. 456:2000. Water sample shall be tested in Government or Government approved laboratories, once before starting of work and then starting of new working season.

Permissible limit for some of the important parameters are as under.

	<b>TEST</b>	<b>PERMISSIBLE LIMIT AS PER IS-456-2000</b>
1	Organic solids	200 mg. per litres (max.)
2	Inorganic solids	3000 mg. per litres (max.)
3	Sulphates (as So <sub>2</sub> )	400 mg. per litres (max)
4	Chlorides (as Cl)	2000 mg./lit. for PCC. And 500 mg.lit.for RCC
5	Ph Value	Not less than 6

#### **M-2 CEMENT**

Cement shall be ORDINARY PORTLAND CEMENT (OPC) of grade 53 confirming to IS-12269:2015. The cement shall be used OPC 53 grade but any of the above and the type selected should be appropriate for the intended use.

The contractor shall have to make his own arrangement to procure the cement bearing I.S.I. mark directly from the major cement manufacturing plants having installed capacity of one LACS tonnes per annum or its authorized dealers only. The contractor shall arrange to cart, load and unload the same to the site of work at his own cost. The cement brought to site shall be tested in Government or government approved laboratory as per provision in IS-12269.

The cement bags shall be neatly stacked in a orderly manner so as to afford easy access and count in a damp proof condition. If the consumption of cement exceeds 25.00 MT., then the cement shall be stored in tin shed godown or in a pucca godown, one feet above the ground, so as cement can be prevented from atmospheric effect. Deteriorated cement shall not be allowed to use.

The testing of the cement shall be done for each lot / consignment received on



site. The frequency of the test shall be as under.

Quantity of Consignment	No. of Test Specimen
50 M.T.	1
100 M.T.	2
200 M.T.	3
300 M.T.	4
500 M.T.	5
800 M.T.	6
1300 M.T.	7
For each larger consignment	8

All physical tests required as per IS - 4031 (Part 1 to 6) – 1988 shall be carried out as per frequency mentioned in the table above. While the chemical test shall be carried out as per IS-4032-7986 one for ten physical test samples.

Each consignment shall be stacked separately and shall be used on the basis of first cum first used. The cement shall be used after testing only. Cement older than 90 days shall not be allowed to use.

The cement lot failed in testing shall be removed immediately from the site. A day-to-day account of cement received & used on the work together with the particulars of the work and quantity of the work and quantity of the work in which it was used, shall be maintained separately by the representative of the department, and shall be signed at the end of the day's work, both by the department's representative and the contractor.

### **M.3 SAND (FINE AGGREGATE)**

All fine aggregate shall be natural river sand and shall confirm to IS-383 -2016. Sand shall be of natural river sand having F.M. from 2.1 to 3.2 for all concrete works. It shall be clean, well graded, hard, durable and strong and free from injurious amount of dust, clay, silt, kankar nodules, soft or flaky particles, shale, alkali, salts, organic matter, loam, mica or other deleterious materials. Grading of the fine aggregate (sand) shall be as per Table – A given below. (IS-383-page No. 11 table-4)

TABLE – A (Table –IV of IS: 383- 1970)

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	90-100
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

Sand of grading zone-iv shall not be used for concrete work.

Limits of various deleterious materials in fine aggregate shall be as per mention below. Sand for masonry mortar and plastering work shall only be used after screening through proper number screen and shall confirm to IS-2116 for masonry mortar and to IS-1526 for plaster work.

#### **STORAGE:**

The fine aggregate should be stacked carefully on a clean and hard surface so that it should not be get mixed up with deleterious foreign materials, Segregation of heavier particles by sliding down may be not stacking in high conical heaps.

#### **TEST:**

The particulars of tests and frequency shall be as mention below.

**TABLE – B**

Sr. No.	Particulars of Test	Frequency of Test	Remarks
1	Gradation for Fineness Modulus	One test per 150 Cum of concrete/masonry work	IS-383-1970 & IS-2386-1963
2	Sp. gravity and water absorption	Once for new quarry/change in source	IS-383-1970 & IS-2386-1963
3	Silt Content	One test per 150 Cum of concrete/masonry work	IS-383-1970 & IS-2386-1963
4	Impact Value	Once for new quarry/change in source	IS-383-1970 & IS-2386-1963

### **M.4 COARSE AGGREGATE**

The coarse aggregate for the use of making concrete and other purpose shall be of black stone crushed metal. It shall be clean, hard, durable & free from alkalis and other deleterious substance. The coarse aggregate shall be well grade and generally be cubical in shape. The gradation shall give a dense & water tight concrete of specified strength and consistency. The actual gradation shall be as indicated by the laboratory study.

#### **GRADING:**

The grading of the coarse aggregate shall be as per Table – A given below (IS-383:1970 Page No. 9 table - 2).

**TABLE - A**

IS Sieve designation	% Passing for graded aggregate of nominal size.			
	40 mm.	20 mm.	16 mm.	12.5 mm.
80 mm.	100	-	-	-
63 mm.	-	-	-	-
40 mm.	95 to 100	100	-	-
20 mm.	30 to 70	95 to 100	100	100
16 mm.	-	-	90 to 100	-
12.5 mm.	-	---	-	90 to 100
10 mm.	10 to 35	25 to 55	30 to 70	40 to 85
4.75 mm.	0 to 5	0 to 10	0 to 10	0 to 10
2.36 mm.	-	-	-	-

#### **SIZE OF AGGREGATE:**

The size of coarse aggregate for mass concrete shall be as Table – B given below

**TABLE – B**

CLASS	SIZE	IS Sieve Designation	% Passing
Very large	150 to 80 mm.	150 mm.	90 to 100
		80 mm.	0 to 10
Large	80 to 40 mm.	80 mm.	90 to 100
		40 mm.	0 to 10
Medium	40 to 20 mm	40 mm	90 to 100
		20 mm.	0 to 10
Small	20 to 4.75 mm	20 mm.	90 to 100
		4.75 mm.	0 to 10
		2.36 mm.	0 to 2

The nominal maximum size of coarse aggregate shall not be greater than one fourth of the minimum thickness of the member for PCC work, In case of RCC members maximum size of coarse aggregate shall be such so as concrete can easily place in the members without honey combing. It can be determined as follow.

(i) One fourth of the minimum thickness of the members. (ii) The minimum clear distance between main bars minus 5 mm. (iii) The minimum cover to the reinforcement minus 5 mm. whichever is smaller. The minimum and maximum size of the aggregate shall be between 4.75 mm. to 80 mm.

#### **DELETERIOUS MATERIALS:**

Deleterious material as described and its acceptance criteria for coarse aggregate shall be as per IS-383-1970.

#### **TESTING:**

The material subjected to tests for gradation, flakiness and elongation, abrasion value, soundness crushing/ impact value, and deleterious materials etc. as per IS-383. Following is the acceptance limit.

- i) Flakiness and elongation : 30 % maximum.
- ii) Abrasion value. : 40 % maximum.
- iii) Soundness. : 12 % loss with Na<sub>2</sub>SO<sub>4</sub> and 18 % loss with MgSO<sub>4</sub>
- iv) Crushing value. : 45 % for concrete and 30 % for wearing surface.
- v) % of deleterious material. : 5 %
- vi) Sp. Gravity. : 2.5 Minimum.
- vii) Water absorption : 1.5 % maximum.

#### **FREQUENCY OF TESTING:**

The particulars of tests and its frequency shall be as mention below.

Sr. No.	PARTICULARS OF TEST	FREQUENCY	REMARKS.
1	Gradation	One test per 150 cum. Of concrete work.	IS-383-1970 & IS-2386-1963
2	Sp. Gravity and Water absorption	Once for new quarry/ change in source.	IS-383-1970 & IS-2386-1963
3	Flakiness and elongation.	Once for new quarry/ change in source.	IS-383-1970 & IS-2386-1963
4	Impact value.	Once for new quarry/ change in source.	IS-383-1970 & IS-2386-1963

#### **STORAGE:**

The aggregate of different size shall be stacked or batched or stored separately and handle in such a manner as to prevent intermixing of different size of aggregates. No foreign materials shall be allowed to be mixed up with the aggregates.

#### **M.5. THERMO MECHANICALLY TREATED (TMT) H.Y.S.D. STEEL:**

The thermo mechanically treated, popularly known as TMT H.Y.S.D. steel shall conform to IS-1786. The steel shall be procured by the contractor and grade of steel shall be Fe415/Fe500 as per item description. The contractor shall make suitable arrangement for storage of the steel at site. In any circumstances steel produced by re-rolling mills shall not be allowed to use. The steel shall be free from loose mill scale, rust oil, grease, or any other harmful matter. The contractor shall have to procure steel bars directly from manufacturers having BIS certification or its authorized dealer. The contractor shall have to produce original voucher / bill (Retail invoice or Tax Invoice). For the same along with physical and chemical test report whenever asked by engineer in charge for the same.

- The mechanical properties of the steel shall be as mentioned below.

**TABLE - A (IS-1786-2008)**

STRENGTH GRADE & DESIGNATION	MECHANICAL PROPERTIES			BEND TEST		REBEND TEST	
	YIELD STRESS (YS)	TENSILE STRENGTH (TS)	ELONGATION % ON GAUGE LENGTH (EL)	Up to & incl. 20mm dia.	Over 20mm. dia	Upto & incl. 10mm dia	Over 10mm. dia.
	N/mm <sup>2</sup>	N/mm <sup>2</sup>		☞	☞	☞	☞
1	2	3	4	5	6	7	8
Fe415	415	10 % more than the actual Ys but not less than 485 N/mm <sup>2</sup>	14.5	Mandrel Dia=3 mm	Mandrel Dia=4 mm	Mandrel Dia=5 mm	Mandrel Dia=7 mm
Fe500	500	8 % more than the actual Ys but not less than 545 N/mm <sup>2</sup>	12	Mandrel Dia=4 mm	Mandrel Dia=5 mm	Mandrel Dia=7 mm	Mandrel Dia=8 mm

NOTE: The sample shall be considered to have passed in the bend test if there is no transverse crack in the bent portion. The sample shall be considered to have passed in the re-bend test if there is no fracture in the bent portion.

The chemical composition of the steel shall be as mentioned below.

<b>TABLE-B (IS-1786-2008)</b>				
CONSTITUENT	PERCENTAGE MAXIMUM			PERMISSIBLE VARIATION
	Fe 415	Fe 500	Fe550	% max
Carbon	0.3	0.3	0.3	0.02
Sulphur	0.06	0.055	0.055	0.005
Phosphorus	0.06	0.055	0.05	0.005
Sulphur & phosphorus	0.11	0.105	0.1	0.01

#### TESTING:

Testing of steel shall be done for each of bars at the frequency mentioned in table-C below or less of steel in government or government approved laboratory to know the physical properties of steel bars, like nominal mass, 0.2 percentage proof stress/yield stress, Elongation percentage, Tensile strength, Bend and Re-bend test. And chemical test shall be done one for every ten physical test sample.

<b>TABLE-C (Table-5, Page-17 of IS-1786)</b>			
FREQUENCY FOR NOMINAL MASS, TENSILE BEND AND REBEND TESTS			
NOMINAL SIZE IN mm	QUANTITY		
	FOR CASTS/BEATS BELOW 100 TONNES	FOR CASTS/BEATS OVER 100 TONNES	
Under 10 mm	One sample from each 25 tonnes or part thereof	One sample from each 40 tonnes or part thereof	
10mm to 16 mm inclusive	One sample from each 35 tonnes or part thereof	One sample from each 45 tonnes or part thereof	
Over 16mm	One sample from each 45 tonnes or part thereof	One sample from each 50 tonnes or part thereof	

#### MEASUREMENT:

For the purpose of payment, the bar shall be measured correct up to 10mm in length. Unit weight of bars shall be computed as per weight given in IS-1786-2008. Specification for Indian steel or at the rate specified below:

<b>TABLE-D (Table-1, Page-11 of IS-1786)</b>			
BAR DIA.	UNIT WEIGHT	BAR DIA.	UNIT WEIGHT
In mm	Kg / Rmt.	In mm	Kg / Rmt.
6	0.222	22	2.98
8	0.395	25	3.85
10	0.617	28	4.83
12	0.888	32	6.31
16	1.58	36	7.99
18	2.00	40	9.85
20	2.47	50	15.42

#### M.6 BINDING WIRE:

The binding wire for tying reinforcement shall be of soft & annealed mild steel conforming to IS-280. The diameter of wire shall be of 1.63mm or 1.22mm (16 or 18

gauge). the use of black wire shall be permitted for binding reinforcement bars. It shall be free from rust, oil paint, grease, loose mill scales or any other undesirable coating which may prevent adhesion of cement mortar.

**M-7: Bricks :**

- 15.1 The bricks shall be hand or machine molded and made from suitable soils and kiln burnt. They shall be free from cracks and flaws and nodules of free lime, they shall have smooth rectangular faces with sharp corners and shall be of uniform colour.

The bricks shall be molded with a frog of 100 mm. x 40mm. and 10mm. to 20mm. deep on one of its flat sides. The bricks shall not break when thrown on the ground from a height of 600 mm.

- 15.2 The size of modular bricks shall be 190 mm. x 90 mm. x 90 mm.

- 15.3 The size of the conventional cricks shall be as under :  
( 9" x 4.3/8" x 2,3/4" ) 225 x 110 x 75 mm.

