

# **STANDARD BIDDING DOCUMENT**

## **PROCUREMENT OF**

## **CIVIL WORKS**

### **COMPLETE BIDDING DOCUMENT**

**Name of work : Constructing New C.C Road Between Ch.00 Mt To Ch.500 mt of main  
canal of D.R.P.**



**GOVERNMENT OF GUJARAT**  
**Water Resources Department**

# Index

<b><u>Sr No</u></b>	<b><u>Section</u></b>	<b><u>Description</u></b>	<b><u>Page No</u></b>
1		Invitation for Bid (IFB)	3
2	Section -1	Instructions to Bidders	7
3	Section -2	Qualification Information	28
4	Section -3	Conditions of Contract	36
5	Section -4	Contract Data	64
6	Section -5	Technical Specification	72
7	Section -6	Form of Bid	141
8	Section -7	Bill of Quantities	144
9	Section -8	Securities and Other Forms	148
10	Section -9	Drawings	160
11	Section -10	Documents to be furnished by Bidder	161
12	Annexure-I	Cement Consumption	162 to 163

**INVITATION FOR BID**  
**(IFB)**

## **NATIONAL COMPETITIVE BIDDING**

1. The Executive Engineer, Deesa Irrigation Division, Deesa invites bids for the construction / Supply of works detailed in the table.  
The bidders may submit bids for any or all of the following works.

### **1. TABLE**

Packa ge No.	Name of work	Approxim ate value of works (Rs.)	Bid security (Rs.)	Cost of document	Period of completion	#Class of Registration / Category of contractor if required
1	2	3	4	5	6	7
	Constructing New C.C Road Between Ch.00 Mt To Ch.500 mt of main canal of D.R.P.	4922749.70	50000	1500	2 Month	E1 and Above

2. Prospective / Interested bidder may download the Bid Documents from website <https://www.nprocure.com> free of cost till the Time and Date as mentioned on online NIT at website <https://www.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 Deesa and in favour of 'Executive Engineer, Deesa Irrigation Division, Deesa'. Once the Bid is received online, Bid Document / Tender Fee will not be refundable. As Per GoG R&B Department's Circular No. PARACH/102/000/IB/221/(59)/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, Deesa Irrigation Division, Deesa 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://www.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 Executive Engineer, Deesa Irrigation Division, Deesa to clarify the issues and to answer questions on any matter that may be raised at that stage as stated in clause 9.2 of 'instructions to Bidders' of the bidding documents.~~
6. #Bid Security (EMD) is equal to 1% of Estimated Amount put to bid / tender and should be rounded off to the next thousand rupees.
7. Other Information is as under:
  - A. Agencies can prepare and edit their offers a number of times before the end of the tender submission date and time. After the tender submission date and time, the bidder cannot modify / edit / withdraw their submitted offer in any case. No written or online request in this regard shall be granted.
  - B. Offers in physical form will not be accepted in any case.
  - C. Demand Draft purchased by the other then 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 Executive Engineer within 7 days from last day of submission of Bid.

- (i) Bid Document Fee / Tender Fee
- (ii) Bid Security / EMD or Valid EMD Exemption Certificate of Appropriate Class of Registration of Approved Contractors
- (iii) Registration Certificate of Appropriate Class
- ~~(iv) Registration Certificate of special category – Road/Building and Category I/II/III, if required~~
- (v) GST Number
- ~~(vi) Work Experience, if necessary...~~
- (vii) Other Documents, as required...As per Section-10

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

## Section 1: Instructions to Bidders

### Table of Contents

	Page No.		Page No.
<b>A. General</b>		<b>D. Submission of Bids</b>	
1. Scope of Bid	9	19. Sealing & Marking of Bids	19
2. Source of Funds	9	20. Deadline for Submission of Bids	19
3. Eligible Bidders	9	21. Late Bids	19
4. Qualification of the Bidder	9	22. Modification and Withdrawal of Bids	19
5. One Bid per Bidder	13		
6. Cost of Bidding	13	<b>E. Bid Opening and Evaluation</b>	
7. Site Visit	13	23. Bid Opening	20
		24. Process to be Confidential	21
<b>B. Bidding Documents</b>		25. Clarification of Financial Bids	21
8. Content of Bidding Documents	14	26. Examination of Bids and Determination of Responsiveness	21
9. Clarification of Bidding Documents	14	27. Correction of Errors	21
10. Amendment of Bidding Documents	15	28. Deleted	22
		29. Evaluation and Comparison of Financial Bids	22
<b>C. Preparation of Bids</b>		30. Deleted	22
11. Language of Bid	16		
12. Documents Comprising the Bid	16	<b>F. Award of Contract</b>	
13. Bid Prices	16	31. Award Criteria	23
14. Currencies of Bid and Payment	17	32. Employer's Right to Accept any Bid and to Reject any or all Bids	23
15. Bid Validity	17	33. Notification of Award and Signing of Agreement	23
16. Bid Security	17	34. Performance Security	23
17. Alternative Proposals By Bidders	18	35. Advance Payment and Security	24
18. Format and Signing of Bid	18	36. Dispute Review Expert	24
		37. Correct or Fraudulent Practices	24



## **A. GENERAL**

### **1. Scope of Bid**

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

### **2. Source of Funds**

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

### **3. Eligible Bidders**

- 3.1 This Invitation for Bids is open to all eligible bidders.
- 3.2 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, 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.~~

<u>Year</u>	<u>Financial Year</u>	<u>Multiplying factor</u>
Base year of inviting tender	<u>2026-2027</u>	1.00
-1	<u>2025-2026</u>	1.10
-2	<u>2024-2025</u>	1.21
-3	<u>2023-2024</u>	1.33
-4	<u>2022-2023</u>	1.46
-5	<u>2021-2022</u>	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. ---Crore for works in progress and completed in all classes of civil engineering construction works in any one year, over the last five financial years.~~
- ~~(b) Experience in successfully completing or substantially completing at least one contract of similar work (.....) of at least 40 percent of the value of proposed contract within the last five financial years.~~

~~The works may have been executed by the applicant as prime contractor or as a member of a joint venture or as a nominated sub-contractor. As 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)~~

#### **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 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 3 Members i.e. 1 Lead & 2 Others)~~**  
**~~(Applicable only for estimated project cost of 50 Crore and above)~~**

**4.6.1. — ~~Joint ventures must comply with the following requirement:~~**

~~(a) — Following are the minimum qualification requirements:~~

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

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

~~(b) — Bid shall be signed so as to legally bind all partners, jointly and severally, and shall be submitted with a copy of the joint venture agreement providing the joint and 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 =  $(A \times N \times 2 - B)$ , 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 as per prevailing Rate)

- 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 21/04/2023 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 from the stipulated date of completion of the p r o j e c t 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 of 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, Deesa Irrigation Division, Deesa	[ Cl.1.1]
<del>2.</del>	<del>The last five financial years.</del>	
	<del>2025 – 2026</del>	
	<del>2024 – 2025</del>	
	<del>2023 – 2024</del>	
	<del>2022 – 2023</del>	
	<del>2021 – 2022</del>	
3.	This Annual Financial Turnover Amount is Rs. ....	{Cl.4.5.3 (a)}
4.	Value of Work is Rs. <b>4922749.70</b>	
5.	Deleted	
6.	The cost of electric work is Rs. Nil	
7.	The cost of water supply / sanitary works is Rs. NIL	
8.	Liquid assets and / or availability of credit facilities is Rs. 0.00	[Cl.4.5.6 ]
9.	Price level of the financial year <b>NA</b>	[Cl. 4.5.2]
<del>10.</del>	<del>The pre-bid meeting will take place at .....</del>	<del>{Cl. 9.2.1}</del>
11.	The technical Bid will be opened at the office of the Executive Engineer on dt    /    /2026 at 11:00 AM/PM	As per NIT
12.	Address of the Employer: Executive Engineer, Deesa Irrigation Division, Deesa, Dantiwada Canal Colony, Opp.Anand Hotel, Havai Pillar Service Road, Deesa-385535, B.K., Gujarat.	
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 Executive Engineer, Deesa Irrigation Division, Deesa As stated on online NIT	[Cl. 23.1 ]
16.	The Bank Draft in favor of Executive Engineer, Deesa Irrigation Division, Deesa	
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>
Base year of inviting tender	<del>2026-2027</del>	1.00
-1	<del>2025-2026</del>	1.10
-2	<del>2024-2025</del>	1.21
-3	<del>2023-2024</del>	1.33
-4	<del>2022-2023</del>	1.46
-5	<del>2021-2022</del>	1.61

## #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.

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

## **List of Key Personnel to be deployed on Contract Work**

### **(Reference Cl. 4.5.4)**

#### **# Employment of a qualified site Engineer by the Contractor.**

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

1. Two graduate Civil Engineers and three diploma Civil Engineers when cost of the work to be executed is more than Rs.50 lakhs.
2. One graduate & two Diploma, Civil Engineers when the cost of the work to be executed is more than Rs.15 lakhs but less than Rs.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 at the rate of Rs.15,000-00 per month per Engineer will be made from the bills/deposit/dues of the contractor. Such recovery shall be non-refundable.

**SECTION - 2**

**QUALIFICATION 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	20	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.

[illegible]

\*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 the work	Name of the Employer	Quantity of work performed (Cum/MT)				Remarks* (indicate contract Ref)
			Cement Concrete (Including RCC & PCC) ITEM 1	Masonry ITEM 2	Earth Works ITEM 3	Bituminous Work ITEM 4	
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
Project Manager				
Etc.				

- 1.7 Proposed sub-contract and firms involved

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

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

- 1.8 Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports (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.