- 15.4 Only bricks of one standard size shall be used on one work. The following tolerances shall be permitted in the conventional size adopted in a particular work.

Length  $\pm 1/8"$  (3.0 mm) Width  $\pm 1/16"$  (1.50 mm. ) Height  $\pm 1/16"$  (1.50 mm. )

- 15.5 The crushing strength of the bricks shall not be less than 35 Kg/Sq. Cm. The average water absorption shall not be more the 20 percent by weight. Necessary tests for crushing strength and water absorption etc, shall be carried out as per I.S. 3495 (Part-1 to 4) – 1992.

**Signature of Contractor**

**Executive Engineer**

**CHAPTER - V**

**ITEM WISE DETAILED TECHNICAL SPECIFICATION**

**CHAPTER -V**  
**ITEM WISE DETAILED TECHNICAL**  
**SPECIFICATION**

**Detail Technical Specification**

**ITEM No.: 1**

**Excavation of pipeline trenches/ foundation trenches in the strata shown below including depositing the excavated stuff as and where directed upto lead of 50 Mts. and 6.0 Mt lift of excavation below average G.L. including refilling, cleaning the site with thin jungle cutting but excluding dewatering if any.(A) Excavation in all sorts of soil.**

**(1) Up to 1.5mtr**

**(2) 1.5mtr to 3.00 mtr**

**1.0 General**

1.1 Any soil which generally yields to the application of pickaxes and shovels, phawaras rakes or any such ordinary excavating implement or organic soil, grovel silt, sand turf loam, clay, peat etc., fall under this category.

**2.0 Clearing the site**

2.1 The site on which the structure is to be built shall be cleared with thin jungle cutting but excluding dewatering, all obstructions like loose stone, materials and rubbish of all kind, bush wood and trees shall be removal as directed. The materials so obtained shall be property of the Government and shall be conveyed and stacked as directed within 50 mt. lead. The roots of the trees coming in the sides shall be cut and coated with a hot asphalt.

2.2 The rate of site clearance is deemed to be included in the rate of earth work for which no extra will be paid.

**3.0 Setting out**

After clearing the site the center lines will be given, by the Engineer - in-charge. The contractor shall assume full responsibility for alignment, elevation and dimension of each and all parts of the work. Contractor shall supply labour, materials, etc., required for setting out the reference marks and bench marks and shall maintain them as long as required and directed.

**4.0 (A) Excavation ( loose or soft soil.)**

The excavation in foundation shall be carried out in true line and level and shall have the width and depth as shown in the drawings or as directed, The contractor shall do the necessary shoring and shutting or providing necessary



slopes to a safe angle, at his own cost. The payment for such precautionary measures shall be paid separately if not specified. The bottom of the excavated area shall be leveled both longitudinally and transversal as directed by removing and watering as required. earth filling will be allowed for bringing it to level. If by mistake or any other reason excavation is made deeper or wider than that shown on the plan or directed. The extra depth or width shall be made up with concrete of same proportion as specified for the foundation concrete at the cost of the contractor. The excavation up to 1.50 mt. depth shall be measured under this item.

**5.0 Disposal of the excavated stuff**

- 5.1 The excavated stuff of the selected type shall be used in refilling the trenches and plinth or leveling the ground in layers including ramming and watering etc.
- 5.2 The balance of the excavated quantity shall be removed by the contractor from the site of work to a place as directed with lead up to 50 mt. and all lift.
- 5.3 Restoring of water Supply connections, sewer connections, telephone lines, etc. if damaged by contractor without extra payment.

**6.0 Mode of measurements & payment**

- 6.1 The measurement of excavation in trenches for foundation shall be made according to the sections of trenches shown on the drawing or as per sections given by the Engineer - in - charge. No payment shall be made for surplus excavation made in excess of above requirements or due to stopping and sloping back as found necessary on account of conditions of soil and requirements of safety.
- 6.2 The rate shall be for a unit of one cubic meter.

**1.5mtr to 3.00 mtr**

- 1.0 Workmanship
- 1.1 The relevant specifications of item No. 1 shall be followed except that the excavation work shall be carried out from 1.50 mt. to 3.00 mt. Lift in hard murrum.
- 2.0 Mode of Measurement & Payment
- 2.1 The relevant specification of item No. 1 shall be followed.
- 2.2 The excavation work from 1.50 mt. to 3.00 mt. shall be measured under this item.
- 2.3 The rate shall be for a unit of one cubic meter.

## **ITEM No.: 2**

**Refilling the pipeline trenches incl. ramming, watering, consolidating disposal of surplus stuff as directed within a radius of 3 km with selected soil brought from outside including all lead.**

- On completion of the pipe laying operations in any section, for a length of about 100m and while further work is still in progress, refilling of trenches shall be started by the Contractor with a view of restricting the length of open trenches. Pipe laying shall closely follow the progress of Trench Excavation and the Contractor shall not permit unreasonably excessive lengths of trench excavation to remain open while awaiting testing of the pipeline. If the Engineer considers that the Contractor is not complying with any of the foregoing requirements, he may prohibit further trench excavation until he is satisfied with the progress of laying and testing of pipes and refilling of trenches. The excavated material nearest to the trench shall be used filling. Care shall be taken during backfilling, not to injure or disturb the pipes, joints or coating. Filling shall be carried out simultaneously on both sides of the pipes so that unequal pressure does not occur. Walking or working on the completed pipeline unless the trench has been filled to height of at least 30cm over the top of the pipe except as may be necessary for tamping etc., during backfilling work.
- The remaining portion of the trench may be filled in with a mixture of hard and soft material free from boulders and clods of earth larger than 150mm in size if sufficient quantity of good earth and murrum are not available. The trench shall be refilled so as to build up to the original ground level, keeping due allowance for subsequent settlement likely to take place. The top 300mm layer or fertile agricultural soil shall be kept aside during excavation and shall be laid in layers near ground level during refilling.
- To prevent buckling of pipe shell of diameters 1200mm and above, pipes shall be strutted from inside while the work of refilling is in progress, for which no separate payment shall be made.
- Strutting shall be done by means of strong spiders having at least 6 arms which shall be sufficiently stiff to resist all deformation. Spiders shall be provided at a maximum interval of 2m & shall be welded in such a way that internal coating does not get burnt.
- The Engineer shall, at all times, have powers to decide which portion of the excavated materials shall be for filling and in which portion of the site and in what manner it shall be so used.
- If any material remains as surplus it shall be disposed of as directed by the Engineer, which includes loading, unloading, transporting and spreading as directed within all lead. If the Contractor fails to remove the earth from site within 7 days after

the period specified in a written notice, the Engineer may arrange to carry out such work at the Contractor's risk and cost or may impose such fine for such omission as he may deem fit. Particular care shall be taken to keep the trench dry during the entire refilling operation.

→ If suitable material for refilling is not available for excavation the Contractor shall bring earth, murrum of approved quality as directed by the Engineer.

→ No mechanical plant other than approved compacting equipment shall run over or operate within the trench until backfilling has reached its final level or the approval of the Engineer has been obtained.

→ Subsidence in filling in : Should any subsidence take place either in the filling of the trenches or near about it during the maintenance period of 24 months from the completion of the Contract Works, the Contractor shall make good the same at his own cost or the Engineer may without notice to the Contractor, make good the same in any way and with any material that he may think proper, at the expense of the Contractor. The Engineer may also, if he anticipates occurrence of any subsidence, employ persons to give him timely notice of the necessity of making good the same, and the expenses on this account shall be charged to the Contractor.

#### → **MODE OF MEASUREMENT AND PAYMENT**

The measurement shall be taken per Cum basis or as per Relevant item of Schedule B. The rates include material

#### **ITEM No.: 3**

**Providing Laying & Joining in standard length ISI mark rigid unplasticised H.D.P.E. Pipes suitable for irrigation water with self fit joint incl, joining necessary fitting like Tee, Bend, Coupler, reducer, End cap joining (cement solvent) of following class and dia as per IS specification No. 4985/1988 etc. comp (a) 6.00 kg/cm<sup>2</sup>(14) 280 mm dia.**

#### **A. General technical specifications: (supplying of HDPE pipe)**

##### **Scope of Item.**

The item shall be covering manufacturing, supplying, and delivery of HDPE pipes having pressure rating PN-6 & material grade PE -100 bearing IS 4984/1995 and its latest version or amendments. The HDPE pipes shall be supply in standard length or as per GWSSB's/ Department requirements.

##### **Standard:**

The HDPE pipes is to be procured, supplied under the scope of this item and which shall be meet the requirement of pressure rating of PN 6 and material grade PE-100

in accordance and confirming to IS:4984/1995 or its latest version or amendments with IS certification mark.

**Temperature Variation:**

All the pipes to be supplied and delivered shall be subject to weather condition like sun, dust, rain, wind as available in the state of Gujarat. They shall also be subject to carry and convey drinking water under available temperature condition ranging from 4 Deg. Centigrade to 40 Deg. Centigrade.

**Marking:**

The method of marking to all the pipes to be used under the scope of contract shall ensure that all the information as mentioned in clause 10 of IS:4984/1995 and/or its latest amendments. The marking will remain legible even after transportation, storage in open space etc. In general the legible and indelible marking upon the pipes shall indicate the following:

- |    |  |
|----|--|
| a) | Manufacturer's name or trade mark.               |
| b) | Grade of material.                               |
| c) | Class of pipes and pressure rating.              |
| d) | Nominal diameter.                                |
| e) | Lot number / Batch number of manufacturer.       |
| f) | ISI certification Mark.                          |
| g) | Purchasers mark as "G.W.R.D.C.Ltd. Gandhinagar". |

**Packing and handling:**

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When the pipes are transported at railway risk, special packing as per IRCA rules are absolutely necessary for which the extra cost if any sale be borne by in total by bidders only.

The bidder shall have proper handling instrument / equipment and shall follow suitable method of handling of pipes as may be approved by Engineer while unloading, and stacking material.

**Material and workman ship:**

- i. General requirement of material and workmanship shall mean any material or articles either raw material or additives or finished are required to be used in the manufacturing process of pipes.
- ii. The material used for manufacturing of pipes should not constitute any toxic hazards should not support microbiological growth and should not give rise to

unpleasant test or odor, cloudiness or discoloration of water. The bidder shall have to produce Pipe manufacturer's certificate, that the material meets the PE 100 requirements as per IS 4984/1995 and its latest revision / amendments.

- iii. All other quality parameters like density, MFR, carbon black content, anti-oxidant and reworked material of raw material use for manufacturing of pipes shall be strictly as per IS:4984/1995 or its latest revision or amendment.
- iv. The HDPE pipe shall be procured from the approved vendor list of GUJARAT WATER SUPPLY AND SEWERAGE BOARD(GWSSB)/GWIL and GWRDC.

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**Technical specification:**

Supply of material and manufacture of pipe:

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1. The general requirement relating to supply of material and manufacture of HDPE pipe shall be confirming to the relevant IS specification.
  2. The dimensions, material compositions, test etc. shall be as per IS 4984/1995 or its latest revision / amendment.
  3. HDPE pipe shall be marked with the ISI certification mark.
  4. The minimum and maximum wall thickness of pipe shall be as per specification in IS 4984/1995 or its latest revision / amendment.
  5. The colour of pipe shall be black as per IS 4984/1995 or its latest revision / amendment.

For the identification purpose each pipe shall contain minimum three equispaced longitudinal strips of width 3 mm (min) in blue colour. These strips shall be co-extruded during pipe manufacturing itself and shall not be more than 0.2 mm in depth. The material of the strips shall be of the same types of resin as used in based compound for the pipe.

- 
6. 100 % virgin material shall allowed no rework is to be used for the production of pipes.
  7. The bidder shall have to arrange testing of pipes at Manufacturer Company where Bidder supply of Pipe Before brought on site and Site Testing should be done as per norms in CIPET/GIRDA the satisfactorily report from the CIPET/GIRDA. Testing charges should be borne by the agency.

The following tests as per IS 4984-1995 and its latest revision/amendments will be carried out by the agency in the presence of representative of Engineer-In-Charge / Third party Inspection (T.P.I). (Laboratory tests as well as field tests). The testing charges shall be borne by the contractor.

8. Dimensions ( Inside and outside diameter, Wall thickness and Length of pipe)
  - Visual appearance
  - Hydraulic Characteristics
  - Reversion test

Over all migration test  
Density  
Melt flow rate (MFR)  
Carbon Black content and dispersion test.  
Acceptance test.  
Internal Creep Rupture Test

## SPECIFICATION FOR LAYING *AND JOINTING OF H.D.P.E PIPELINE*

### **FOR LAYING AND JOINTING**

The contractor shall have to arrange demonstration of the installation and testing of pipe by manufacturer including fixing all specials and valves properly at least up to 10 % of total quantity to be supplied by them at any place of the site of work under the bid.

In addition to the in house testing of HDPE pipe in manufacturer laboratory, the Contractor shall have to arrange for random testing of pipes brought on site, in CIPET as decided and directed by the Engineer-in-charge.

### **WELDING**

HDPE pipes are joined by BUTT Fusion welding method with the help of electric heat (Mirror) and hydraulically operated welding jack.

### **PRECAUTIONS**

Since critical parameters for sound welding joint are temperature and pressure, welding methods should ensure proper temperature and pressure by using proper equipments. The welding area has to be protected from adverse weather condition like rain water, moisture, rough wind, dust and low ambient temperature (less than 5° C). Primary inspection of pipes should be done for ensuring defect free pipe before starting welding.

### **WELDING PROCEDURE**

Two ends of pipes to be welded are to be cut perpendicular to the pipe axis and then cleaned and planed by using proper planning tool. The pipes are fixed in welding jack and aligned properly in axial direction. The pipes then are pressed against a hot plate (called heating mirror or simply mirror) till a bead of molten material is formed. The mirror is electrically heated by in-built electric resistance heating coil. The heating should be uniform all around mirror plate on both sides. The mirror should be provided with a temperature control device so that during welding the surface temperature is automatically maintained within the required limit i.e.  $200 \pm 10^{\circ} \text{C}$ .

Proper Teflon cloth covering should be provided on mirror surface to avoid sticking of melted HDPE material on plate surface.

After attaining the welding temperature of 200°C on mirror surface the pipe ends are simultaneously brought in contact with the heating surfaces of mirror. This is done by using hydraulically operated welding jack. Initial contact pressure is applied which is maintained till the uniform ring of molten bead is achieved. Then the contact pressure is reduced until proper fusion takes place.

After proper fusion, the welding mirror is removed carefully without damaging the head. The time of removal of the mirror should be as short as possible. After removal of mirror, pipe ends are brought immediately to contact with each other under initial welding pressure which is gradually increased to final welding pressure. This pressure depends on the total welding surface of pipe.

The final welding pressure is maintained to be applied till the joint is cooled down to ambient temperature naturally. Artificial cooling such as wrapping with wet cloth, spraying of water etc. are not allowed.

### **INSPECTION OF JOINTS**

The visual inspection of each joint should be done to ensure correct bead formation. Weld joint should be checked for axial alignment of welded pipes.

### **LAYING OF PIPES**

The required length of HDPE pipes are made alongside the trench. The pipe is lowered in to the trench carefully avoiding damage to pipe and joints. Laying should be carried out as per relevant I S.

### **TRENCH**

Since the welding of pipe is done outside of trench, the width of trench should be kept as minimum as possible, normally pipe O.D. plus 280 mm width should be sufficient for laying. The depth of trench will be as per the requirement of client depending on level survey (L.S) Here in our case the earth cover of average 1.2 m. on top of pipe is to be provided. Hence the depth of trench will be pipe O.D. plus 1.2 m.

The trench should be made as straight as possible. Wherever necessary, trench can be made with smooth curve but not below allowed bending radius of HDPE pipe, which is 25 times of O.D.

The bottom of trench should be properly dressed and made free from any sharp objects.

### **LAYING & BACK FILLING**

Laying of pipe lengths to be done carefully from one end without giving any impact on pipe and as per IS. Provision. After laying of pipe, trench should be backfilled with the

layers of good earth of dug soil as available. Extra soil will be embedded on trench which will be compacted with water.

#### **TESTING OF FEEDER PIPELINE: (HDPE)**

a. Inspection and test after erection

In addition to the progressive supervision and inspection by the Engineer-In-Charge or his representative, the contractor shall offer for inspection to Engineer-In-Charge or his representative, the complete, erected or its parts on which tests are to be carried out. After such inspection by Engineer-in-charge, the contractor shall have to carry out the testing for leakage / seepage from pipe line in the presence of Engineer-In-Charge or his representative.

b. Testing

1. The contractor shall have to make all the arrangement of water for testing, labours, supervisory staff etc. for the period of testing. The necessary arrangement for plugging of opening shall be made by the contractor at his cost. After testing contractor shall have to remove the plugging at his cost, but care should be taken that no damage will occur to the work executed. If any damage will occur to any parts of work executed the same shall be required to be repaired by the contractor at his cost to the satisfaction of Engineer-in-charge.

2. The testing of pipe line shall be carried out before backfilling of trenches and the space around the structures.

The water shall be filled in the pipeline and thereafter the suitable pressure shall be created by using suitable equipment in order to found any leakage in pipe.

During the testing the joints of pipe line shall be observed for the entire length of pipeline including joints and structures for checking for leakage and if any leakage is found the same shall be rectified by the contractor at his own cost. The test is repeated again till there is no any leakage observed in entire length and joint of pipe line.

#### **MODE OF MEASUREMENT AND PAYMENT :**

The measurement shall be Running meter basis. Payment shall be made at the contract unit rate per running metre of pipeline after successfully supplied, lowered, laid, jointed, tested and commissioned.

#### **ITEM No.: 04**

**Providing and Fixing ISI mark following class & dia of different type of valves with necessary fittings of standard design and specification incl. testing with all leads and lifts etc. complete.**

**(A) (Sluice valve 300 mm )**



This specification described design, construction, inspection and testing features of sluice valve as per It.no. 5

### **Codes and standards**

The design and manufacture of the valve shall comply with all applicable codes, standards, regulations and safety codes. Nothing in this specification shall relieve the contractor of his responsibility. Valves shall be conforming to IS 14846. The design and number of valves shall be got approved by engineer-in-charge.

### **Design Requirements**

Valves shall be provided with back seating arrangement. Renewable body and wedge rings shall be provided. Drain plugs of gunmetal shall be provided for all valves. Stuffing box gland shall be of bolted type. Valves shall be with non-rising spindle type. Face to face dimension shall be as per IS;14846 Direction of flow shall coincide with the flow direction indicated by "arrow" cast on the valve body.

### **Construction Features**

1.0	Standard	IS: 14846-2000
2.0	Stem	Non rising spindle only.
3.0	Ends	Flanged,flat faced flanges having off center bolt holes.
4.0	Bonnet	Bolted
5.0	Disc.	Solid wedge
6.0	Operation	Manual
7.0	Seat	Body – Renewable, Disc – Renewable
8.0	Other requirements	Valves shall close in clockwise rotation of the hand wheel
9.0	Body & bonnet	C.I. IS 210 GR 260
10.0	Disc	C.I. IS 210 GR 260
11.0	Stem	S.S. AISI- 410
12.0	Body seat	S.S. AISI- 316
13.0	Disc seat	S.S. AISI- 316
14.0	Stem nut	Bronze IS 318 GR. LTB2
15.0	Stuffing box	C.I. IS 210 GR 260
16.0	Gland	C.I. IS 210 GR 260
17.0	Packing	Graphited Asbestos
18.0	Bolts,Studs& Nuts	Carbon Steel IS 1367 Class 4.6/4

### **Cleaning and Painting**

All manufacturing waste such as metal chips, debris and all other foreign material shall be removed from the interior of the valve. All mill scale, rust, oil, grease, chalk and all other material shall be removed from the interior and exterior surface.

Valves shall first be given two coats of zinc base primer after completely cleaning the surface and then it shall be coated with three coats of coal tar epoxy paint. The resulting coating shall be uniform and smooth and adhere perfectly to the surface.

The inside coating shall not contain any constituent soluble in water or any ingredient which could impart any taste or odour to the water.

### **Tests and Inspection**

Valves shall be as per IS : 14846. The test report should be produced at the time of delivery on site. Visual inspection done at site by engineer in charge.

The whole item shall be carried out as per the instructions of Engineer-in-charge.

### **MODE OF MEASUREMENT AND PAYMENT :**

The measurement shall be taken and paid on number basis.

## **ITEM No.: 05**

### **Constructing sluice valve chamber:**

#### **1. Excavation**

As per Item No.1

**2.** This item includes Providing and laying hand mixed and unvibrated plain cement concrete as under of different proportion for foundation laid in situ including temping smooth finishing curing and lead up to 50 Mt. Moreover lift 1.5 mt.etc. complete C.C.of cement sand and coarse aggregates (20 mm to 40 mm)

(i) 1:4:8.

#### **Materials**

2.1.1 Water shall conform to M-1, Cement shall conform to M-3, Sand shall conform to M-6, Stones aggregate 20 mm.to 40 mm. nominal size shall conform to M-12.

2.1.2 Workmanship

2.1.3 General

2.1.4. Before starting concrete the bed of foundation trenches shall be cleared of all loose materials, leveled, watered and rammed as directed.

#### **2.2 Proportion of Mix.**

2.2.1. The proportion of cement, sand and coarse aggregate shall be 1-part of cement, 4 parts of sand and 8 parts of coarse aggregates and shall be measured by volume.

#### **2.3. Mixing.**

2.3.1.The concrete shall be mixed in a mechanical mixer at the site of work. Hand mixing may however by allowed for smaller quantity of work if approved by the Engineer-in-charge. When hand mixing is permitted by the Engineer-in-charge in case of breakdown of machineries and in the interest of the work, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in color and consistency.

However in such case 10 % more cement than other wise required shall have to be used. without any extra cost. The mixing in Mechanical Mixture shall be done for a period 1 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose.

#### **2.4 Transporting & Placing the concrete :**

2.4.1. The concrete shall be handled from the place of mixing to the final position in not more than 15 minutes by the method as directed and shall be placed into its final position, compacted and finished within 30 minutes of mixing with water i.e. before the setting commences.

2.4.2. The concrete shall be laid in layers of 15 cms. to 20 cms.

2.5. The concrete shall be rammed with heavy iron rammers and rapidly to get the required compaction and to allow all the interstices to be filled with mortar.

## **2.6 Curing :**

2.6.1. After the final set, the concrete shall be kept continuously wet if required by pounding for a period of not less than 7 days from the date of placement.

(b) C.C. of cement sand and coarse aggregates (20 mm and under ) 1:2:4.

### **1.0 Material & Workmanship**

The relevant specification of item No.6(a) shall be followed except that the work shall be carried out for coping and wall caps, except the stone aggregate 20 to 40 mm size shall be used.

### **1.1 Proportion Of Mix**

The Part of Cement Sand & Aggregates Shall be 1 Part of Cement 2 Part of Sand 4 Part Aggregates by Volume.

**2(b).** Item also includes Providing and laying hand mixed and unvibrated plain cement concrete as under of different proportion for foundation laid in situ including tamping smooth finishing, curing, and lead upto 50 Mt. Moreover, lift 1.5 Mt. etc. complete.

(a) C.C. of cement sand and kapchi (20mm and under ) 1:2:4

### **2(b).1 Materials.**

Water shall conform to M-1, cement shall conform to M-3, Sand shall conform to M-2, Grit shall conform to M-4, Graded stones aggregate 20 mm nominal size conform to M-5.

2(b).1.1 General.

2(b).1.2 The concrete mix is not required to be designed by preliminary tests. The proportion of the concrete mix shall be 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate) graded stone aggregate 20 mm nominal size) by volume concrete work shall have exposed concrete surface or as specified in the item.

2(b).1.3 The designation ordinary M-100, M-150, M-200, M-250 specified as per I.S. correspondence approximately to 1:3:6, 1:2:4, 1:1:1/2 :3 and 1:1:2 nominal mix of ordinary concrete by volume respectively.

2(b).1.4 The ingredients required for ordinary concrete containing 1 bag of cement of 50 kg by weight (0.0342 cu. Meter) for different properties of mix shall be as under.

Grade of Concrete	Total quantity of dry aggregate by volume per 50kgs of cement to be taken as the sum of individual volume of fine and coarse aggregates maximum	Proportion of fine aggregate to coarse aggregates.	Qty. of water per 50kgs of cement maximum
M-100 (1:3:6)	300 Litters	Generally 1:2 for fine aggregate to coarse aggregates by volume 160 but subject to an upper limit of 1:1.1/2 and lower limit of 1:3	34 Litters
M-150 (1:2:4)	220 Litters		32 Litters
M-200 (1:1,1/2:3)	160 Litters		30 Litters
M-250 (1:1:2)	100 Litters		27 Litters

2(b).1.5 The water cement ratio shall not be more than specified in the above table. The cement content of the mix specified in the tables shall be increased if the quantity of water in mix has to be increased to overcome the difficulties of placements and compaction so that the water cement ratio specified in the table is not exceeded.

2(b).1.6 Work ability of the concrete shall be controlled by maintaining a water cement ratio that is found to give a concrete mix which is just sufficient wet to be placed and compacted without difficulty with the means available.

2(b).1.7 The maximum size of coarse aggregates shall be as large as possible within the limits specified but in no case greater than one fourth of the minimum thickness of the member provided that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and to fill the corners of the form.

2(b).1.8 For reinforced concrete work coarse aggregates having a nominal size of 20mm are generally considered satisfactory.

2(b).1.9 For heavily reinforced concrete members as in the case of ribs of main beams, the nominal maximum size of coarse aggregate should usually be restricted to 5mm less than the minimum clear distance between the main bars or 5 mm less than the minimum cover to the reinforcement whichever is smaller.

2(b).1.10 Where the reinforcement is widely spaced as in solid slabs, limitations of size of the aggregate may not be so important and the nominal maximum size may sometimes be as great as or greater than the minimum cover.

2(b).1.11 Admixture may be used in concrete only with approval of Engineer-in-charge based upon the evidence that with the passing of time neither the compressive strength of concrete is reduced nor are other requisite qualities of concrete and steel impaired by the use of such admixture.

## **2(b).2 Workmanship.**

### **2(b).2.1 Proportioning :-**

Proportioning shall be done by volume, except which shall be measured in terms of bags of 50 kgs weight the volume of one such bag being taken as 0.0342 cu. meter. Boxes of suitable size shall be used for measuring sand aggregate. The size of boxes (internal) shall be 35 x 25 cms and 40 cms deep while measuring the aggregate and sand the boxes shall be filled without shaking ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of dam sand, allowances for bulk age shall be made.