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

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

---



---

- 1.13 Proposed work method and schedule. The 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. \_\_\_\_\_ 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

## Table of Contents

<b>A</b>	<b>General</b>	<b>Page No.</b>	<b>D.</b>	<b>Cost Control</b>	
1	Definitions	38	37	Bill of Quantities	50
2	Interpretation	39	38	Changes in the Quantities	50
3	Language and Law	40	39	Variations	50
4	Engineer's Decisions	40	40	Payments for Variations	50
5	Delegations	40	41	Cash Flow Forecasts	51
6	Communications	40	42	Payment Certificates	52
7	Sub-Contractors	40	43	Payments	52
8	Other Contractors	40	44	Compensations Events	52
9	Personnel	41	45	Tax	53
10	Employer's & Contractor Risk	41	46	Currencies	53
11	Employers Risks	41	47	Price Adjustment	53
12	Contractor's Risk	41	48	Retention	53
13	Insurance	41	49	Liquidated damages	54
14	Site Investigations Reports	42	50	Bonus	55
15	Queries about the Contract	42	51	Advance Payment	55
16	Contractors to Construct the works	42	52	Securities	56
17	The Works to be Completed By the Intended Completion Date	42	53	Deleted	56
18	Approval by the Engineer	42	54	Cost of Repair	56
19	Safety	42			
20	Discoveries	43	<b>E.</b>	<b>Finishing the Contract</b>	
21	Possession of the Site	43	55	Completion	57
22	Access to the Site	43	56	Taking Over	57
23	Instructions	43	57	Final Account	57
24	Disputes	43	58	Operating and Maintenance manuals	57
25	Procedure for Disputes	44			
26	Deleted	44	59	Terminations	57
			60	Payment upon Terminations	58
<b>B.</b>	<b>Time Control</b>		61	Property	59
27	Programme	45	62	Release from Performance	59
28	Extensions of the Intended completion date	45			
29	Deleted	45	<b>F.</b>	<b>Special Conditions of Contract</b>	
30	Delays Ordered by The Engineer	45	63	Labour	60
			64	Compliance with labour regulations	60
31	Management Meetings	46	65	Arbitration	63
32	Early Warning	46			
<b>C.</b>	<b>Quality Control</b>				
33	Identifying Defects	47			
34	Tests	49			
35	Correction of Defects	49			
36	Uncorrected Defects	49			

## 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** (Sujalam Sufalam Circle-2, Mehsana) within 14 days of the notification of the Engineer's decision. If the issue is not resolved, any party can refer the matter for conciliation within 15 days from the decision given by the **#Superintending Engineer** (Sujalam Sufalam Circle-2, Mehsana).
- 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** (Sujalam Sufalam Circle-2, Mehsana), both the parties have to refer to the Chief Engineer concern for the conciliation process.
  - (b) For the work more than Rs.100 Cr., if any of the parties is not satisfied with the decision of the **#Superintending Engineer** (Sujalam Sufalam Circle-2, Mehsana), both the parties have to refer to the **#Secretary**, Water Resources Department, Government of Gujarat for the conciliation process.

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

**25. Procedure for 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.
- 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~~

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

## **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 certified date of completion of the project and the additional security for unbalanced bids shall be valid until a date 28 days from the date of issue of the certificate of completion of the work.

## **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) (..... Circle) 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** (..... Circle), both the parties have to refer to the **#Chief Engineer** concerned for the conciliation process.
  - (b) For the work more than Rs.100 Cr., if any of the parties is not satisfied with the decision of the **Superintending Engineer**, both parties have to refer to the **#Secretary, Water Resources Department, Government of Gujarat** for the conciliation process.

If the dispute is not resolved through the conciliation process, contractor may refer the dispute to Gujarat Public Works Contract Dispute Arbitration Tribunal. If the Contractor fails to refer a claim / dispute to the Higher Authority within 14 days of the notification of the Engineer's decision, the 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: <b>Executive Engineer, Deesa Irrigation Division, Deesa</b>	
	Address: Dantiwada Canal Colony, Opp.Anand Hotel, Havai pillar Service Road, Deesa, 385535, B.K., Gujarat.	
	Name of authorized Representative (will be intimated later)	
2.	The Engineer is <b>Deputy Executive Engineer</b>	
	Name of Authorized Representative: <b>Assistant Engineer</b>	
3.	The Defects Liability Period is <b>3</b> years from the date of completion.	[CL.1.1&33]
4.	The Start Date shall be <b>1<sup>st</sup></b> 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>2 Months</b> after start of work with the following milestones:	[CL.1.1,17&2]
	<p>Milestone dates:</p> <p><u>Physical works to be completed Period from the start date</u></p> <p>Milestone 1 i.e. 25 % 15 days.</p> <p>Milestone 2 i.e. 50% 30 days.</p> <p>Milestone 3 i.e. 75% 45 days.</p> <p>Milestone 4 i.e. 100% 60 days.</p>	[CL.2.2& 49.1]
6.	The Site is located at near <b>Dantiwada, Ta.Dantiwada, Dist.B.K.</b>	[CL.1.1]
7.	The name and identification number of the Contract is:	[CL.1.1]
8.	The works consist of " <b>Constructing New C.C Road Between Ch.00 Mt To Ch.500 mt of main canal of D.R.P.</b> " with items as per B.O.Q. The works shall, inter alia, include the following, as Specified or as directed:	[CL.1.1]
	<p><b>(A) WRD Works</b></p> <p>Site clearance; setting – out and layout; Construction and Maintenance of all types of dams and its component, earthen dam; spillway; installation of gate; excavation and earth work, approach road, Inspection Bungalows, checkdams, bandhara, T.R., weir, barrages, Flood Protection &amp; Anti Sea Erosion work, canal lining and structures, , CD Works, structure repairing, Jungale cutting, Desilting, etc. other WRD works.</p> <p><b>(B) Road Works :</b></p> <p>Site clearance; setting out and layout widening of <b>existing</b> 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.</p>	

### **( 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)]
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. [CL.13]
17. Site Investigation report [CL.14]
18. The Site Possession dates shall be from the date of workorder [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 ..... days. [CL.27.3]
21. The amount to be withheld for late submission of an updated programme shall be Rs .....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 price of bitumen of IOC depot at the nearest center: -  
For the first 15 days of the month under consideration, the price declared on the 1st day of that month.  
- For the remaining days of the month under consideration, the rate declared on the 16th day of that month

$P_b$  = 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 India 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 - $P_l$ =	7.87 %
2. Cement - $P_c$ =	33.69 %
3. Steel - $P_s$ =	5.17 %
4. Bitumen- $P_b$	..... %
5. POL - $P_f$ =	7.47 %
6. Plant & Machinery Spares $P_p$	7.00 %
7. Other Materials - $P_m$ =	38.80 %
	-----
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
- For Whole of work {CL.49} (1/2000)<sup>th</sup> of the Initial contract price, rounded off to the nearest Thousand, per day. For sectional Completion (wherever specified In item 6 of Contract data) (1/2000)<sup>th</sup> of initial contract price for #5 km Section, rounded off to the nearest thousand per day.

27.	Maximum limit of liquidated damages For delay in completion work	10 percent of the Initial {CL. 49} Contract Price rounded off to the nearest thousand
-----	---	---

28.	<del>Amount of Bonus for early completion</del>	Amount of bonus for early completion of work shall be given as per CL.50 of Section-3
-----	---	---

29.	<del>Maximum limit of bonus for early Completion of work</del>	<b>5 percent</b> 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
i	Mobilization	10% of the contract Price	On submission of unconditional Bank Guarantee. (to be drawn before the end of 20% of the contract period). The contractor may furnish four bank guarantees of 2.5 % of each valid for the full period.
ii	Equipment	90% for new and 50% of depreciated value for old equipment. Total amount will be subject to a maximum of 5% of the Contract Price	After equipment is brought to site (provided the Engineer is satisfied That the equipment is required for performance of the contract) and on submission of unconditional Bank Guarantee for amount of advance
iii	Secured	<del>Deleted</del>	
	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 29.5

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

34. The Schedule of Operating and maintenance Manuals.....N/A. {CL. 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 {CL. 58} by the Date required is Rs ..... Lakhs.

37. The following events shall also be fundamentals breach of contract: {CL.59.2}  
“The Contractor has contravened Sub- clause 7.1 and Clause 9 of GCC”

38. The percentage to apply the value of the work not completed representing {Cl 60} the Employer’s additional cost for completing the Works shall be 20 per cent.



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

## INDEX

<b>Sr.No.</b>	<b>Particular</b>	<b>Page No.</b>
<b>(1)</b>	<b>SECTION: 1</b>  General Condition	74
<b>(2)</b>	<b>SECTION: 2</b>  Work and Site Condition	76
<b>(3)</b>	<b>SECTION: 3</b>  Special Condition	79
<b>(4)</b>	<b>SECTION: 4</b>  List of IS code	82
<b>(5)</b>	<b>SECTION: 5</b>  Specification for Materials	92
<b>(6)</b>	<b>SECTION: 6</b>  Item wise Technical Specification	115 to 140

## **SECTION :1**

### **GENERAL CONDITIONS**

#### **1.0 DEFINITION OF TERMS :-**

In constructing these general conditions and contract documents, the following expressions shall have the meaning herein assigned to them unless there is something in the subject or context inconsistent with such constructions.

- (i) The “ Government “ shall mean the Governor of Gujarat and shall unless excluded by or repugnant to the context, include his successors in offices and accepted assigns.
- (ii) The “ Contractor “ shall mean the tenderer whose tender has been accepted by the Government and shall include tender’s legal personal representative, successors and assigns. The “ Sub-contractor “ shall mean the person named in the contract for any part of the work or any person to whom any part of the contract has been sublet with the consent in writing of the Engineer and the legal representatives, successors and assigns of such person.
- (iii) The “ Engineer “ or “ Engineer-in-charge “ or the “ Executive Engineer “ shall mean the Executive Engineer, Deesa Irrigation Division, Deesa, Kherva-Deesa for the time being or such other officer as may be duly authorised and appointed in writing by the Government to act as the Engineer for the purpose of the contract.

The Engineer where named as final authority for decision shall mean the Superintending Engineer, in charge of the work to whom the Contractor shall have a right of appeal when the contractor is not satisfied with the decision of the Executive Engineer.

- (iv) The “ Chief Engineer “ shall mean the Chief Engineer (CG) & Additional Secretary, Narmada, Water Resources, Water Supply & Kalpasar Department, Gujarat State, Gandhinagar.
- (v) The “ Contract “ shall mean and include the documents specifying invitation for tenders, work and site conditions, General Conditions,

Special Conditions Printed S.B.D. Booklet with all its appendices, and technical specifications, the contract between the contractor and the Government.

- (vi) The “ Specifications “ shall mean the specifications included laid down or implied in the contract documents.
- (vii) The “ Site “ shall mean the lands and the other places, on under in or through which works are to be executed or carried out or any lands or places provided by the Govt. for the purpose of the contract and includes such other are as approved by the Superintending Engineer.
- (viii) “Construction Plant“ shall mean all appliances, machineries, equipment like stock or things of whatsoever nature together with necessary supplies or upkeep and maintenance required in or about the proper execution, completion or maintenance of the works or temporary works, but does not include materials or other things intended to form or forming part of the permanent works.
- (ix) “Temporary work“ shall mean all temporary works of every kind requiring in or about the proper execution, completion or maintenance of the work.
- (x) “ Month “ shall mean the calendar month.
- (xi) “ Writing “ shall include any manuscript, type written or printed statement under or over signature and / or a seal as the case may be.
- (xii) “Tendered rates” shall mean the estimated rates entered in work in Bill of Quantity of the tender reduced or increased by the percentage entered by the contractor in tender for works and accepted by the Government.
- (xiii) Tender for works and accepted by the Government.