### **2(b).2.2 Mixing**

For all work, concrete shall be mixed in a mechanical mixer which along with other accessories shall be kept in first class working condition and so maintained throughout the construction. Measured quantity of aggregate sand and cement required for each batch shall be poured into the drum of the mechanical mixer while it is continuously running. After 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 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 aggregates 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.

2(b).2.3 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 water tight 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 materials gets mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall 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 of uniform colour. Specified quantity 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% above that specified.

2(b).2.4 Mixtures 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 third of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

#### **2(b).2.5 Consistency.**

The degree of consistency which shall depend upon the nature of the work and methods of vibration of concrete shall be determined by regular slump tests in accordance with I.S. 1199-1939. The slump of 10mm to 25mm shall be adopted with vibrators are used and 80mm when vibrators are not used.

#### **2(b).3 Inspection :**

2(b).3.1 Contractor shall give the Engineer-in-charge due notice before placing any concrete in the form to permit him to inspect and accept the the false work and forms as to their strength, alignment, and general fitness but such inspection shall not relieve the contractor of his responsibility for the safety of men, machinery, materials and for result obtained immediately before concreting all forms shall be thoroughly cleaned.

2(b).3.2 Centering design and its erection shall be got approved from the Engineer-in-charge. One carpenter with helper shall invariably be kept present through out the period of concreting. Movement of labour and other persons shall be totally prohibited for reinforcement laid in position. For access to different parts suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed. For ensuing proper cover mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber, Kapchi or metal pieces shall not be used for this purpose.

#### **2(b).4 Transporting and laying**

2(b).4.1 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.

2(b).4.2 Concreting shall proceed continuously over the area between construction joints. Fresh concrete proper contraction joint is formed. Concrete shall be compacted in its final position with 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.

2(b).4.3 Unless otherwise agreed to by the Engineer-in-charge, concrete shall be dropped in 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 13mm thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13mm 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 from water removed and then coated with neat cement grout. The first layer of concrete to be placed in this surface shall not exceed 150mm in thickness and shall be well rammed against old work, particular attention being given to corners and close spots.

2(b).4.4 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. Sufficiently vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of break downs. 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 status 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 likely to destroy the bond between concrete and reinforcement.

#### **2(b).5 Curing.**

Immediately after compaction, concrete shall be protected, including rain, running water, shocks, vibration traffic, rapid temperature changes, frost and drying out process. It shall be covered with wet sacking or sign 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.

**2(b).6** Sampling and testing of concrete sample from fresh concrete shall be taken as per I.S 1199-1959 and cubes shall be made, cured and tested at 7 days and 28 days as per requirements in accordance with I.S 526-1959. A random sampling procedure shall be adopted to ensure that each concrete batch shall have a

reasonable chance of being tested i.e the sampling should be spread over the entire period of Concreting and cover all mixing units. The minimum frequency of sampling of the concrete of each

grade shall be in accordance with following.

Quantity of the concrete in the work	No. of samples.	Quantity of the concrete in the work	No. of samples.
1-5 Cmt.	1	31-50Cmt.	4
6-15Cmt.	2	51 and above it.	One additional sample for each 50 Cmt. Or part thereof.
16-30Cmt.	3		

NOTE:- At least one sample shall be taken from each shift. 6 test specimens shall be made from each Sample, three for testing at 7 days and the remaining three at 28 days the sample shall taken on each day of concreting as per above frequency. The No. of specimens may be suitable increase as deemed necessary by the Ex. Engineer or his Authorized Engineer-in-charge. When procedure of test given above reveals a poor quality of concrete and in other special cases. The average of the group of cube test for each day shall be less than the special cubes strength of 150 kg./cm<sup>2</sup> at 28 days 20% of the cubes cast for each dry may have value less than the specified strength provided the lowest value is not less than 85% of the specified length. If the concrete made in accordance with the proportions give for a particular grade does not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower grade. Concrete made in accordance with the proportions give for a particular grade shall not however be placed on the ground that the test strength are higher than the minimum specified.

## **2(b).7 Stripping.**

3.7.1 The Engineer-in-charge shall be informed in advance by the contractor of his intention to start the form work. While fixing the time of removal of form work due consideration shall be given to local conditions character of the structure, the weather and other conditions that influences the setting of concrete and of the materials used in the mixture. In normal circumstances (generally where temperature are above 20.c) and where ordinarily concrete used, forms may be struck after expire on period specified.

3.7.2 All form work shall be removed without causing any shock or vibration as would damage the concrete. Before the soft and struts are removed, the concrete surface shall be gradually exposed, where necessary in order to ascertain that



concrete has sufficiently hardened, centering shall be gradually and uniformly lowered in such a manner as to permit the concrete to take stresses due to its own weight uniformly and gradually where internal metal tiles are permitted, they or their removable parts shall be extracted without causing any damage to the concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm cover to the finished concrete surface. Where it is intended to reuse the form work, it shall be cleaned and made good to the satisfaction of the Engineer-in-charge. After removal of form work and shuttering, the Executive Engineer shall inspect the work and satisfy by random checks that concrete produced is of good quality.

2(b).7.3 Immediately after the removal of forms, all exposed bolts etc passing through the cement concrete member and used for shuttering or any other purpose shall be cut inside the cement concrete member to a depth of at least 25mm below the surface of the concrete and the resulting holes be filled by cement mortar, all fins caused by form joints, all cavities produced by the removal of form tiles and all other holes and depressions, honeycomb spots, broken edges or corners and other defects, shall be thoroughly cleaned saturated with water and carefully pointed and rendered true with mortar of cement and fine aggregate mixed in proportions used in the grade of concrete that is being furnished and of as dry consistency as is possible to use. Considerable pressure shall be applied in filling the pointing to ensure thorough filling in all voids. Surface which are pointed shall be kept moist for a period of 24 hours if rock pockets / honey comb in the opinion of the Engineer-in-charge are of a such an extent or character as to effect the strength of the structure materially or to endanger the life of the steel reinforcement, he may declare the concrete defective and require the removal and replacement if the portions of structure affected.

**3.** Item also includes Providing and laying in position RCC as under proportion using cement sand and crushed aggregate (20 mm and under) for plinth course, lintels, slabs, beams, columns, chajja, lofts, barrels, etc. including cost of frame work providing and shuttering temping smooth finishing, curring as directed with all leads and lifts etc. complete.

R.C.C. 1.:2:4)

### **3.0. General**

3.1. The concrete mix is not required to be designed by preliminary testes.

3.1.1 The proportion of the concrete mix shall be 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) by volume concrete work shall have exposed concrete surface or as specified in the item no (a)

3.1.2 The proportion of the concrete mix shall be 1:2:4 (1 cement :2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) by volume concrete work shall have exposed concrete surface or as specified in the item no (b)

3.2. The designation ordinary M-100, M-150., M-200, M-250 specified as per I.S. correspond approximately to 1:3:6, 1:2:4, 1:1.1/2:3 and 1:1:2 nominal mix of ordinary concrete by volume respectively.

3.3. The ingredients required for ordinary concrete containing one beg of cement of 50 kg. by weight (0.0342 Cu. Mt.) for different proportions of mix shall be as under.

Grade of concrete	Total quantity of dry aggregate by volume per 50 kgs. of cement to be taken as the sum of individual volume of fine and coarse aggregates, maximum	Proportion of fine aggregate to coarse aggregate	Quantity of water per 50 kgs. Of cement maximum.
1	2	3	4
M-100(1:3:6)	300 Liters	Generally 1:2 for Fine aggregate to coarse aggregate by volume	34 Liters
M-150(1:2:4)	220 Liters		32 Liters
M-200(1:1.1/2:3)	160 Liters		30 Liters
M-250(1:1:3)	100 Liters	160 but subject to an upper limit of 1:1.1/2 and lower limit 1:3	27 Liters

3.4. The water cement ratios shall not be more than those specified in the above table. The cement content of the mix specified in the table shall be increased if the quantity of water in mix has to be increased to overcome the difficulties of placements and compaction so that the water-cement ratio specified in the table is not exceeded.

3.5. Workability of the concrete shall be controlled by maintaining a water-cement-ratio that is bound to give a concrete mix which is just sufficient wet to be placed and compacted without difficulty with the mean available.

3.6. The maximum size of course aggregate shall be as large as possible within the limits specified but in no case greater than one forth of the minimum thickness of the member provided that the concrete can be place without difficulty so as to surround all reinforcement thoroughly and to fill the corners of the form.

3.7. For reinforced concrete work, coarse aggregates having a nominal size of 20 mm. are generally considered satisfactory.

3.8. For heavily reinforced concrete members as in the case of ribs of main beams, the nominal maximum size of coarse aggregate should usually be restricted to 5 mm. less than the minimum clear distance between the main bars or 5 mm. less than the minimum cover to the reinforcement whichever is smaller.

- 3.9. Where the reinforcement is widely spaced as in solid slabs, limitations of size of the aggregate may not be so important, and the nominal maximum size may some times be as great as or greater than the minimum cover.
- 3.10. Admixture may be used in concrete only with approval of Engineer-in-charge based upon the evidence that with the passage of time, neither the compressive strength of concrete is reduced nor are other requisite qualities of concrete and steel impaired by the use of such admixtures.

### **3.0. Workmanship**

- 3.1. Proportioning : Proportioning shall be done by volume, except which shall be measured in terms of bags of 50 kg. weight, the volume of one such bag being taken as 0.0342 cu.meter. Boxes of suitable size shall be used for measuring sand ,aggregate. The size of boxes (internal) shall be 35 cms. x 25cms. and 40 cms. deep while measuring the aggregate and sand the boxes shall be filled without shaking ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of damp sand, allowances for bulk age shall be made.

### **3.2. Mixing :**

- 3.2.1. For all work, concrete shall be mixed in a mechanical mixer which along with other accessories shall be kept in first class working condition and so maintained throughout the construction. Measured quantity of aggregate, sand and 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.
- 3.2.2. 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 water tight 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 uniform layer on top of the measured quantity of fine and coarse aggregates 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 color. Specified quantity 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.

- 3.2.3. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting 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.

### **3.3. Consistency :**

- 3.3.1. The degree of consistency which shall depend upon the nature of the work and methods of vibration of concrete, shall be determined by regular slump tests in accordance with I.S.-1199-1939. The slump of 10 mm to 25 mm. shall be adopted when vibrators are used and 80 mm. when vibrators are not used.

### **3.4. Inspection :**

- 3.4.1. Contractor shall give the Engineer-in-charge due notice before placing any concrete in the forms to permit him to inspect and accept the false work and forms as to their strength, alignment, and general fitness but such inspection shall not relieve the contractor of his responsibility for the safety of men, machinery, materials and for results obtained. Immediately before concreting, all forms shall be thoroughly cleaned.

- 3.4.2. Centering design and its erection shall be got approved from the Engineer-in-charge. One carpenter with helper shall invariably be kept present throughout the period of concreting. Movement of labor and other persons shall be totally prohibited for reinforcement laid in position. For access to different parts suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed. For ensuring proper cover, mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber, kapachi or metal pieces shall not be used for this purpose.

### **3.5. Transporting and laying :**

- 3.5.1. 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.

- 3.5.2. Concreting shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position more than 30 minutes unless a proper contraction 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 compacted depth of not more than 0.45 meter when internal vibrators are used and not exceeding 0.30 meter in all other cases.

- 3.5.3. Unless otherwise agreed to by the Engineer-in-charge, concrete shall not be dropped in to place from 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.
- 3.5.4. All concretes shall be compacted to produce a dense homogeneous mass with the assistance of vibrator unless otherwise permitted by the Engineer-in-charge for exceptional cases, such as concreting under water, when vibrators can not be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the even of breakdowns. Concrete shall be judged to be compacted when the mortar fills the space 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.

**3.6. 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 day 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.

3.7. Sampling and testing of concrete :

3.7.1. Samples from fresh concrete shall be taken as per I. S. 1199-1959 and cubes shall be made, cured and tested at 7 days or 28 days as per requirements in accordance with I. S. 516-1959. A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of

being tested i.e. the sampling should spread over the entire period of concreting and cover all mixing units. The minimum frequency of sampling of concrete of each grade shall be in accordance with following :

<b>Quantity of concrete in the work</b>	<b>Nos. of samples</b>	<b>Quantity of concrete in the works</b>	<b>Nos. of samples</b>
1-5 cmt.	1	16-30 cmt.	3
6 - 15 cmt.	2	31-50 cmt	4
51 and above	4 $\pm$ one additional sample for each additional 50 mm. or part thereof		

**Note :** At least one sample shall be taken from each shift. Six test specimens shall be made from each sample, three for testing at 7 days and the remaining three at 28 days, The samples of concrete shall be taken on each day of the concreting as per above frequency. The number of specimens may be suitably increased as deemed necessary by the Engineer-in-charge when procedure of tests given above reveals a poor quality of concrete and in other special cases.

3.7.2. The average strength of the group of cubes cast for each day shall not be less than the specified cube strength of 150 Kg /Cm<sup>2</sup> at 28 days. 20% of the cubes cast for each day may have value less than the specified strength provided the lowest value is not less than 85% of the specified strength. If the concrete made accordance with the proportions given for a particular grade does not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower grade. Concrete made in accordance with the Proportions given for a particular grade shall not, however, be placed in a higher grade on the ground that the test strength are higher than the minimum specified testing of concrete.

3.8. Stripping :

3.8.1. The Engineer-in-charge shall be informed in advance by the contractor of his intention to strike the form work. While fixing the time of removal of form work, due consideration shall be given to local conditions character of the structure, the weather and other conditions that influence the setting of

concrete and of the materials used in the mix, In normal circumstances (generally where temperatures are above 20.C) and where ordinary concrete is used forms may be struck after expire of periods specified as below for respective item of form work.

(A)	Side of walls, columns and vertical face of beams	...	24	to
	28hours			
(B)	Beam soffist (props. Left under)	...	7 days	
(C)	Removal of props. Slabs			
	(i) Slabs spanning up to 4.50 mt.	...	7 days	
	(ii) Slabs spanning over 4.50 mt.	...	14 days	
(D)	Removal of props. Slabs and arches			
	(i) Slabs spanning up to 6.00 mt.	...	14 days	
	(ii) Slabs spanning over 6.00 mt.	...	28 days	

3.8.2. All form work shall be removed without causing any shock or vibration as would damage the concrete. Before the soft and struts are removed, the concrete surface shall be exposed, where necessary in order to ascertain that concrete has sufficiently hardened. Centering shall be gradually and uniformly lowered in such a manner as to permit the concrete to take stresses due to its own weight uniformly and gradually. Where internal metal tiles are permitted, they or their removable parts shall be extracted without causing any damage to the concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25mm. cover to the finished concrete surface. Where it is intended to re-use the form work, it shall be cleaned and made good to the satisfaction of the Engineer-in-charge. After removal of form work and shuttering, the Executive Engineer shall inspect the work and satisfy by random checks that concrete produced is of good quality.

3.8.3. Immediately after the removal of forms, all exposed bolts etc. passing through the cement concrete member and used for shuttering or any other purpose shall be cut inside the cement concrete member to a depth of at least 25mm. below the surface of the concrete and the resulting holes be filled by cement mortar all fins caused by form joints, all cavities produced by the removal of form tiles and all other holes and depressions, honeycomb spots, broken edges or comers and other defects, shall be thoroughly cleaned, saturated with water and carefully pointed and rendered true with mortar of cement and fine aggregate mixed in proportions used in the grade of concrete that is being finished and of as dry consistency as is possible to use. Considerable pressure shall be applied in filling and pointing to ensure thorough filling in all voids. Surface which are pointed shall be kept moist for a period of 24 hours. If rock pockets/honeycombs in the opinion of the Engineer-in-charge are of such an extent or character as to effect the strength of the structure materially or to endanger the life of the steel reinforcement, he may declare the concrete

defective and require the removal and replacement of the portions of structure affected

**4.0** Providing and fixing in position mild steel reinforcement or tor steel bars reinforcement as per detail drawing and design including cutting bending and binding in position with binding wires as directed with all leads and lifts etc.complete. TMT Bar fe-500

**4.1. Materials**

4.1.1. Mild Steel bars shall conform to M-18, Mild steel binding wires shall conform, to M-21.

**4.2. Workmanship**

4.2.1. The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed.

4.2.2. Steel shall be clean and free from rust and loose mill scale at the time of fixing in position and subsequent concreting.

4.2.3. Reinforcing steel shall conform accurately to the dimensions given in the bar bending schedules shown on relevant drawings. Bars shall be bent cold to specified shape and dimensions or as directed, using a proper bar bender, operated by hand or power to attain proper radius of bends. Bars shall not be bent or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used on the work. They shall not be heated to facilitate bending. Unless otherwise specified, a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bend shall not be less than twice the diameter of the round bar and the length of the straight part of the bar beyond the end of the curve shall be at least four times the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area. The hooks shall be suitably encased to prevent any splitting of the concrete.

4.2.4. All the reinforcement bars shall be accurately placed in exact position shown on the drawings, and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm. in size, and by using stay blocks or metal chair spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals, Bars shall not be allowed to sag between supports nor displaced during concreting or any other operations of the work. All devices used



for positioning shall be of non-corrodible material. Wooden and metal supports shall not extend to the surface of concrete, except where shown on drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and wooden blocks shall not be used. Layers of bars shall be separated by spacer bars, precuts mortar blocks or other approved devices. Reinforcement after being placed in position shall be maintained in a clean condition until completely embedded in concrete. Special care shall be exercised to prevent any displacement of reinforcements in concrete already placed. To prevent reinforcement from corrosion, concrete cover shall be provided as indicated on drawings. All the bars protruding from concrete and to which other bars are to be sliced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout.

- 4.2.5. Bars crossing each other where required shall be secured by binding wire (annealed) of size not less than 1 mm in such a manner that they do not slip over each other at the time of fixing and concreting.
- 4.2.6. As far as possible, bars of full length shall be used, In case this is not possible. Over lapping of bars shall be done as directed. When practicable, over lapping bars shall not touch each other, but be kept apart by 25 mm or 1.25 times the maximum size of coarse aggregate whichever is greater by concrete between them. Where not feasible, overlapping bars shall be bound with annealed wires not less than 1 mm. thick twisted tight. The overlaps shall be staggered for different bars and located at points, along the span where neither shear nor bending moment is maximum.
- 4.2.7. Whenever indicated on the drawings or desired by the Engineer-in-charge, bars shall be joined by couplings which shall have a cross-section sufficient to transmit the full stresses of bars. The ends of the bars that are joined by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than the normal cross-section of the bar. Threads shall be standard threads. Steel for couplings shall conform to Relevant I S
- 4.2.8. When permitted or specified on the drawings, joints of reinforcement bars shall be butt-welded so as to transmit their full stresses. Welded joints shall preferably be located at points when steel will not be subject to more than 75 percent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded. Only electric arc welding using a process which excludes air from the molten metal and conforms to any or all other special provisions for the work shall be accepted. Suitable means shall be provided for holding bars securely in position during welding. It shall be ensured that no voids are left in welding and when welding

is done in two or three stages, previous surface shall be cleaned properly. Ends of the bars shall be cleaned of all loose scale, rust, grease, paint and other foreign matter before welding. Only competent welders shall be employed on the work. The M.S. electrodes used for welding shall conform to I.S. 814-2004. Welded pieces of reinforcement shall be tested. Specimen shall be taken from the actual site and their number and frequency of test shall be as directed.

#### **4.3 Mode of Measurements & Payment**

- 4.3.1. For the purpose of calculating consumption, wastage shall not be permitted beyond 5 percent. Excess consumption over 5% will be charged at penal rate.
- 4.3.2. Reinforcement shall be measured in length including overlaps, separately for different diameters as actually used in the work. Where welding or coupling is resorted to, in place of lap joints, such joints shall be measured for payment as equivalent length of overlap as per design requirement. From the length so measured, the weight of reinforcement shall be calculated in tones on the same basis as per M-18 even though steel is supplied to the contractor by the department on actual weight. Length shall include hooks at the ends. Wastage and annealed steel wire for binding shall not be measured and the cost of these items shall be deemed to be included in the rate for reinforcement.
- 4.3.3. The rate for reinforcement includes cost of steel & binding wires, its carting to work site, cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices for keeping reinforcement in approved position, cost of joining as per approved method and all wastage and spacer bars.

The rate shall be for a unit of One Kg.

**5.0** Providing B.B.Masonry 2nd class using British size conventional bricks in cement mortar of prop. (1:6) for foundation plinth and super structure including striking out joint 20mm deep with curing finishing joints and providing scaffolding as directed with all leads and all lifts etc. complete. For foundation

#### **5.1 Materials**

- 5.1.1 Water shall conform to M-1, Cement shall conform to M-3, sand shall conform to M-6, Brick shall conform to M-15, Cement mortar shall conform to M-11.

#### **5.2 Workmanship**

##### **5.2.1 Proportion :**

The proportion of the cement mortar shall be 1: 6 ( 1 cement : 6 fine sand) by volume.

##### **5.2.2 Wetting of bricks :**

The bricks required for masonry shall be thoroughly wetted with clean water for about two hours before use or as directed. The cessation of bubbles, when the bricks are wetted with water is as indication of through wetting of bricks

##### **5.2.3 Laying :**

- 5.2.3.1 Bricks shall be laid in English bond unless directed otherwise, Half or cut bricks shall not be used except when necessary to complete to bond; closures in such case shall be cut to required size and used near the ends of walls.
- 5.2.3.2. A layer of mortar shall be spread on full width for suitable length of the lower course. Each brick shall first be properly bedded and set home by gently tapping with handle of trowel or wooden mallet. Its side face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course the vertical joints shall be fully filled from the top with mortar.
- 5.2.3.3. The walls shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joint shall be truly vertical. Vertical joints in alternate course shall generally be directly one over the other. The thickness of brick course shall be kept uniform.
- 5.2.3.4 The brick shall be laid with frog up wards. A set of tools comprising of wooden straight edges, mason's spirit level, square half meter rub, and pins, string and plumb shall be kept on the site of work for frequent checking during the progress of work.
- 5.2.3.5. Both the faces of walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brick work shall be kept not more than one meter over the rest of the work. Where this is not possible, the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45 degrees.
- 5.2.3.6 All fixtures, pipes, outlets of water, hold fasts of doors and windows etc. which are required to be built in wall shall be embedded in cement mortar.

#### **5.2.4. Joints :**

- 5.2.4.1. Bricks shall be so laid that all joints are quite flush with mortar. Thickness of joints shall not exceed 12 mm. The face joints shall be raked out as directed by raking tools daily during the progress of work, when the mortar is still green so as to provide key for plaster or pointing to be done.
- 5.2.4.2 The face of brick shall be cleaned the very day on which the work is laid and all mortar dropping removed.

#### **5.2.5. Curing :**

- 5.2.5.1 Green work shall be protected from rain suitably. Masonry work shall be kept moist on all the faces for a period of seven days. The top of masonry work shall be kept well wetted at the close of the day.

#### **5.2.6. Preparation of foundation bed:**

- 5.2.6.1. If the foundation is to be laid directly on the excavated bed, the bed shall be leveled, cleared of all loose materials, cleaned and wetted before starting masonry. If masonry is to be laid on concrete footing, the top of concrete shall be cleaned and moistened. The contractor shall obtain the engineer's approval for the foundation bed before foundation masonry is started. When pucca flooring is to be provided flush with the top to plinth, the inside plinth offset shall be kept lower than the outside plinth top by the thickness of the flooring.

#### **5.3.0. Mode of measurements & payment**

- 5.3.1. The measurements of this item shall be taken for the brick masonry fully completed in foundation up to plinth. The limiting dimensions not exceeding those shown on the plans or as directed shall be final. Battered tapered and curved portions shall be measured net.
- 5.3.2. No deduction shall be made from the quantity of brick work, for any extra payment made for embedding in masonry or making holes in respect of following items.

- (1) Ends of joints, beams, posts, girders, purloins, trusses, corbel, steps etc. where cross sectional area does not exceed 500 Sq.Cm.
  - (2) Openings not exceeding 1000 Sq.Cm.
  - (3) Wall plates and bed plates, bearing of slabs, chajjas and the like whose thickness does not exceed 10 Cms. and the bearing does not extend to the full thickness of wall.
  - (4) Drainage holes, and recesses for cement concrete blocks to embed hold fasts for doors, windows etc.
  - (5) Iron fixtures, pipes up to 300 mm. dia, hold fasts, and doors and windows built into masonry and pipes etc. for concealed wiring.
  - (6) Forming chases of section not exceeding 350 Sq.Cm. in masonry.
- 5.3.3. Apertures for fire places shall not be deducted nor shall extra labor required to make splaying of jambs, trotting and making arches over the aperture be paid for separately.

5.3.4. The rate shall be for a unit of one cubic meter.

#### **5.4 For super structure.**

##### **5.4.1. Materials.**

The relevant specifications of item No.1.1 shall be followed except that masonry work to be carried out above plinth level to floor two level.

##### **5.4.2. Workmanship.**

5.4.2.1 The relevant specifications of item No.1.1 shall be followed except the masonry work to be carried out above plinth level to two floor level.

5.4.2.2 The frames of doors, windows, cupboards etc. shall be housed into the brick work at the correct location and level as directed. The heavy steel doors, window frames etc. shall be built in with brick work, but for ordinary steel doors and windows required opening for frames holdfasts etc. shall be left in the wall and frames embedded later on in order to avoid damage to the frame.

5.4.2.3 Necessary scaffolding shall be provided. The support of scaffolding shall be sound and strong tied together with horizontal pieces over which the scaffolding planks shall be fixed. Simple scaffolding shall be allowed normally. In this case, scaffolding hole shall rest in hold header horizontal coarse only. Minimum number of holes shall be left in brick work for supporting horizontal scaffolding holes.

The contractor is responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

5.4.2.4 For the face of brick work where plastering is to be done, joint shall be racked out to a depth not less than thickness of joints. The face of brickwork shall be cleaned and mortar dropping removed on very same day that brick work is laid.

#### **5.5 Mode of Measurement.**

5.5.1 The measurements of this item shall be taken for the brick masonry fully completed in super structure. The limiting dimensions not exceeding those shown on the plans or as directed shall be final. Battered tapered and curved portions shall be measured net.

5.5.2 No deduction shall be made from the quantity of brick work, for any extra payment made for embedding in masonry or making holes in respect of following items.