**Dated signature of Contractor**

**Executive Engineer  
Deesa Irrigation Division,  
Deesa**

**SECTION : 2**  
**WORK & SITE CONDITION**

**1.0 WORK TO BE EXECUTED UNDER THIS TENDER:**

The present tender cover the work of **Constructing New C.C Road Between Ch.00 Mt To Ch.500 mt of main canal of D.R.P.** The above information is only a general out line and dose not in any way limit the scope of work under this tender. No claim shall be entertained if any of the items or individual works are deleted or minor charge in location after tender is accepted.

- 1.2 No extra rate over tender rate shall be payable out side the terms of tender agreement for variation of quantities on any account. Tendered rate shall be inclusive of all the expense to complete the work as per Schedule 'B'

**2.0 LOCATION :**

- 2.1 The location of work is shown in Index plan included in the tender drawing. The site of work under this tender is situated Nr. **Village Dantiwada, Ta.Dantiwada, Dist.B.K.**

**3.0 COMMUNICATION :**

- 3.1 The nearest town is Dantiwada, with a population of about 50000 and work site is situated near the Village Dantiwada, Ta.Dantiwada, Dist.B.K.
- 3.2 The nearest railway station is Palanpur and is on Mumbai-Delhi railway line.
- 3.3 The nearest post office and telephone office at Dantiwada which is situated at a distance of about 7 km. from site. There is also a branch of state Bank at Dantiwada.

**4.0 LABOUR, HOUSING ,WATER SUPPLY AND DRAINAGE**

- 4.1 Some unskilled labour may be available locally but skilled labour will hardly be available in required numbers at work site for this type of work. The contractor shall however make his own inquiries and arrangement for skill and unskilled labour.

- 4.2 No local housing is likely to be available. The contractor should plan for suitable housing for his staff and labour within the area as may be available to him on rental basis.
- 4.3 The contractor will have to make his own arrangement of water supply for his work and camp. The contractor shall have to make his own arrangement for pumping, purification, installing pipeline etc. as necessary at his own cost.
- 4.4 Suitable and adequate arrangements shall be made by the contractor for drainage of domestic and rain water around his camp and the work spots.
- 4.5 The contractor shall be responsible for maintaining law and order in his camp and on his work by keeping, Watchmen and other person as required “Unauthorized or Undesirable persons” shall be excluded from the camp and from the works., if in the opinion (which shall not be questioned) of the Engineer any employee or agent of the contractor misbehaves and/or causes obstruction in the proper execution of work or other wise make himself undesirable the contractor shall on receipt of the instruction to do so.

## **5.0 MEDICAL AID :**

- 5.1 The nearby Govt. dispensary is at **Dantiwada** moreover there are private dispensaries also at village **Dantiwada** etc. which are nearer to the site of work.
- 5.2 The contractor shall also provide at his own cost first aid arrangement at the various work spots in accordance with the labour rules and regulations and as may be directed by the Engineer in charge.

## **6.0 POST, TELEGRAM AND TELEPHONES:**

- 6.1 There is a general post office at **Palanpur** is **25 km** away from this work. There is telephone exchange at **Palanpur 25 km** away from this work.

## **7.0 CLIMATIC CONDITION:**

- 7.1 The work area is situated in relatively medium rainfall zone. The rainy season commence normally from the middle of June and last up to end of September. It has been observed that works are required to be totally closed in monsoon

but in the part of it, can be continued with precautions in dry spells during monsoon.

#### **8.0 SUPPLY OF PATROL AND DIESEL:**

- 8.1 The contractor is advised to make his own arrangement for his requirements of patrol and diesel. The nearest consumers pump is available at **nearby around 10 km.**

#### **9.0 MATERIALS:**

- 9.1 Cement shall be provided by the contractor as per actual requirement on site of work or as per provision of Schedule “A” shall be followed. The cement is to be purchased from the manufacturer who manufactures the cement as per I.S. Specification. Necessary test results should be produced before utilization in the work. The purchase bill will have to be produced to the department with each R.A.Bill.
- 9.2 Sand is available in River Banas near site with average lead of 25 km at Deesa. However, screening will be necessary to obtain required gradation for all work.
- 9.3 The above information is given for general guidance to the tenderer and it does not in any way limit the performance of work under this tender, The tenderer shall have to make his own arrangement of the quality and the quantity of the construction materials as also requiring the accessibility to the structures, locations nature of work etc. Department does not bind itself to any conclusion or towards any conclusion that may be made by the tenderer in this respect from this information and no claims on this account shall be entertained.

#### **10.0 LOCATION OF SUB-DIVISION/DIVISION OFFICE.**

- 10.1 The office of the Executive Engineer, Deesa Irrigation Division, DEESA, is located at : Dantiwada Canal Colony, Palanpur-Deesa Highway, Deesa and can be contacted on Office Phone No.(02744) 220071, Deesa. The sub-division office in charge of the work Namely DEPUTY EXECUTIVE ENGINEER, DANTIWADA DAM WORKS SUB DN. NO.1, DEESA

**Dated signature of the Contractor**

**Executive Engineer  
Deesa Irrigation Division,  
Deesa**

## **SECTION : 3**

### **SPECIAL CONDITION**

#### **1.0 ACCURACY OF LINES, LEVELS AND GRADES :**

The various works shall be done true to line, level and grade. The periodical checking of these by the Government staff shall not absolve the contractor or his responsibility regarding their accuracy. In case of any deviation or discrepancy in line level or grade at the meeting faces the contractor shall make good the discrepancy at his cost and without any for the additional work if any involved. Whenever each a discrepancy is found to arise at the junction of work of difference contractors, the relative liability to set right their respective discrepancy shall be fixed by the Engineer whose decision shall be final and binding on the contractors concerned. The Engineer, shall further have the unquestioned right, if need be to rectify the discrepancies and recover the costs from the contractor or contractors according to proportions as he may consider reasonable.

#### **2.0 TESTING OF MATERIALS :**

- 2.1 All materials before being incorporated in the work shall be inspected and tested before using the same for the work, Any work, on which such materials are used without prior inspection (and when necessary testing) and without approval or written permission of the Engineer-in-charge is liable to be considered as unauthorized defective and not acceptable.
- 2.2 All labour for collecting and transporting samples to Govt. Laboratory for tests will be supplied contractor free of cost to Government. Testing charges will be born by the Agency. Necessary arrangement for proper curing of cast specimen on work site and transport if field samples from work site to laboratory shall be arranged by the contractor at his cost. The contractor shall supply necessary materials at testing laboratory at his own cost.



### **3.0 SECURITY MEASURES :**

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

### **4.0 TREATMENT DURING MONSOON :**

If during time, the works are in progress, the monsoon breaks, in it shall be the responsibility of the contractor to preserve and maintain the safe condition of all materials, machinery, tools and work sites from the floods due to seasonal or unseasonable rains, cyclone etc. The damages to the work plant, Materials, Machinery etc. shall be good by the contractor without any claims.

### **5.0 INSPECTION FACILITIES:**

A motor able inspection road shall be maintained by contractor for inspection of the work during construction in working period necessary temporary inspection facilities for the detailed inspection shall also provide necessary temporary inspection facilities for the detailed inspection of the work.

### **6.0 DIVERSION**

Proper diversion roads, for highway road traffic shall be maintained by the contractor with proper signboards and red lights on entry and exist of the division etc. as directed by the Engineer in charge in during currency of the contract without any type extra payment.

### **7.0 DELETION CHANGE TYPE AND/OR LOCATION OF STRUCTURE:**

The drawing supplied to the contractor are works to the carried out shall be as per the details furnished by the Department form time to time. If any of the

items of particular works is required it be omitted due to bonafied reasons, the same shall be deemed to be withdrawn from the contractor and no claim what-so-ever on account of minor change of locations in site shall be entertained.

#### **8.0 RECOVERIES**

Deductions form running account bill of the following items shall be made to the extant mentioned against each item.

1. Securities deposit at stipulated rates.
2. Penalty if any in full.
3. Expenditure in incurred by Government on behalf of the contractor in full.
4. Recoveries on account of secured advance on materials in full.
5. Hire charge to plant and equipment in full.
6. Other recoveries in full.
7. Income tax deduction.
8. GST deduction.
9. Price variation.

- 9.0 All the expenses for sampling and testing charges for all materials shall be born by the govt.

**Dated signature of Contractor**

**Executive Engineer  
Deesa Irrigation Division,  
Deesa**

## **SECTION: 4**

### **List of I. S. Code and other publication**

#### **1.0 Applicable Publications.**

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

#### **1.1 Indian Standards and Other Publications : ( for Earthwork )**

1	IS: 1498 -1970	Classification and identification of soils for general engineering purposes (first revision) (Amendment Nos.1 and 2)
2	IS: 2809 -1972	Glossary of terms and symbols relating to soil engineering (first revision).
3	IS: 3764 -1966	Safety code for excavation work (Amendment No. 1)
4	IS: 7293 -1974	Safety code for working with construction machinery.
5	IS: 4701 -1982	Code of practice for earthwork on canals (first revision)
6	IS: 1720 -1978 (Part I to xx)	Methods for testing of soils
7	IS: 2720 -1983 (Part - I to X & Part 14)	Methods of test for soils
8	IS: 1888 -1982	Methods of load test on soil( second revision)
9	IS: 2131 -1981	Method of standard penetration test for soils (first revision)
10	IS: 5529 -1985 (Part-I)	Test in overburden ( first revision)
11	IS: 7894 -1975	Code of practice for stability analysis of earth dams (Amendment-No.1)

12	IS: 8237 -1985	Code of practice for protection of slopes for reservoir embankments (first revision)
0 -1	U.S.B.R. (United State Bureau of Reclamation)	Earth manual (Second edition 1974, reprinted 1985)
0 - 2	Central Water commission	Safety manual

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

1	IS :8112	Specification for 43 grade ordinary Portland cement (First revision)
2	IS:12269	Specification for 53 grade ordinary Portland cement.
3	IS :455	Specification for Portland Slag Cement (Fourth Revision.)
4	IS :1489	Specification for Portland pozzolana cement (Third revision) (Part I & II)
5	IS :3535	Method of sampling hydraulic cement ( First revision)
6	IS :4845	Definitions and terminology relating to hydraulic cement (Reaffirmed 1987)
7	IS :4031 ( part 1 - 13)	Methods of physical tests for hydraulic cement (First revision)
8	IS :4032	Method of chemical analysis of hydraulic cement (First revision)
9	IS:8041	Specification for rapid hardening Portland cement (Second revision )
10	IS:8043	Specification for Hydrophobic Portland cement ( Second revision)
11	IS :5512	Specification for flow table for use in test of hydraulic cement and pozzolanic materials (First revision)
12	IS :2580	Jute sacking bags for packing cement (Second revision) (With Amendment No. 1 to 3 )

13	IS :650	Specification for standard sand for testing of cement (First revision) (Amendment No.1,2&3)
14	IS :383	Specification for coarse & fine aggregate from natural sources for concrete (Second revision)
15	IS :460	Specification for test sieves (Part 1 to 3 )
16	IS :2430	Methods for sampling of aggregates for concrete (First revision)
17	IS :2386 (Part I - VIII)	Method of test for aggregates for concrete.
18	IS :5640	Method of test for determining aggregated impact value of soft coarse aggregates.
19	IS :456	Code of practice for plain & reinforced concrete (Fourth revision)
20	IS :457	Code of practice for general construction of plain and reinforced concrete for dams & other massive structures.
21	IS :4926	Specification for ready mixed concrete (First revision)
22	IS :1199	Method of sampling and analysis of concrete.
23	IS :516	Method of test for strength of concrete (Amendment No.1)
24	IS :3085	Methods of test for permeability of cement, mortar and concrete.
25	IS:1791	Specification for batch type concrete mixers (Second revision)
26	IS :2722	Specification for portable swing weigh batchers for concrete (Single & double bucket type)
27	IS :4634	Methods for testing performance of batch type concrete mixers.
28	IS :5892	Specification for concrete transit mixer and agitators.