- (1) Ends of joints, beams, posts, girders, purloins, trusses, corbel, steps etc. where cross sectional area does not exceed 500 Sq.Cm.
- (2) Openings not exceeding 1000 Sq.Cm.

- (3) Wall plates and bed plates, bearing of slabs, chajjas and the like whose thickness does not exceed 10 Cms. and the bearing does not extend to the full thickness of wall.
  - (4) Drainage holes, and recesses for cement concrete blocks to embed hold fasts for doors, windows etc.
  - (5) Iron fixtures, pipes up to 300 mm. dia, hold fasts, and doors and windows built into masonry and pipes etc. for concealed wiring.
  - (6) Forming chases of section not exceeding 350 Sq.Cm. in masonry.
- 5.5.3 Apertures for fire places shall not be deducted nor shall extra labor required to make splaying of jambs, trotting and making arches over the aperture be paid for separately.
- 5.5.4 The rate shall be for a unit of one cubic meter.

**6.0** Providing plaster of cement and sand in 1:3 proportion including preparing surface providing scaffolding, finishing curing curing as directed etc. complete. (15mm thick )

### **6.1 Materials.**

Water shall conform to M-1, The cement mortar of proportion 1:3 shall conform to M-11.

### **6.2 Workmanship.**

#### **6.2.1. Scaffolding :**

Wooden bullies, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shall be provided for ceiling plaster which shall be independent of the walls.

#### **6.2.2. Preparation of back-ground:**

- 6.2.2.1. The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be toughened by wire brushing. If it is not hard and by hacking if it is hard. In case of concrete surface, if a chemical retarder has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the retarders is left on the surface. Trimming of projections on brick/concrete surfaces where necessary shall be carried out to get an even surface.
- 6.2.2.2. Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plaster work.
- 6.2.2.3. The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry, such area shall be moistened again.
- 6.2.2.4. For external plaster, the plastering operation shall be started from top floor and carried downwards. For internal plaster, the plastering operations may be started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

### **6.3. Application of plaster :**

- 6.2.3.1. The plaster about 15 x 15 cms. shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished

plastered surface. The mortar shall then be applied in uniform surface slightly more than the specified thickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movements at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a smooth or a sandy granular texture is required. Excessive troweling or over working the float shall be avoided. All corners, arrases, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering, corners, arrases junctions etc. shall be carried out with proper templates to be size required.

6.2.3.2. Cement plaster shall be used within half an hour after addition of water. And mortar or plaster which is partially set shall be rejected and removed forthwith from the site.

6.2.3.3. In suspending the work at the end for the day, the plaster shall be left out clean to the line both horizontally and vertically. when recommencing the plaster, the edges of the old work shall be scraped clean and wetted with cement putty before plaster is applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. to any corners or arises. It shall not be closed on the body of features such as plaster bands and cornices not at the cornices not at the corners or arises. Horizontal joints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.

6.2.3.4. Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging matting or gunny bags on the outside of the plaster and keeping them wet.

**7.0** Extra over item no-11 for finishing with a floating coat neat cement slurry.

#### 7.1 Materials & workmanship

7.1.1 The relevant specification of item no. 6 shall be followed for materials and workmanship except that this work is only providing smooth cement finish with floating coat of neat cement slurry.

7.1.2 The coat of cement and fine sand mortar of proportion 1:1 (1.5 mm. thick about) shall be applied to the plastered surface with a trowel to provide uniform texture while the base coat is still plastic.

7.1.3 In any continuous face of wall the finishing treatment should be carried out continuously and day to day breaks made to coincide with architectural breaks in order to avoid unsightly junctions.

#### 7.2 Curing :

All the plaster work shall be kept damp continuously for a period of 7 days.

#### 7.3 Mode of measurements & payment

7.3.1 The rate shall include the cost of all materials, labor and scaffolding etc. involved in the operations described under workmanship.

- 7.3.2 All plastering shall be measured in square meters unless otherwise specified, Length breadth or height shall be measured correct to a centimeter.
- 7.3.3 Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 15 mm. at any point on this surface.
- 7.3.4. This item includes plastering up to floor two level.
- 7.3.5 The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of corners if any shall be deducted.
- 7.3.6 So fits of stairs shall be measured as plastering on ceilings. following soffits shall be measured separately.
- 7.3.7 For jambs, so fits, sills etc. for openings not exceeding 0.50 sq.mt. each in area for ends of joints beams, posts, girders, steps etc. not exceeding 0.50 sq.mt. each in area and for openings exceeding 0.50 sq.mt. and not exceeding 3.00 sq.mt. in each area deductions and additions shall be made in the following manners.
- (a) No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.50 sq.mt. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings, for finish to plaster around ends of joints, beams posts etc.
  - (b) Deduction for openings exceeding 0.50 sq.mt. but not exceeding 3.00 sq. mt each shall be made as follows and no addition shall be made for ravel, jambs, soffits, sills etc. of these openings.
    - (i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only.
    - (ii) When two faces of wall are plastered with different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the other side. Where width of reveals on both faces of all are equal, deductions of 50% of area of opening on each face shall be made from areas of plaster and / or pointing as the case may be.
- 7.3.8. For openings having door frames equal to projecting beyond the thickness of wall full deduction for opening shall be made from each plastered face of the wall.
- 7.3.9. In case of openings of area above 3.00 sq.mt. each deduction shall be made for openings but jambs, soffits sand sills shall be measured.
- 7.4.0 The rate shall be for a unit of one sq.meter.
- 7.4.1. The payment shall be made for a unit of 1.00 sq.mt of work done over an above the finishing of work of base coat & floating coat of neat cement slurry
- 7.4.2. The relevant specifications of item of base coat & floating coat of neat cementslurry shall be followed for measurements and payment.
- 7.4.3. The rate shall be for a unit of one sq.meter.

**8.0** Item also includes Providing and fixing M.S Cover for sluice valve chamber manufactured from 35 mm x 35 mm x 5 mm MS angle 3 mm thick MS Plate including bending,cutting,welding and one coat of red oxide and two coat of

anticorrosive oil paint, including necessary RCC work etc comp. as per drawing Size:-0.70mt x 0.70 mt.

- a The Work Shall be carryout as per description approved drawing and instruction of engineering charge.
- b The good quality of M.S.Plate 35 x 35 x 5 mm. MS angle, 3 mm. thick ms plate
- c Good quality of Welding work should be done as per instruction of engineering charge.
- d The Cover shall be fixed in sluice valve chamber in such a way that it should be esily opened and closed.
- e The Cover shall be painted by one coat of red oxide and two coat of anti corrosive oil paint as per instruction of engineering charge.

**Mode of Measurement and Payment :**

The item shall be measured and paid on number basis.

**ITEM No.: 6 Constrcting Tail Kundi :**

**1.0 Excavation**

As per Item No.1

**2.0** This item includes Providing and laying hand mixied and unvibrated plain cement concrete as under of different proportion for foundation laid in situ including temping smooth finishing curing and lead up to 50 Mt. Moreover lift 1.5 mt.etc. complete C.C.of cement sand and course aggregates (20 mm to 40 mm)

(i) 1:4:8.

As per Item No.5

**2(b)** Item also includes Providing and laying hand mixed and unvibrated plain cement concrete as under of different proportion for foundation lain in situ including temping smooth finishing, curring, and lead upto 50 Mt. Moreover, lift 1.5 Mt. etc. complete.

(a) C.C. of cement sand and kapchi (20mm and under ) 1:2:4

As per Item No.5

**3.0**



This items include Providing B.B.Masonry 2nd class using British size conventional bricks in cement mortar of prop. (1:6) for foundation plinth and super structure including striking out joint 20mm deep with curing finishing joints and providing scaffolding as directed with all leads and all lifts etc. complete. For foundation

As per Item No.5

**4.0** Providing plaster of cement and sand in 1:3 proportion including preparing surface providing scaffolding, finishing curing curing as directed etc. complete. (15mm thick )

As per Item No.5

**5.0** Extra over item no-11 for finishing with a floating coat neat cement slurry

As per Item No.5

**6.0** Providing cement and sand vata (10 cm x10 cm) size quarter round in cement mortar 1:1 prop. Including net cement finishing watering etc.complete.

1 Material:

1.1. water shall conform to M-1 Cement mortar shall conform to M-11

2. Workmanship:

2.1 the work of cement vata of 10 cms x 10 cms size shall be carried out at junction of parapets and terraces, and at distribution tank &kundies as directed. The vata shall be finished in quarter round shape. The work shall be carried out in the best workmanlike manner. The inter portion of rain water pipe shall be rounded off properly during constructing the vata. The work shall be cured for 7 days.

3.0 Mode of Measurement & Payment:

The rate shall be for a unit of one running meter.

**Item No.7: Providing videography/Photography on the occasion of function or for on going construction work including dubbing, titiling etc complete including cost of cassate/CD For hole Day.**

The videography and photography should be done as per instruction of Engineer in charge. Good quality of photographs also taken of each site and print out of one set of photographs (4 x 6) of each site also given. Videography also include dubbing, titiling etc complete and provide in CD/Pendrive to Engineer in charge.

### **ITEM No.: 8**

#### **Supplying & Fixing Road Sign Board of MS Plate & Angel Iron Including Painting Lettering etc. Complete Including Fixing in CC (1:4:8) With necessary Excavation etc. Complete as per IRCT Type Design (Non Reflective Type)**

The sign board of M.S. plate size 110 X 60 cm. & thickness 6mm. The M.S. angle iron post shall be of 75 mm X 75 mm & 6mm thick confirming as per IS 808. The length of iron post shall be 2.1 meters. The post shall be fixed to the board by welding.

The board shall be fixed in C.C. 1:4:8 concrete. The concrete block for each post shall be 30 cm X 30 cm in size. The depth of concrete block shall be 85 cm of which 60 cm will be below ground and 25 cm above ground level.

The post shall be painted with two coats of paint, alternatively in black & white strips 23 cms in height after applying one coat of anticorrosive paint. The paint shall be of approved quality. The board shall be painted with color as directed by engineer- in- charge. The information may be one or more three script .viz. Hindi, English & Gujarati. The payment should done on actual work done on sqmt basis as per tender condition

### **ITEM No.: 9**

#### **Crop Compensation**

Right of Way (ROW) and Facilities: The contractor shall bear all costs and charges for special and / or temporary Rights-Of-Way (ROW), which he may require, including those for access to the site. The contractor shall also obtain, at his cost, any additional facilities outside the site which he may require for the purposes of the works. No land will be acquired for R.C.C kundies / chamber. The contractor shall have to make the payment to land owner by mutual understanding.

Avoidance of Interference: The contractor shall not interfere unnecessarily or improperly with: - The convenience of the public, or- The access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the employer or of others.

The contractor shall indemnify and hold the employer harmless against and from as damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

Access Route: The contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the site. The contractor shall use reasonable efforts to prevent any road or bridge from being damage by the contractor

's traffic or by the contractor's personnel. These efforts shall include the proper use of appropriate vehicles and routes. Except as otherwise stated in these conditions:

The contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;

- The contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions.
- The employer shall not be responsible for any claims which may arise from the use or otherwise of any access route;
- The employer does not guarantee the suitability or availability of particular access routes, and
- Costs due to non-suitability or non-availability, for the site required by the

contractor, of access routes shall be borne by the contractor

### **Crop Compensation**

➤ The work of pipeline is to be executed on the land acquired temporally under "Right of Work" permission. The minimum width of ROW shall be considered 10m Width for laying of HDPE pipelines of 280 mm Dia .

➤ The payment of standing crops, standing trees, fruit / non fruits bearing trees, within Row land width and any of such requirements for work for the right of Work to farmer other affected persons / owners, NOC and other miscellaneous charges shall be borne by the contractor for the entire period of the contract

➤ The contractor shall have to take enough precaution to see that no adjacent/ surrounding land is damaged/obstructed/ encroached by them during the execution. Any such dispute / litigation if arise shall be the responsibility of the contractor.

➤ The R.C.C chamber on pipeline shall be constructed without acquiring land. Contractor shall have to pay the compensation to farmer by mutual understanding

➤ Contractor shall have to pay crop compensation to farmers by calculation Area of work multiply by yield of that crop multiply by APMC Rate of crops or by mutual understanding. (Area (in smt) x Yield of crops (per Ha./10000) x Rate of Crops)

➤ The payment of standing crops, compensation of wells, bores, buildings, properties, any of such requirements for work for the right of use permission to farmer / other affected persons / owners, NOC and other miscellaneous charges shall be borne by the contractor for the entire period of the contract. The contractor shall have to take enough precaution to see that no adjacent/ surrounding land is damaged / obstructed / encroached by them during the execution. Any such dispute / litigation if arise shall be the responsibility of the contractor.

➤ On satisfactory completion of the work, required NOC to be obtained by the contractor from the concerned department/Farmers. The contractor is responsible for obtaining all necessary permissions / clearance / NOC / sanctions etc. Required coordination for sanction from the concerned

authority and NOC from the concerned authority / field owner for satisfactory completion, Rojkam, Sammati Patrak, Calculation of Crop Compensation, Payment detail (Photo of Cheque) and other KYC of concerned authority / field owner shall be provided by the contractor.

- The payment will be made on Smt Basis in which Govt Land Area & Farm without crop area will be deducted.
- No Extra Payment will be made for Crop Compensation/ NOC from the concerned authority or field owner/ Land for RCC Chamber.