29	IS :7245	Specification for concrete pavers.
30	IS :4925	Specification for concrete batching & mixing plant.
31	IS : 6461 (Part I to XII)	Glossary of terms relating to cement concrete vibrators.
32	IS :2505	General requirement for concrete vibrators (immersion type) (Second revision)
33	IS :2506	General requirements for screed board concrete vibrators.
34	IS :4656	Specification for form vibrators for concrete.
35	IS :6923	Methods of test for performance of screed board concrete vibrators.
36	IS :5889	Specification for vibratory plate compactor.
37	IS :3558	Code of practice for use of immersion vibrators for consolidating concrete.
38	IS :4558	Code of practice for under drainage of lined canals (First revision)
39	IS :3873	Code of practice for laying in situ cement concrete lining of Canal ( First revision )
40	IS :5256	Code of practice for sealing joints in concrete lining on canals.
41	IS :7861 ( part I & II)	Code of practice for extreme weather concreting.
42	IS :5513	Specification for vicat apparatus(First revision) (Amendment No.1)
43	IS :5515	Compacting factor apparatus (First revision )
44	IS :5529 ( part I & II)	Code of practice for in-situ permeability test.
45	IS:5816	Method of test for splitting tensile strength of concrete cylinders.(First revision)

46	IS :7320	Specification for concrete slump test apparatus (Amendment No.1 )
47	IS :9284	Method of test for abrasion resistance of concrete.
48	IS :8142	Method of test for determining setting time of concrete by penetration resistance.
49	IS :9013	Method of making curing & determining compressive strength of accelerated cured concrete test specimen.
50	IS :9103	Specification for admixtures for concrete. (First revision)
51	IS :6925	Methods of test for determination of water soluble chlorides in concrete admixtures.
52	IS:12200	Code of practice for provision of water stops at transverse and construction joints in masonry and concrete dams.
53	IS :8989	Safety code for erection of concrete frame structures.
54	IS :303	Specification for plywood for general purposes (Second revision) (Amendment No.1 to4)
55	IS :883	Code of practice for design of structural timber in building (third revision)
56	IS :4990	Specification for plywood for concrete shuttering work (First revision ( Amendment No.1)
57	SP:16 (S & T)	Design aids for reinforced concrete to IS : 456.
58	SP:23	Handbook for Concrete Mix.
59	IS:3370	Code of practice for concrete structures for the storage of liquids ( part I to IV)
0 - 1	Indian Road Congress (IRC)	Standard specification and code of practice for Road Bridges. Section – I, Section – II, Section – III

0 - 2	The United State Bureau of Reclamation (USBR)	Concrete Manual (Eighth Edition) (Revised– 1981)
0 - 3	American society for Testing of Materials (ASTM)	All relevant codes.
0 - 4	ACI codes and Manual	All relevant codes.
0 - 5	CBIP	Manual on canal lining
0 - 6	MORT & H	Specifications for Road & Bridge works (fourth revision, August 2001, reprinted in January 2002)

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

1	IS: 226	Structural steel (standard quality ) (fifth revision) (Amendment No.1 to 5)
2	IS: 280	Mild steel wire for general engineering purposes (third revision )
3	IS: 432	Mild steel and medium tensile bars and hard drawn steel wires for concrete reinforcement.
4	IS: 432 (Part-I)	Mild steel and medium tensile steel bars (third revision )
5	IS: 432 (Part-II)	Hard drawn steel wire ( third revision)
6	IS: 1566	Specification for hard drawn steel wire fabric for concrete reinforcement. (second revision ) (Amendment No.1)



7	IS: 1786	Specification for high yield strength deformed steel bars and wires for concrete reinforcement ( third revision)
8	IS: 1139	Hot rolled mild steel, medium tensile steel and high yield strength steel deformed bars for concrete reinforcement.
9	IS: 1481	Metric steel scales for engineers (first revision )(with 2 Amendments )
10	IS: 2502	Code of practice for bending and fixing of bars for concrete reinforcement.
11	IS: 5525	Recommendations for detailing of reinforcement in reinforced concrete works.
12	IS: 1521	Method for tensile testing of steel wire (first revision )
13	IS: 1608	Method for tensile of steel products ( first revision )
14	IS :9077	Code of practice for corrosion protection of steel reinforcement in RB and RCC construction.
15	IS:2062	Weld able Structural Steel (third revision)
16	IS: 2751	Recommended practice for welding of mild steel plain and deformed bars for reinforced construction (first revision)
17	IS: 9417	Recommendation for welding cold worked bar for reinforced concrete construction.
18	IS: 814	Covered electrodes for metal arc welding of structural steels.
19	IS: 814 (Part-I)	For welding products other than sheets (fourth revision) (with Amendment No. 1 to 3 )
20	IS: 814 (Part-II)	For welding sheets (fourth revision)
21	IS: 1278	Filler rods & wires for gas welding (second revision) (with Amendment No.1 )

22	IS :5242	Method of taste for determining shear strength of metal (first revision).
23	IS:800	For Structural Steel
24	IS :961	For Structural Steel
25	IS :1977	For Structural Steel
26	IS:2062	For Structural Steel
27	IS:816	For Welding work on Steel
28	IS:1477	For Paint on Steel

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

1	IS:458	Specification for Concrete pipes (with and with out reinforcement (third revision)
2	IS:783	Code of practice for laying of concrete pipes (first revision)
3	IS:3597	Methods of test for concrete pipes (first revision)
4	IS:1239	Mild steel tubes, tubular and other wrought steel fittings; Part-I mild steel tubes (fourth revision)
5	IS: 3114	Code of practice for laying of cast iron pipes (first revision)
6	IS:1592	Specification for asbestos cement pressure pipe (third revision)
7	IS:1630	Code of practice for laying of asbestos cement pressure pipes.
8	IS:8794	Cast Iron detachable joints for use with Asbestos cement pressure pipe (first revision)
9	IS:6163	Centrifugally cast (spume) iron low-pressure pipes for water, gas and sewage (first revision)
10	IS:1838	Preformed filler for expansion rest in concrete pavement and structures (on extruding and resilient type)

11	IS:5382	Rubber sealing rings for gas mains, water mains and sewers (first revision)
12	IS:1542-1977	Specification for sand for plaster (first revision)
13	IS:2116-1980	Specification for sand for masonry mortar (first revision)
14	IS: 2250-1981	Code of practice for preparation and use of masonry mortar (first revision)
15	IS:1597-1967	Code of practice for construction of stone masonry
16	IS:1597-1967 (Part-I)	Rubble stone masonry
17	IS: 4101-1967 (Part-I)	Stone facing
18	IS: 7779-1975 (Part-I/Sec.2)	Gujarat state, section 2 Engineering properties of building stones
19	IS: 8381-1977	Recommended practice for quarrying stones for construction purposes
20	IS:1127-1970	Recommendation for dimensions and workmanship of natural building stones for masonry work (first revision)
21	IS:1129-1972	Recommendation of dressing of natural building stone (first revision)
22	IS:1123-1975	Methods of identification of natural building stone (first revision)
23	IS: 4121-1967	Methods of test for determination of water transmission rate by capillary action through natural building stones
24	IS: 4122-1967	Methods of test for surface softening of natural building stones by exposure to acidic atmosphere

25	IS: 5218-1969	Method of test for toughness of natural building stones
26	IS:1706-1972	Methods of test for determination of resistance to wear by abrasion of natural building stones (first revision)
27	IS: 4348-1973	Methods of test for determination of permeability of natural building stones (first revision)
28	IS:1121-1974 (Part 1 to 4)	Methods of test for determination of strength properties of natural building stones (first revision)
29	IS:1122-1974	Methods of test for determination of true specific gravity of natural building stone (first revision)
30	IS:1124-1974	Methods of test for determination of water absorption, apparent specific gravity and porosity of natural building stones (first revision)
31	IS:1125-1974	Methods of test for determination of weathering of natural building stones (first revision)
32	IS:1126-1974	Methods of test for determination of durability of natural building stones (first revision) (Amendment No.1)

**SECTION: 5**  
**SPECIFICATION FOR MATERIALS**

**M - 1 CEMENT :-**

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

The contractor shall arrange a suitable & adequate infrastructure for procuring, conveying with loading & unloading and proper storing the same to the site of work at his own cost with sufficient quantity for advance planning of work to be done in next fifteen days as approved by the Engineer-in-charge of the work, so that Deptt. shall be conduct minimum required test to ascertain its quality. For verification of such purchase, the contractor shall have to produce all the bills of manufacturer / authorized dealer's along with testing details (i.e. manufacturer's test result conducted in the it's Q.C. laboratory for each batch of cement which is brought to the work site) to the Engineer-in-charge of the work, so that works can be allowed if manufacturer's lab. result are found OK till the receiving of test results from approved lab. of NWRD.

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

and if any damage or deterioration there in, shall be responsible for the change or removed at his own cost.

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

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

- 1.3 The cement brought by the contractor at the site, department shall be done sampling as per I.S. 3535 (or latest version of I.S.) & sending it in approved lab. of Depptt. for testing as per I.S. 4031, 4032 (or latest version of I.S.). The contractor shall be arrangement for sampling work & it's submitted to the Government Laboratory or Govt. approved laboratory at his own cost. **All testing charges shall be borne by the contractor.** The testing shall be done for each consignment received at the site. The cement consignment shall be more than 50tons or part thereof; each consignment shall be stacked separately.