**Signature of Contractor**

**Executive Engineer  
Unit No-1  
Kherva (Mehsana)**

**SECTION – 6**

**FORM OF BID**

## FORM OF BID

Description of the Works:

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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 Addenda for the sum (s) of

\_\_\_\_\_  
\_\_\_\_\_  
(----- )

2. We undertake, if our Bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works in the Contact 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 your 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 -----

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\_\_\_\_\_

(in block capitals or typed)

Address

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Witness

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Address

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Occupation

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**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 in so far 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 errors 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 sledgehammers, 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.

1.

**BILL OF QUANTITIES****(A) Percentage Rate Tender (Up to INR 50 Cr. )**

As per attached sheet.

**Name of work :-** Repairing of existing HDPE pipeline of dia.280 mm & supplying and fixing new valve (survey no-235 new) at village: Aanand Bhakhari, Taluka-Satlasana Dist- Mehsana at chainage 3280 mt. Kuda to Bhimpur Pipeline project by using HDPE 280 mm dia. pipe.

Qty	Item	Estimated Rates With Labour Cess		Unit	Amount
		In Figures RS.	InWords		
	<b>ITEM NO-1</b> Excavation of pipeline trenches/foundation trenches in the strata shown below including depositing the excavated stuff as and where directed upto lead of 50 Mts. and 6.0 Mt lift of excavation below average G.L. including refilling, cleaning the site with thin jungle cutting but excluding dewatering if any.(A) Excavation in all sorts of soil. ( As Per GWRDC SOR 2023-24( Ch.4 item no- 1 A p.no-33)		Two Hundred Twenty One Rupees And Nineteen Paise Only	Cmt	
30	<b>(a) Up to 1.5mtr</b>	221.19			6635.70
30	<b>(b) 1.5mtr to 3.00 mtr</b>	232.30			6969.00
1200	<b>ITEM NO-2</b> Refilling the pipeline trenches incl. ramming, watering, consolidating desposal of surplus stuff as directed within a radius of 3 km with selected soil brought from outside including all lead (As Per GWSSB SOR 2022-23 Section-A Item No.14(2) Pg.No.40)	175	One Hundred Seventy Five Rupees Only	Cmt	210000.00
36	<b>ITEM NO-3</b> Providing Laying & Joinig in standard length ISI mark regid unplasticised H.D.P.E. Pipes suitable for irrigation water with self fit joint incl, joining necessary fitting like Tee, Bend, Coupler, reducer, End cap joining (cement solvent) of following class and dia as per IS specification No. 4985/1988 etc.comp (a) 6.00 kg/cm2 <b>(14) 280 mm dia</b> (As Per GWSSB SOR 2022-23 Section-A Item No.4.1.A.(14) Pg.no.8)	1777.60	One Thousand Seven Hundred Seventy Seven Rupees And Sixty Paise Only	Rmt	63993.60
2	<b>ITEM NO :- 4</b> Providing and Fixing I S I mark following class & dia of different type of valves with necessary fittings of standered design and specification incl. testing with all leads and lifts etc.complete. <b>(3)(g) Sluice valve 300 mm dia.</b> (As Per GWRDC SOR 2023-24 ( Ch 9 sr no-1 p.no-50)	22307.87	Twenty Two Thousand Three Hundred Seven Rupees And Eighty Seven Paise Only	No	44615.74
2	<b>ITEM NO-5</b> Constructing sluice valve chamber As Per Sub Estimate No- 1	32187	Thirty Two Thousand One Hundred Eighty Seven Rupees Only	No	64374.00

1	<b>ITEM NO-6</b> Constructing Tail Kundi As Per Sub Estimate No- 2	224273	Two Lakh Twenty Four Thousand Two Hundred Seventy Three Rupees Only	No	224273.00
1	<b>ITEM NO-7</b> Providing videography on occasion of function or for on going construction work including dubbing, titeling etc. complete including cost of casette/CD. For Whole day <b>As Per GWRDC SOR 2023- 24 ( Ch 11 sr no45 p.no-61)</b>	2222	Two Thousand Two Hundred Twenty Two Rupees Only	Per Day	2222.00
0.54	<b>ITEM NO-8</b> Supplying & Fixing Road SignBoard of MSPlate&Angel Iron Incl Painting Lettering Etc ComplIncl Fixingin CC(1:4:8) With necessary Excavation Etc Comp Asper IRCType Design (NonReflective Type) <b>As Per GWRDC SOR 2023-24 ( Ch 11 sr no-6 p.no-53)</b>	2410.87	Two Thousand Four Hundred Ten Rupees And Eighty Seven Paise Only	Smt	1301.87
300	<b>ITEM NO-9-</b> Crop Compensation	15	Fifteen Rupees Only	Smt	4500.00
<b>Total (Without GST)</b>					628884.91

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

(A) Total Tendered Amount

(B) Rebate on above tendered amount (if any) % (in figure) .....  
(in words).....

(C) Net Tendered Amount (A-B) (in figure) .....  
(in words).....

#

1	The Contractor shall exhibit a board with brief details of work as directed by the Engineer-In-Charge for which no extra payment shall be made.
2	The labour cess 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	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. there fore 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 from the rate of original item at the rate of input rate mentioned in all the tender.

**SECTION - 8**

**SECURITIES AND OTHER FORMS**

## **BID SECURITY (BANK GUARANTEE)**

WHEREAS, ----- (name of Bidder) (hereinafter called the "The Bidder") has submitted his bid Dated ----- (Date) for the construction of ----- (Name of Contractor hereinafter called "the Bid")

KNOW ALL PEOPLE by these presents that We -----  
(name of Bank) of----- (name of country) having our  
registered office at ----- ( hereinafter called  
"the bank") are bound unto ----- (name of Employer)  
(hereinafter 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 note that the  
amount claimed by him is due to him owing to the occurrence of one or any of  
the three conditions, specifying the occurred conditions or conditions.

This Guarantee will remain in force up to 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-----

WITNESS -----

SEAL -----

---

(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) (hereafter 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 prices 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 aforesaid 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 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 thereunder 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) (hereafter 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 prices 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 aforesaid 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 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 thereunder 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 **28 days** from the project completion date.

Signature and Seal of the guarantor -----

Name of Bank -----

Address -----

Date -----



## BANK GUARANTEE FOR 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 above mentioned Contract, \_\_\_\_\_ (name and address of Contractor) (hereinafter 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 whatsoever right of obligation on our part and without his first claim to the Contractor, in the amount not exceeding \_\_\_\_\_ (amount of guarantee)\* \_\_\_\_\_ (in words)~~

~~We further agree that no change or addition to or other modifications of the terms of the Contractor or Works to be performed thereunder 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 we hereby 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 of 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 that Bank or Financial Institution representing the amount of the Advance Payment, and 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 hereby 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. up to \_\_\_\_\_ 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**

(Letterhead of the Employer)

----- (date)

To,

\_\_\_\_\_ (Name and address of the Contractor)

\_\_\_\_\_

\_\_\_\_\_

Dear Sirs,

Pursuant to your furnishing the requisite security in ITB 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) (Hereinafter called "the Employer") and \_\_\_\_\_ (name and address of contractor) hereinafter called "the Contractor" of the other part.

Whereas the Employer is desirous that the Contractor 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 the remedying of any defects therein, 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 hereinafter 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 wherein 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 whereof the parties there to have caused this Agreement to be executed the day and year first before written

The Common seal of \_\_\_\_\_  
Was hereunto affixed in the presence of :

Signed, sealed and Delivered by the said \_\_\_\_\_

---

In the presence of

Binding signature of Employer \_\_\_\_\_

Binding Signature of Contractor \_\_\_\_\_

**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 undersigned do hereby undertake that our firm M/s .....  
..... agree to abide 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

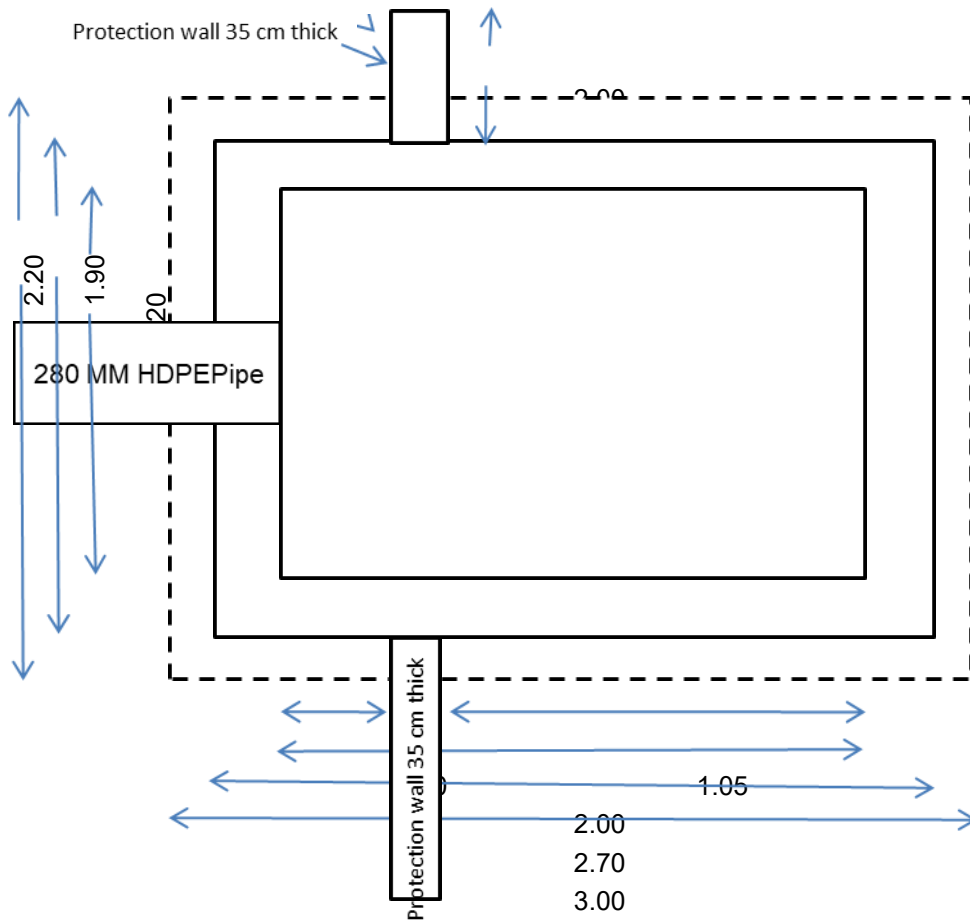
\_\_\_\_\_  
Name of firm

\_\_\_\_\_  
DATE

**SECTION - 9**  
**DRAWINGS**

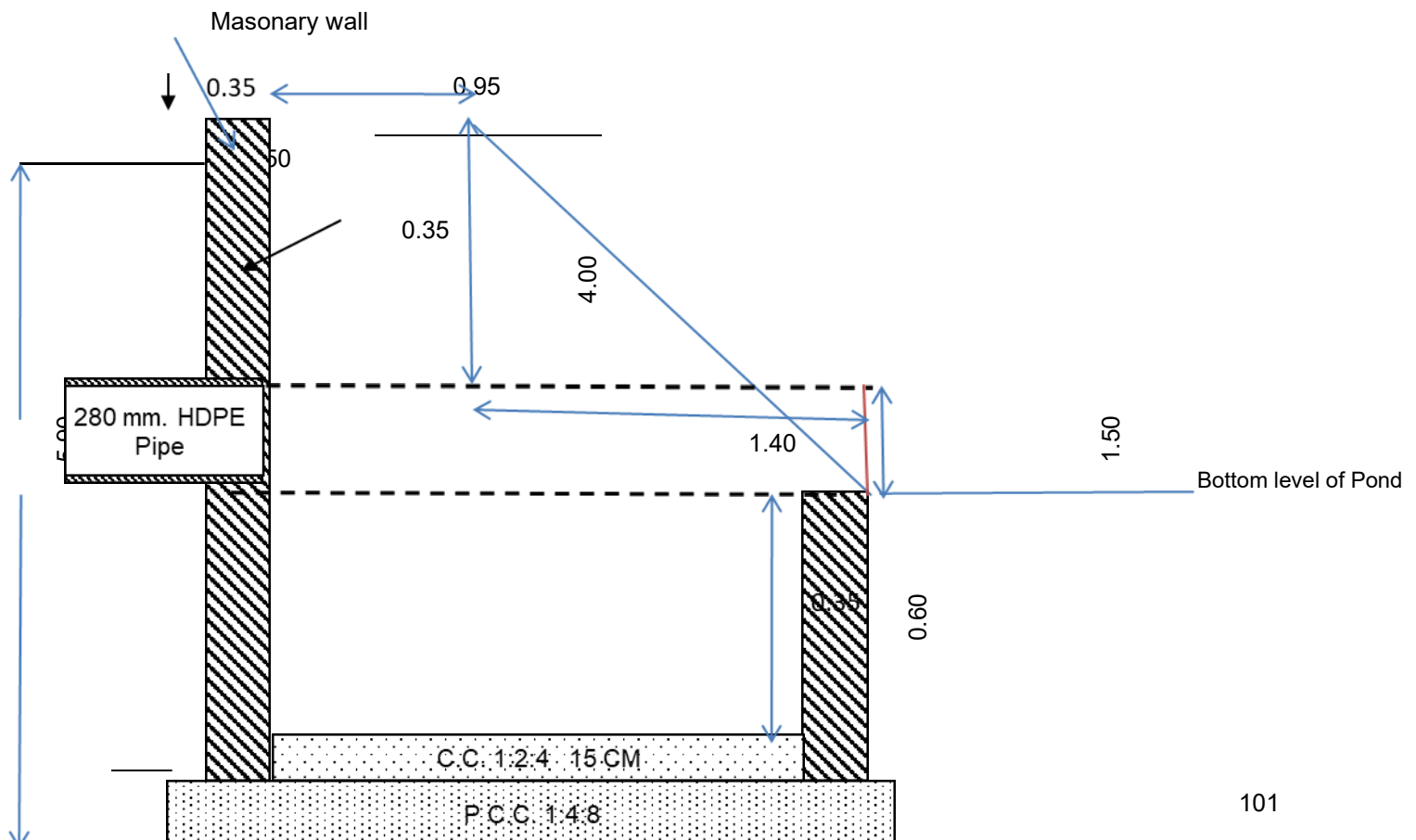
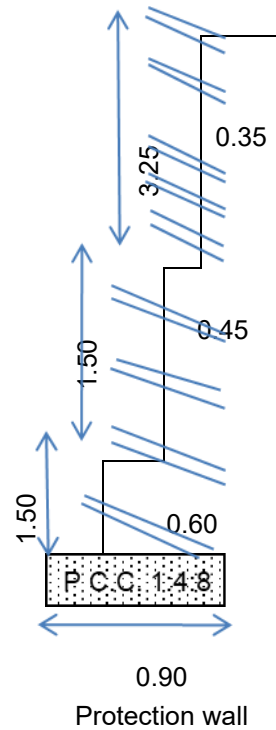