- 1.4 The cement not satisfying the criteria as per I.S. 8112 for grade 43 and I.S. 12269 for grade 53 shall be rejected and such stack of cement shall be removed immediately from the site of work. No extra cost either for testing or for rejected cement shall not paid to the contractor. No cement shall be used for the work without being tested and such work shall not be paid by the Engineer-in-charge and shall be removed at contractor's own cost. The results of the cement should be submitted by the contractor as and when required by the Engineer-in-charge or his authorized.
- 1.5 The samples of cement older than 90 days shall be tested by the Quality control Unit of GERI at Gandhinagar or Baroda at the contractor's cost. If the test results are in accordance with I. S. specification then and only then the Engineer-in-charge will permit to use such cement. The cement older than 180 days shall not be permitted to be used for the work.
- 1.6 A regular day to day account of cement received and consumed / used in the work, together with the particulars tender item & quantity of each of the work shall be maintained in ink by the responsible representative of the department and shall be signed both i.e. by the departmental representative as well as the contractor, after proper verification at the end of the day's work. The accounting shall be shown to the inspecting officer when asked for. The Engineer-in-charge of the work or his authorized shall have the authority to verify the stock and check on the consumption in any manner he thinks proper. The volume of one bag cement weight 50kg. shall be considered as 0.0342cum. for mixing in concrete / mortar.
- 1.7 **Frequency for Cement testing** (physical properties) is as under, as per IS:3535- 1986.

Weight of lot in tonne	No. of Sample to be taken	Remarks
Up to 50	1	(1) For sample (15kg. of cement) taken from 2% bag
51 to 100	2	

101 to 200	3	out of total bag of consignment.
201 to 300	4	
301 to 500	5	
501 to 1000	6	
1000 to 1300	7	

**1.8** The following Test with required results are required for Physical properties of Cement.

Requirements of Test		Requirements for Test Results	
		43 Grade Cement (IS-8112)	53 Grade Cement (IS12269)
<b>A. Physical Test ( as per I.S. 4031 – 1988)</b>			
Specific Surface area (in m <sup>2</sup> /Kg)	Fineness	Min.225	Min.225
Standard Consistency (in %)		Above 30	Above 30
Setting Time (in minutes)	Initial	Not less than 30	Not less than 30
	Final	Not more than 600	Not more than 600
Soundness	(a) By Le-Chateller (in mm)	Not more than 10	Not more than 10
	(b)By autoclave (in %)	Not more than 0.8%	Not more than 0.8%
Compressive strength (in N/mm <sup>2</sup> )	03 days	Not less than 23	Not less than 27
	07 days	Not less than 33	Not less than 37
	28 days	Not less than 43	Not less than 53



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

## **M – 2 FINE AGGREGATES : (Sand)**

All the fine aggregates shall conform to IS: 383-1970 or its latest version and as directed by the Engineer-in-Charge. Sand to be used shall be natural as obtained from the river bed and the maximum size shall be limited to 4.75mm. The Sand shall be obtained from Banas river bed or from any other suitable sources as approved by Engineer -in -charge.

- 2.1 The sand shall consists of hard, dense, durable, uncoated siliceous gritty materials. It shall be free from injurious materials of dust, lumps, soft and flaky particles, shale, alkali-organic matter, loam, mica, earth, clay and other deleterious substances. The maximum size of sand particle shall be limited to 4.75mm. The F.M of the sand to be used in concrete / masonry shall be ranging between 2.20 to 3.0.

The maximum percentage of each of the deleterious substances in sand as delivered to the mixer for use in concrete, mortar etc. shall not exceed the following values.

### **(a) Limits of deleterious materials.**

I	Coal & lignite	1% by weight
II	Clay lumps	1% by weight
III	Material finer than 75 micron I.S. sieve	3% by weight
IV	Shale	1% by weight
V	Total percentage of all deleterious material (except Mica)	5% by weight

(b) Sand shall be free from injurious amount of organic impurities. Sand that are producing a colour (obtained by dissolving 9 grams of chemically pure (c.p.) ferric chloride and 1 grams of c.p. cobalt chloride in 100 ml of water to which one-third ml of hydro-chloric acid has been added) darken than the standard in the test (organic test) for organic impurities shall be rejected.

- 2.2 Fine aggregates shall be tested for their gradation, fineness modulus, specific gravity, water absorption, soundness, deleterious constituents, petrographic analysis and alkali aggregate reactivity.

The following testing frequencies shall be maintained for the same source of fine aggregates.

Sr. No.	Name of test	Minimum number of test specified
1	Gradation for Fineness Modulus (F.M.)	If the variation of daily F.M. values is more than 0.1, then frequencies may be increased.
2	Silt Content	Daily one test
3	Moisture Content	Daily one test
4	Sp. gravity, water absorption, Soundness	Once in a concreting working season.

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

2.4 **Gradation :-**

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

IS Sieve	Cumulative percentage of weight passing through sieve	
	Zone – II	Limited to
10 mm	100	100
4.75 mm	90 – 100	92 -- 100
2.36 mm	75 – 100	75 -- 92

1.18 mm	55 – 90	55 -- 82
600 micron	35 – 59	30 -- 64
300 micron	8 – 30	10 -- 40
150 micron	0 – 10	3 -- 10

(b) Deviations from the prescribed limits of cumulative percentage retained on 10mm, 4.75 mm, 2.36 mm, 1.18 mm, 600 micron, 300micron and 150 micron IS sieves shall be permitted provided total of such deviations do not exceed 5%. (c) No deviation from the prescribed limit shall be permitted for cumulative percentage passing through 600 micron IS Sieve.

#### **Fineness Modules:-**

(a) The sand shall have a fineness modules ranging between 2.20 to 3.0 subject to the gradation specified in the preceding paragraph or as per mix design etc..

(b) The modules shall be computed by adding cumulative percentage of the sand retained on the standard screen from 4.75 mm, 2.36mm, 1.18 mm, 600micron, 300 micron, 150 micron IS sieves (as M.T. standard screen from 3/16” and no. 480, 120, 60, 30, 15 sieve) and dividing the sum by 100. Gradation of sand shall be so controlled that the FM of at least 9 out of 10 consecutive test samples of finished and shall not vary more than 0.10 from the average 10 tests samples.

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

(d) Details regarding Fineness Modulus for sand available at different locations in river bed can be seen the same by the office of the Executive Engineer, Sujlam Suflam Division No.-1, Deesa. It may be pointed out in

particular that the large quantity of sand is available in river Sabarmati. The Contractor shall procure approved quality of sand from any other source if required at their own cost. The contractor shall procure approved quality of aggregates from any other sources for which no extra claim shall be entertained.

- 2.5 Frequency of test shall be as per table of para 2.2 / at change of source of fine aggregate / one test for each 250cumt. of sand or part there of.
- 2.6 **Storage:-** All sand shall be stored on the site of work in such a manner as to prevent intrusion of foreign matter.

### **M - 3 COARSE AGGREGATE:- (Kapachi, Grit)**

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

- 3.1 Coarse aggregate shall be of machine crushed stone of black trap or equivalent and shall be hard, strong, dense, durable, clean, and free from thin elongated soft flaky pieces, vegetable matter, organic or other deleterious matter i.e. such as to reduce the strength & durability of the concrete or harmful to steel reinforcement. Predominantly flaky aggregates shall not be used. It shall have no adherent coating of clay, silt, mud or any other adherent-coating likely to prevent proper adhesion of mortar. Aggregates shall have no deleterious reaction with cement. It shall be capable of developing good bond with cement paste and weather resisting and unaffected by water. Coarse aggregate shall be well graded and gradation shall give a dense concrete of the specified strength and consistency that will work readily into position without segregation and without the use of excessive water content.
- 3.2 Contractor shall remove all vegetations and other perishable substances and objectionable amounts of other foreign matter. All Coarse aggregates shall be washed and/or screened by the Contractor, if required, at the source approved by the Engineer- in -charge. In case the coarse aggregate brought to the site

of work is not washed and screened at the source the contractor shall make necessary arrangements for washing and screening at the work site / B&M plant. The cost of washing & screening shall be born by the Contractor.

- 3.3 The size of the coarse aggregate for plain cement and ordinary reinforced cement concrete shall generally be as per the table given below and shall have a maximum size of 40mm.

Following shall be maximum size of coarse aggregate for the different items of work. However, depending on the technical requirement various size of aggregate may be required to be used in various components of the structure.

<b>Sr. No.</b>	<b>Item of work</b>	<b>Maximum nominal Size of Coarse Aggregate (MSA)</b>
1	Foundation floor and gravity retaining walls (mass concrete) i.e substructures.	40 mm 40mm
2	RCC cutoff walls, Transition walls ,Retaining walls etc. Mass concrete cement works in superstructures ,linings works,etc.	20 mm
3	R.C.C. rafts, piers, abutments, cut-off walls, breast walls, transition wall, staunching ring, pile, pile cap etc.	40mm to 20 mm
4	R.C.C. work in main and cross girders, Deck slab, wearing coat, kerb, parapet walls, approach slab, pier caps, R.C.C. trough, barrel, and other thin walled members and in zones of congestion	20mm

	caused by closely spaced reinforcement bars.	
5	For any other items of construction not covered by schedule –B etc.	As specified in the drawings or in case, it is not specified in drawing, as directed by the Engineer –in-Charge.

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

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

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

Sr. No.	Name of test	Minimum number of test specified ( for each nominal size of aggregate)
1	Gradation	Daily one test

2	Water Content	Daily one test
3	Silt Content	Daily one test
4	Sp.Gravity, Water Absorption, Impact or Abrasion value, Density, Soundness,	Once in a concreting working season.

3.5 The grading of coarse aggregate shall be in the nominal sizes as mentioned in Table I of IS: 383-1970 reproduced as below in respect of 40MSA, 20MSA.

IS SIEVE Designation.	PERCENTAGE PASSING FOR SINGLE-SIZED AGGREGATE OF NOMINAL SIZE.		
	40mm	20mm	10mm
80 mm	---	---	---
63 mm	100	---	---
40 mm	85 to 100	100	---
20 mm	0 to 20	85 to 100	---
16 mm	---	---	---
12.5 mm	---	---	100
10 mm	0 to 5	0 to 20	85 to 100
4.75 mm	---	0 to 5	0 to 20
2.36 mm	---	---	0 to 5

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

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

(c) The grading between the limits specified above shall be such as shall produce a dense concrete of the specified proportion and consistency that will work readily into without segregation and without the use of excessive water

content. The material passing through the screen shall be in gradation ranging from 40mm to 4.75 mm.

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

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

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

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

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

Sr. No.	Name of test	Criteria as per IS 383, 2386	
		For other than Wearing surface	For Wearing surface
1	Impact value (max.)	45%	30%
2	Abrasion value (max.)	45%	30%
3	Soundness (after 5 Cycle)		
	(a) with Sodium Sulphate(max.)	12%	12%
	(b) with Magnesium Sulphate(max)	18%	18%



4	Flakiness Index (max.)	25%	15%
5	Elongation Index (max.)	15%	15%
6	Specific Gravity (max.)	3%	3%
7	Water Absorption in 24hrs.(max.)	1%	1%

3.8 Frequency of test shall be as per table of para 3.4 / at change of source of coarse aggregate / one test for each 250cumt. of kapachi or part there of.

### 3.9 Storage (Stock piles) :-

(a) Aggregate shall be stacked in such a way as to prevent the admixture of foreign materials such as soil, vegetable matter etc. The aggregates shall be kept free of dirt, rubbish papers, vegetable matter, bidi, etc. on the stock piles by the collection of people.

(b) Heaps of fine and coarse aggregates shall be kept separate. When different sizes of fine or coarse aggregate are procured separately they shall be stored in separate stockpiles, sufficiently away from each other to prevent the materials at the edge of the piles from getting intermixed. Each grade of materials shall be stacked 40mm to 20mm, 20mm to 10mm, & 10mm to 4.75mm.

(c) The aggregates shall be stockpiled adjacent to the mixer site so as to require minimum re-handling and labour when conveyed to the mixer.

(d) The aggregates shall be placed on a dry hard patch of ground if available otherwise a platform of planks or plain galvanized iron sheets or alternatively on a floor of dry bricks or a thin layer of lean concrete.

(e) To minimize moisture variations, the stockpile shall be spread over as large in area as possible but kept low and fairly uniform in height preferably 1.25 to 1.50 metre and the lowest layer of about 30 cm height shall be allowed to act as drainage layer and not used till the end.

3.10 **Grit:-** It shall consist of crushed of broken stone and shall be hard, strong dense, durable, clean, proper gradation and free from skin or coating likely to

prevent adhesion of mortar. The grit shall have no deleterious reaction with cement. Grit shall generally be cubicle in shape and as far as possible flaky elongated pieces shall be avoided. It shall generally comply with the provision of I.S. 383. Grit shall be obtained from the best black trap or equivalent hard stone approved by Engineer -in-charge.

#### **M - 4 WATER :-**

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

- 4.1 The sample of water taken for testing shall represent the water proposed to be used for concreting, due account being paid to seasonal variation. The sample shall not receive any treatment before testing other than that envisaged in the regular supply of water proposed for use in concrete. The sample shall be stored in a clean container previously rinsed out with similar water. Frequency of test shall be one test per working season / at change of source of water / as directed by Engineer- in -charge as required.

Container for transport and storage of the water shall be reasonable clean.

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

- 4.2 Potable water is generally considered satisfactory for mixing and curing. The PH value of water should be between 6.0 to 8.0. The turbidity in the water

shall not be exceed 2000 ppm and shall be preferably a low as possible. The water shall be odourless & colourless. Hard and bitter water shall not be used for curing of work.

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

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

#### **M - 5 STEEL:- Steel Reinforcement Bars**

- 5.1 As far as possible HYSD (High Yield Strength Deformed) steel bars or TMT (Thermo Mechanically Twisted) steel bar / FE (415) bars conforming to IS: 1786-1985, shall be used as reinforcement as shown in the drawings or as directed by the Engineer- in -charge. It shall also comply with relevant part to I.S 456-2000.

If, required mild steel (MS) bars shall also be used as per the direction of the Engineer- in -charge or as per the requirement of works as shown in the drawing. However in case of non availability of such bars, other steel bars conforming to IS: 432-1982 and / or IS: 1139-1966 shall be used as per the direction of Engineer- in -charge on production of necessary documentary evidence by the Contractor.

- 5.2 The Contractor shall be procured the required category and type of steel such as mild steel, HYSD, TMT / FE(415) bars from the BIS manufactures / BIS

primary manufacturers only at his own cost and the stacking of each type of steel shall be made separately. The contractor shall furnish BIS manufacturer's test certificate along with test results for each category for every lot brought to the site of work. The manufacturer's test results from the manufacturer's lab only shall be produced. The test results from other lab shall not be accepted and the consignment will be rejected. Testing of steel shall be carried out as per relevant IS code. No re-rolled steel shall be allowed to be used in this work. All the reinforcement shall be cleaned from free dirt, paint oil, grease mill scale or losses or thick next at the time of placing & till construction.

- 5.3 For each type of steel, the central place for stacking shall be make suitable arrangements by the Contractor at the site of work. The storing arrangement shall be such as to be convenient for inspection and check of materials. Engineer- in -charge or his representative shall have the authority at all times to inspect the storage arrangement and suggest modification and improvements, if any, and the contractor shall comply with the same. The contractor shall at all times maintain proper records showing the basis of the indent, the receipt and utilization of the steel. The contractor shall keep these all time open for inspection by the Engineer-in -charge or his representative.
- 5.4 The steels, structural steel as well as M.S. steel or HYSD bars, not mentioned and required for the use on the work shall have to be procured by the contractor, for verification of which the contractor shall have to produce to the Engineer- in -charge, the original vouchers for purchases of the steel required. The steel of the required quantity shall have to be procured and used after being certified by the Engineer- in -charge to this effect and after submission of the necessary test report of suitability of the steel for use in the works concerned.

5.5 **Frequency for steel testing** (Physical properties) is as under as per IS: 1786-1985.

Diameter of Reinforcement	Quantity	
	Lot ... below 100 tonne.	Lot ... above 100 tonne.
Under 10mm	1 sample from each 25 tonne	1 sample from each 40 tonne.
10 to 16mm	1 sample from each 35 tonne	1 sample from each 45 tonne.
Over 16mm	1 sample from each 45 tonne	1 sample from each 50 tonne.

The frequency for analysis for steel to be decided by the Engineer-in-Charge as per the requirement during the course of execution, or shall be **at least one** in a each working season, per each diameter of steel.

5.6 **TESTING:** The steel brought by the contractor shall be tested by the department as per IS 432 – 1982. The testing charges shall be born by the contractor.

(A) Mechanical (Physical) properties of HYSD bars:- (IS 1786-1985)

Sr. No.	Mechanical property	Proportion (Limit) (d = Diameter of bar)	
		Fe-415	Fe-500
1	Yield (proof) stress Mpa (minimum)	415	500
2	Ultimate tensile stress Mpa (minimum) % more than the actual 0.2% proof stress, but not less than .....	10% ----- 485N /mm <sup>2</sup>	8% ----- 545N/mm 2
2	Elongation percentage (minimum)	14.5	12.0

4	Bend up to including 22mm dia. of bar Over 22mm dia. of bar (should not show any transverse crack)	3d 4d	4d 5d
5	Re-bend up to inclu. 10mm dia. of bar Over 10 mm dia. of bar	5d 7d	5d 7d

If the quality of steel does not conform to the requirement as stated above, such Steel shall be removed from the site of work by the contractor at his own cost.

- 5.7 TMT bars shall be tested prior to use in the work and after getting the acceptable test results for the assessment of its quality before it shall be used in the work. The Engineer-in-charge shall decide the acceptable test result and field requirement for use of TMT bars in the R. C. C. work and it shall be considered as final. However, if the TMT bars satisfying the field requirement in such case, Department may also consider the proportion (limit) for the Mechanical properties as under only for the following cases and other component for chemical and mechanical properties shall be as above.

Mechanical Properties:

- 1.0 Elongation % (minimum) ..... 12
- 2.0 Bend up to and including 22 mm .. 4d
- 5.8 Steel shall be of Density 7850kg/cm<sup>3</sup>.
- 5.9 Mild steel binding wire shall be of 1.63mm or 1.22mm (16 or 18 gauge) as per IS Code 280-1978 or as latest revised. Binding wire shall be of soft and annealed steel. It shall have ultimate strength not less than 5600kg/cm<sup>2</sup> & yield not less than 3684kg/cm<sup>2</sup>.

**M – 6 METAL:-** (Machine Crushed Metal / hand broken Metal)

- 6.1** The field of Machine Crushed Metal (M.C.) and hand broken Metal (H.B.) shall be approved quarry as shown in the quarry chart as well as approved by the Engineer-in-charge prior to collection.
- 6.2** The Machine Crushed / hand broken metal shall be hard, tough, solid, durable of black trap field metal of close texture, free from decay and weathering. Each piece of stone shall be angular and roughly cubical in shape but round elongated or flaky materials shall be rejected. Unsound or oblong pebbles or angular chips larger or smaller than specified size shall be not allowed. All unsound weathered or disintegrated stone obtained from the upper surface layer of the quarry or other layer of boulders shall be rejected.
- 6.3** The physical requirement for standard size metal shall conform to the test results indicated below:

Test	Requirement
(a) Los Angeles Abrasion Value	50% Max.
(b) Aggregate Impact Value	40% Max.
(c) Flakiness Index	15% Max.

- 6.4** The M.C./ H.B. metal shall be as nearly uniform in size as possible and shall confirm to following minimum requirement of passing through the sieve.

I. S. Sieve Size	Percentage passing by weight through Sieve
<b>(a) 40mm to 63 mm</b>	
63 mm	100
50 mm	95 -- 100
40 mm	35 -- 70
20 mm	0 -- 10
<b>(b) 25mm to 40 mm</b>	
50 mm	95 -- 100
40 mm	65 -- 90
20 mm	0 -- 10
10 mm	0 -- 5

The size shall be 40 mm to 63 mm where in tolerance limit for over size shall be up to 15% and that for lower size should be up to 15% and not below 20 mm. It shall be allowed up to 5%.

- 6.5** Any collection which does not fully satisfy the above requirements is liable to be rejected all together. Wherever any doubt exists as to whether the above requirement are satisfied in whole or part, the collection of M.C. metal shall be got screened by the Contractor, if so ordered by the Engineer –in-Charge and for which no extra payment shall be claimed by the Contractor.
- 6.6** The M.C. and Hand broken Metal stacked on fairly level ground shall be filling in standard box of size 2.00 x 1.50 x 0.50 mtr. and no deduction of voids shall be made from the gross measurements.

#### **M - 8 CONCRETE :-**

- a) Concrete shall be composed of cement, fine aggregates (natural sand or manufactured sand or both), coarse aggregates (manufactured), admixtures and water, well mixed in proportion and brought to the proper consistency. The design mix proportions shall be adjusted to produce a durable and workable and cohesive concrete, suitable for specified conditions of placement & design strength.
- b) For all items of concrete in any portion of the structure or its associated works, concrete manufactured by batching and mixing plant which shall be termed by **Controlled Concrete** shall be used where specified.