# TYPICAL DRAWING OF TAIL KUNDI (MASONRY) FOR HDPE PIPE 280M.M. DIA.



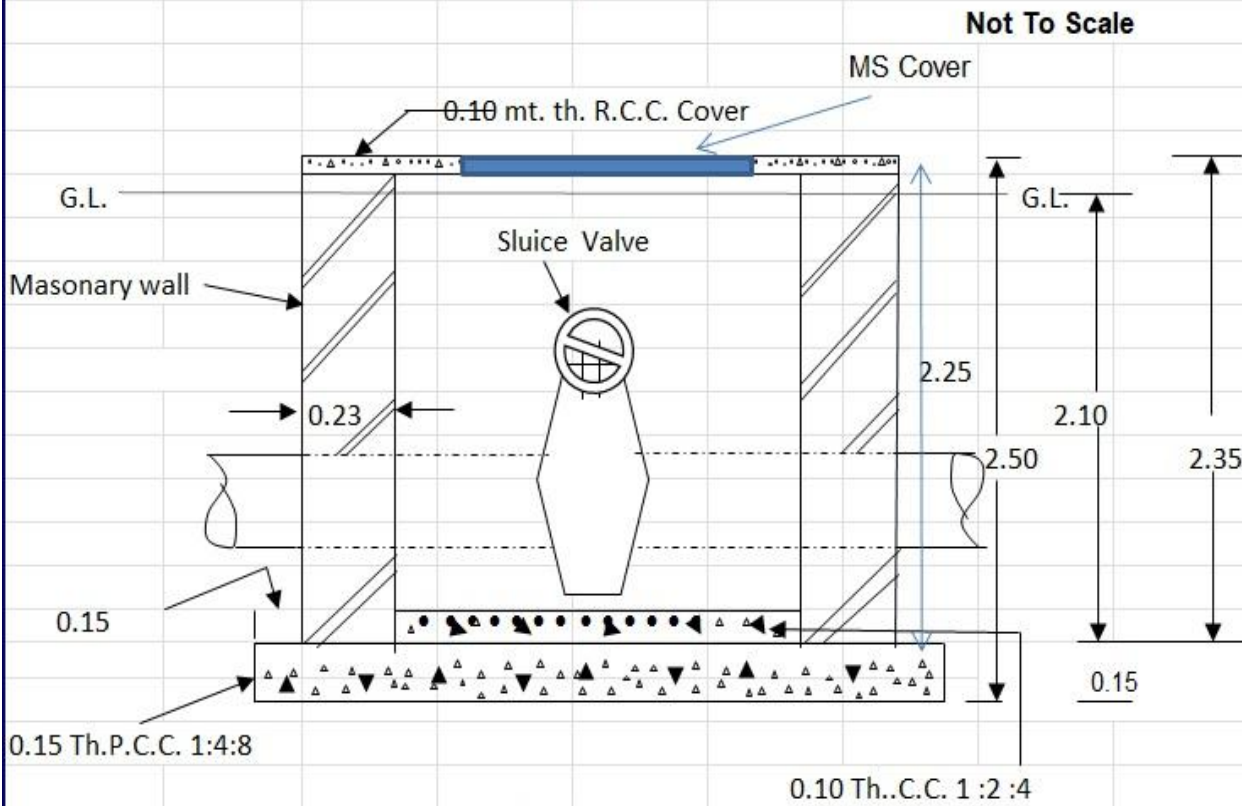
PLAN

Not to scale

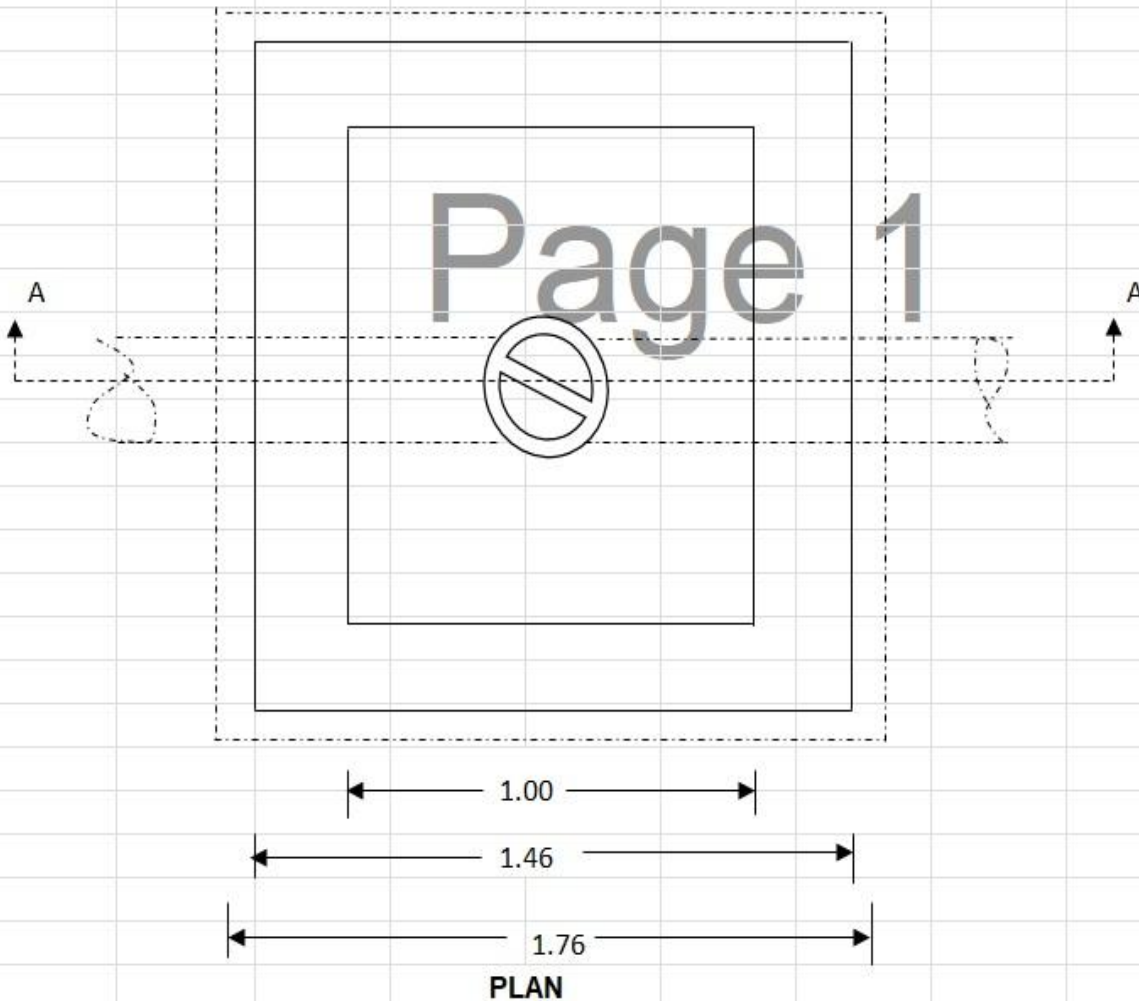


## TYPICAL DRAWING

### SLUICE VALVE CHAMBER ( MASONARY) FOR HDPE PIPE 280 M.M. DIA.

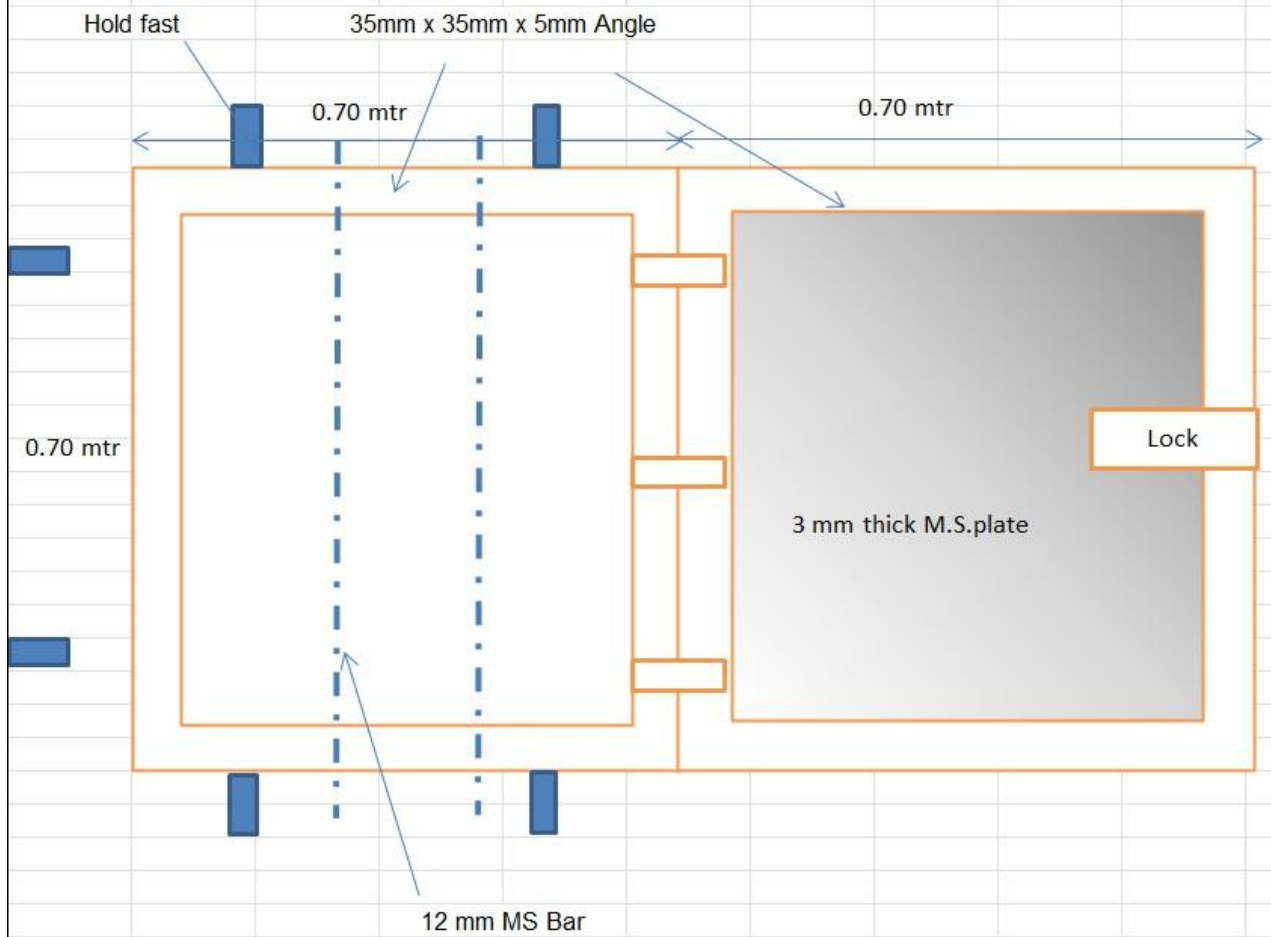


**SECTION**



## M.S. COVER FOR SLUICE VALVE CHAMBER

Not to scale





**SECTION - 10**  
**DOCUMENTS TO**  
**BE FURNISHED BY BIDDER**

- (i) Scanned copy of demand Draft of Bid Document Fee /Tender Fee
- (ii) Scanned copy Bid Security / EMD or Valid EMD Exemption Certificate of Appropriate Class of Registration of Approved Contractors
- (iii) Scanned copy of valid Registration Certificate of Appropriate class
- (iv) Scanned copy GST Registration certificate and PAN card
- (v) Scanned copy of AFFIDAVIT (As per proforma)
- (vi) Scanned copy of Undertaking for bid validity (As per proforma)