#### **1.0 Mix Design**

- (a) The contractor shall prepare mix design of concrete in accordance with IS 456-2000 and relevant codes to achieve desired strength durability and workability and using approved ingredients viz. cement, fine aggregates, coarse aggregates and water. The ingredients of concrete shall be got tested and approved by the Engineer-in-charge. The contractor shall got approved the mix design (prepared by him) from GERI or any other laboratory as directed by Engineer-in-charge and only after approval of Engineer-in-charge, the same shall be used for construction.



- (b) (i) The Engineer -in -charge shall check and carry out necessary tests on mix design given by the contractor in accordance with Para (a) above to determine its strength, workability, durability as well as economy. For this purpose the contractor shall submit mix design and its details prepared by him to the Engineer in charge well in advance of commencement of work as directed by the Engineer in charge.
- (b)(ii) Department reserves right to accept or reject the mix design given by the contractor and also to direct him to use mix design given by Engineer -in -charge. Decision in this regard shall be final and binding to the contractor.
- (b)(iii) Over and above specified in (a) above, if required Engineer -in -charge shall make a test to determine the mix proportions required to produce the strength specified with the material to be used in the work. (The necessary ingredients shall be provided to department free of cost by contractor.)
- (c) The mix shall be designed by using representative samples of approved coarse and fine aggregates as well as cement and water to be made available by the contractor to the department, to achieve the required workability, cohesive, strength and durability at minimum level of cement. Mix design studies and tests will be carried out by the department.
- (d) The proportion of mix design ingredients shall be such that concrete has adequate workability for conditions prevailing on the work in question and can be properly compacted with the means available.
- (e) During the execution of the work if the source of any ingredient of the concrete changes or in new working season, then the Contractor shall inform the Engineer-in-Charge sufficiently in advance so as to allow him to proportion a new mix design to attain the specified strength of concrete. At that time the representative samples of approved ingredient shall be supplied by the Contractor to the Engineer-in-Charge at his own cost.
- (f) The details of mix design including the proportion of each separate size and grading of aggregates and actual cement level required shall be declared to the contractor in writing by the Engineer-in-Charge. As a result of para (d) if

there is any subsequent change in mix design, similarly the same shall be declared.

- (g) The tentative cement level for various grade of concrete with various size of aggregate shall be governed as under as per GR by NWR, WS&K Deptt. letter No.MIS-102010-17-K1, Dt.30/07/2018

Sr. No	Grade of concrete	Nominal aggregate	Tentative cement level is required in Kg. for one cubic meter of concrete
1	M-10	40 MSA	220 / 205
2	M-15	20 MSA	300
3	M-15	40 MSA	280
4	M-20	20 MSA	360
5	M-20	40 MSA	330
6	M-25	20 MSA	380
7	M-25	40 MSA	360
8	M-30	20 MSA	410

- (h) Actual cement level required for the aggregate to be used shall be determined by tests. The mix proportions shall be selected to ensure that the workability of the fresh concrete is suitable for the conditions of handling and placing so that after compaction it surrounds all reinforcement and completely fills the formwork. When concrete is hardened, it shall have the required strength, durability and surface finish.
- (i) Due to change in design mix, if it becomes obligatory to use less or more cement per cubic metre of concrete, the Contractor shall do the same without claiming any extra cost for using of extra cement. In case of cement level as per mix design cement of mix design the actual cement consumption shall not be less than minimum cement level as provided in I.S. 456-2000 in such event where actual cement used being less than the cement level specified in table hereinabove the Deptt shall deduct the cost of cement from the bill at the base price of star rates and rate analysis per tonne of cement at worksite for the

reduced consumption of cement , in case of actual use being more than that specified above, the contractor will not be paid for increase in use of cement.

- (j) The quantity of water shall be just sufficient to produce a dense concrete of required workability cohesiveness, durability and strength for the job. An accurate and strict control shall be kept on the quantity of water.

### **Sampling Procedure and Frequency**

(a) Sampling procedure: A random sampling procedure shall be adopted to ensure that each concrete batch has a reasonable chance of being tested. i.e. the sampling should be spread over the entire period of concreting and should cover all mixing units.

(b) Frequency: The minimum frequency of sampling of concrete of each grade shall be in accordance with following:

Quantity of concrete m <sup>3</sup>	Number of samples
1 to 5	1
6 to 15	2
16 to 30	3
31 to 50	4
51 and above	4 plus One additional sample for each addl. 50cum. or part thereof.

Note: At least one sample shall be taken during each shift.

8.6 Ready mix concrete shall be allowed to be used as per the codal provisions. The contractor shall not claim for the extra cost of cement or any other materials for any additional cost for use in **Ready mix concrete**.

## **SECTION: 6**

### **ITEM WISE TECHNICAL SPECIFICATIONS**

#### **Item No.1 Earthwork for embankment including breaking clods, dressing with all lead and lift (excluding watering and consolidation)**

##### **(A) From Borrow pits within 3.0 Km lead**

The soil to be used for the embankment shall be free from trees, slumps, roots, rubbish or any other objectionable materials. Only materials considered suitable by the Engineer in charge shall be used for the construction and that considered unsuitable other disposed off as directed by him. The embankment shall consist of earth available from road side borrow pits on either side with 3 km lead and all lifts.

Location, shape and size of borrow pits shall be indicated by the Engineer in charge. Pits shall not be dig continuously. Ridges on not less than 8 meters width should be left at intervals not exceeding 300 meters. Small drains shall be cut through the ridges to facilitate drainage. The outer edge of borrow pits shall be so regulated that the bottom does not cut an imaginary line having a slope of 1 vertical to 4 horizontal projected from the edge of final section of bank. The maximum dept in any case being limited to 1.50 meters. Also no pits shall be dug within 5 meters of the toe of the final section of the road embankment.

No borrow pits shall be allowed at the following sites along the road.

(a) Upto 30 meters on either sides of C.D. works.

(b) Upto 15 meters on either side of cart track crossing for which approaches are to be constructed.

The embankment shall be constructed in uniform layer not exceeding 250 mm in loose thickness. The soil shall be spread uniformly over the embankment, unless otherwise directed by the Engineer in charge. All clods of hard lumps of earth shall be broken to have maximum size of 15 cm when being placed in the embankment and maximum size 5 cm when being placed in the top 45 cm of the embankment.

Where an embankment is to be placed on sloping ground the surface of the ground shall be benched in the steps of trenches or broken up in such 13 a manner

that the material shall have perfect bond with the existing surface. Where the embankment is to be laid over an existing road surface the surface shall be scarified to minimum depth of 5 cm so as to provide ample bond between the old and new material. However when the pavement shall be broken up in place not to exceeding 0.1 mt and may be left under the new embankment. If the existing road surface is of granular or bituminous type and line within 1 mt. of the new subgrade level the same shall be scarified to a depth of minimum 50mm so as to provide ample bond between the old and the new material.

To avoid interference with the construction of abutment, wing walls or return wall, culvers / bridge structures, the contractor shall at point to be determined by the Engineer in charge, suspend the work on embankment forming approaches to such structures, until such time as the construction of the latter is sufficiently advanced to permit the completion of approaches without the risk of interference or damage to the bridge work. Unless directed otherwise the filling ground culverts, bridges and other structure upto a distance to twice the height of the embankment from the back of the embankment shall be carried out independent of the work on the main embankment. The fill material shall not be placed against any abutment or wing walls unless permission has been given by the Engineer in charge but in any case not until the concrete or masonry has been in position for 14 days. The embankment shall be brought up simultaneously with the laying of fill material. The material used for the filter shall conform to the requirements for filter medium and will be paid extra in the relevant item.

The Embankment shall be finished in conformity with the alignment, levels, cross section.

Finishing operations shall include the work of shaping and dressing the shoulders, road bed and the side slopes to conform the cross section.

The earthwork measurements shall be paid on box measurements or computing the volumes of earthwork in cubic meter by calculation of CS, computing Initial and final level & 15% deduction will be made from quantities for shrinkage. The contractors or his authorized representative shall be attending day to

day work, if there is any disagreement the contractor shall inform it in writing to the officer 14 concerned with specific reference to the section before starting further work. Once the work is started no cognizance or any complaint will be taken.

The rate of earthwork includes, excavating earth from borrow pits, breaking clods, conveying and spreading earth in layers, finishing entire embankment, royalties and incidentals necessary to complete the work to the specifications.

## **Item No.2**

### **Rolling & Watering of Earth work in layers with vibratory roller including filling in depressions which occur during the process.**

1. For spreading materials in layers and bringing the appropriate moisture content, the embankment materials shall be spread uniformly over the entire width of the embankment in layers not exceeding 250 mm in thickness. Successive layers of embankment shall not be placed until the layer under constriction has been thoroughly collected to the requirements set down hereunder:-

Moisture content of the materials shall be checked at the source of supply and if found less than the specified for compaction, the same, shall be made good either at the source of after spreading the soil in loose thickness for compaction. In the latter case, water shall be sprinkled directly from a houseline or from a trunk mounted water tank, and flooring shall not be permitted under any circumstances.

If the materials delivered to the road bed is too wet it shall bedded, by evaporation and exposure to the sun, till the moisture content is brought done to acceptable slandered for compaction. Should circumstances arise, where owing to wet weather, the moisture content cannot be reduced to the required level be the above procedure, work of compaction shall be suspended.

Moisture content of each layer of soil shall be checked in accordance with ISI 2720 (Part-II) and unless otherwise mentioned shah be so adjusted, making due allowance for evaporation losses, that at the time of the compaction it is in the range of 1 percent to 2 p6rcentrbelow the optimum moisture content determined in accordance with ISI (Part-VII). Highly expansive clays shall however be compacted at 2 to 4 percent above the optimum mature content.

After nodding the required amount of water, the soil shall be processed by means of horrows, rotary mixers or as otherwise approved until the layer is uniformly wet.

Clods or hard lumps of earth shall be broken to have maximum size to 150mm when being placed in the lower layers of the embankment and maximum size of 60 mm when being placed in the top 0.5 metre portion of the embankment below the sub grade.

Hauling equipment shall be distributed uniformly over entire surface of the previously constructed layer to minimize cutting of uneven compaction.

Where the embankment is to be constructed on low area ground that will not support the weight of truck or other hauling equipment, the lower part of the fill should be constructed by dumping successive loads in a uniformly distributed layers of a thickness not greater than that necessary to support the hauling equipment while placing subsequent layers.

## **2.0 COMPACTION:**

Only compacting equipment approved by the Engineer-in-charge shall be employed to compact the materials. The contractor shall demonstrate the efficiency of the plants he intends to use for carrying out compaction trials.

Each layer of the materials shall be thoroughly compacted to the densities specified in Table 1:2.

**Table 1:2 Compaction requirements for embankment.**

<b>Sr. No.</b>	<b>Type of Work / Materials</b>	<b>Field by density as per centage of maximum laboratory dry density as per IS : 2720 (Pt. VIII)</b>
1.	Top 0.5 metre portion of embankment below sub grade level and shoulders.	Not less than 100.
2.	Other portion of embankment	Not less than 95.
3.	Highly expensive class	85 to 90

Subsequent layers shall be placed only after finished layer has been tested according to M.O.S.T. specification MoRTH Clause 902 and accepted by the Engineer-in-charge.

When density measurements reveal any soft areas in the embankment further compaction shall be carried out as directed by the Engineer-in-charge: If instate of that the specificity compaction is not achieved, the materials in the soft areas shall be removed and replaced by approved materials and compacted to the density requirement, to the satisfaction of the Engineer-incharge.

### **3.0 Measurements for Payment:**

Consolidation of earth embankment construction shall be paid on Qty of earthwork payable under item No. 1 or 2 after deduction of shrinkage.

4.0 The contract unit rate includes cost of mechanical roller required for consolidation including all labour equipments fuel, hire charges, tolls, and incidentals necessary.

**Item No.3 Construction of Grannular sub base of 150 mm thick in by Providing GSB Gr-I coarse graded material using B.T Metal 26.5mm to 53 mm @ 35 %, 26.5mm to 4.75mm 45% & Below 2.36mm 20% in uniform layer with motor grader on prepared surface mxing by mix in place method with vibratory roller to achive the desired density complete as per close 401.**

### **GRANULAR SUB-BASE**

#### **Scope**

This work shall consist of laying and compacting well-graded material on prepared sub-grade in accordance with the requirements of these Specifications. The material shall be laid in one or more layers as sub-base or lower sub-base and upper sub-base (termed as sub-base hereinafter) as necessary according to lines, grades and cross-sections shown on the drawings or as directed by the Engineer.

#### **401.2.Materials**

401.2.1 The material to be used for the work shall be natural sand, moorum, gravel, crushed stone, or combination thereof depending upon the grading required.



Materials like crushed slag, crushed concrete, brick metal and kankar may be allowed only with the specific approval of the Engineer. The material shall be free from organic or other deleterious constituents and conform to one of the three grading given in Table 400 – 1.

While the grading in Table 400 – 1 are in respect of close graded granular sub-base materials, one each for maximum particle size of 75 mm, 53 mm and 26.5 mm, the corresponding gradings for the coarse graded materials for each of the three maximum particle sizes are given at Table 400 – 2. The grading to be adopted for a project shall be as specified in the Contract.

**401.2.2 Physical requirements:** The material shall have a 10 per cent fines value of 50 KN or more (for sample in soaked condition) when tested in compliance with BS: 812 (Part 111). The water absorption value of the coarse aggregate shall be determined as per IS:2386 (Part 3); if this value is greater than 2 per cent, the soundness test shall be carried out on the material delivered to site as per IS: 383. For Grading II and III materials, content likely to be developed in equilibrium conditions which shall be taken as being the density relating to a uniform air voids content of 5 per cent.

**TABLE 400-1. GRADING FOR CLOSE – GRADED GRANULAR SUB-BASE MATERIALS**

IS sieve Designation	Percent by weight passing the IS sieve		
	Grading I	Grading II	Grading III
75.0 mm	100	-	-
53.0 mm	80-100	<b>100</b>	-
26.5 mm	55-90	<b>70-100</b>	100
9.50 mm	35-65	<b>50-80</b>	65-95
4.75 mm	25-55	<b>40-65</b>	50-80
2.36 mm	20-40	<b>30-50</b>	40-65
0.425 mm	10-25	<b>15-25</b>	20-35
0.075 mm	3-10	<b>3-10</b>	3-10
CBR value (Minimum)	30	<b>25</b>	20

**TABLE 400-2. GRADING FOR COARSE – GRADED GRANULAR  
SUB-BASE MATERIALS**

IS sieve Designation	Percent by weight passing the IS sieve		
	Grading I	Grading II	Grading III
75.0 mm	100	-	-
53.0 mm		<b>100</b>	
26.5 mm	55-75	<b>50-80</b>	100
9.50 mm			
4.75 mm	10-30	<b>15-35</b>	25-45
2.36 mm			
0.425 mm			
0.075 mm	<10	<b>&lt;10</b>	<10
CBR value (minimum)	30	<b>25</b>	20

### 401.3 Strength of Sub-base

It shall be ensured prior to actual execution that the material to be used in the sub-base satisfies the requirements of CBR and other physical requirements when compacted and finished. When directed by the Engineer, this shall be verified by performing CBR tests in the laboratory as required on specimens remoulded at field dry density and moisture content and any other tests for the “quality” of materials, as may be necessary.

### 401.4. Construction Operations

**401.4.1. Preparation of subgrade:** Immediately prior to the laying of sub-base, the subgrade already finished to Clause 301 or 305 s applicable shall be prepared by removing all vegetation and other extraneous matter, lightly sprinkled with water if necessary and rolled with two passes of 80 – 100 kN smooth wheeled roller.

**401.4.2. Spreading and Compacting:** The sub-base material of grading specified in the Contract shall be spread on the prepared subgrade with the help of motor grader of adequate capacity, its blade having hydraulic controls suitable for initial adjustment and for maintaining the required slope and grade during the operation or other means as approved by the Engineer.

When the sub-base material consists of combination of materials mentioned in Clause 401.2.1, mixing shall be done mechanically by the mixture in-place method.

Manual mixing shall be permitted only where the width of laying is not adequate for mechanical operations, as in small-sized jobs. The equipment used for mix-in-place construction shall be a rotavator or similar approved equipment capable of mixing the material to the desired degree. If so desired by the Engineer, trial runs with the equipment shall be carried out to establish its suitability for the work.

Moisture content of the loose material shall be checked in accordance with IS: 2720 (Part 2) and suitably adjusted by sprinkling additional water from a truck mounted or trailer mounted water tank and suitable for applying water uniformly and at controlled quantities to variable widths of surface or other means approved by the Engineer so that, at the time of compaction, it is from 1 per cent above or 2 per cent below the optimum moisture content corresponding to IS: 2720 (Part 8). While adding water, due allowance shall be made for evaporation losses. After water has been added, the material shall be processed by mechanical or other approved means like disc harrows, rotavators until the layer is uniformly wet.

Immediately thereafter, rolling shall start. If the thickness of the compacted layer does not exceed 100 mm, a smooth wheeled roller of 80 to 100 kN weight may be used. For a compacted single layer upto 225 mm the compaction shall be done with the help of a vibratory roller of minimum 80 to 100 kN static weight with plain drum or pad foot drum or heavy pneumatic tyred roller of minimum 200 to 300 kN weight having a minimum tyre pressure of 0.7MN/m or equivalent capacity roller capable of achieving the required compaction. Rolling shall commence at the lower edge and proceed towards the upper edge longitudinally for portions having unidirectional crossfall and super-elevation and shall commence at the edges and progress towards the centre for portions having crossfall on both sides.

Each pass of the roller shall uniformly overlap not less than one-third of the track made in the preceding pass. During rolling, the grade and crossfall (camber) shall be checked and any high spots or depressions, which become apparent, corrected by removing or adding fresh material. The speed of the roller shall not exceed 5 km per hour.

Rolling shall be continued till the density achieved is at least 98 per cent of the maximum dry density for the material determined as per IS: 2720 (Part 8). The surface of any layer of material on completion of compaction shall be well closed, free from movement under compaction equipment and from compaction planes, ridges, cracks or loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of layer and re-compacted.

#### **401.5.Surface Finish and Quality Control of Work**

The surface finish of construction shall conform to the requirements of Clause 902. Control on the quality of materials and works shall be exercised by the Engineer in accordance with Section 900.

#### **401.6.Arrangement for Traffic**

During the period of construction, arrangement of traffic shall be maintained in accordance with Clause 112.

#### **401.7.Measurement for Payment**

Granular sub-base shall be measured as finished work in position in cubic metres. The protection of edges of granular sub-base extended over the full formation as shown in the drawing shall be considered incidental to the work of providing granular sub-base and as such no extra payment shall be made for the same.

#### **401.8.Rate**

The Contract unit rate for granular sub-base shall be payment in full for carrying out the required operations including full compensation for:

- (i) making arrangements for traffic to Clause 112 except for initial treatment to verges, shoulders and construction of diversions;
- (ii) furnishing all materials to be incorporated in the work including all royalties, fees, rents where necessary and all leads and lifts;
- (iii) all labour, tools, equipment and incidentals to complete the work to the Specifications;
- (iv) carrying out the work in part widths of road where directed; and
- (v) carrying out the required tests for quality control.

**Item No.4. Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 220 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a fixed form paver or conventional method, compacting with 8-10 tonnes vibratory roller, finishing and curing etc. complete as directed.**

### **Detailed Technical Specification**

Construction of Dry Lean Cement Concrete (DLC) Sub-Base

#### **1. Scope of Work**

This item covers the construction of Dry Lean Cement Concrete (DLC) Sub-Base over a prepared and approved sub-grade for rigid pavement works, including supply of materials, proportioning, mixing, transportation, laying, compaction, finishing, curing, quality control testing, and all incidental operations complete in accordance with the relevant provisions of the latest specifications of the Indian Roads Congress, Ministry of Road Transport and Highways, and applicable IS codes.

#### **2. Applicable Standards**

The work shall conform to the latest editions of:

- Indian Roads Congress: IRC:15 – Standard Specifications and Code of Practice for Construction of Concrete Roads.
- Indian Roads Congress: IRC:SP:49 – Guidelines for Dry Lean Concrete.
- Bureau of Indian Standards IS:383 – Specification for Coarse and Fine Aggregates from Natural Sources for Concrete.
- Bureau of Indian Standards IS:456 – Plain and Reinforced Concrete.
- Bureau of Indian Standards IS:269 / IS:8112 / IS:12269 – Ordinary

Portland Cement.

- MoRTH Specification Clause 601.
- IRC:SP:62 for quality control and workmanship.

### **3. Materials**

#### **3.1 Cement**

Cement shall be: Ordinary Portland Cement (OPC) Grade 43 or 53.

Conforming to IS:8112 or IS:12269. Fresh, free from lumps and approved by the Engineer. The cement content shall not be less than 220 kg per cubic metre of compacted DLC.

#### **3.2 Coarse Aggregate**

Coarse aggregates shall: Conform to IS:383.

Consist of crushed stone, crushed gravel, or approved hard durable material.

Be clean, tough, durable and free from clay, organic matter and deleterious substances. Maximum aggregate size shall not exceed 25 mm.

#### **Typical physical requirements:**

<b>Property</b>	<b>Requirement</b>
Aggregate Impact Value	$\leq 40\%$
Los Angeles Abrasion Value	$\leq 40\%$
Water Absorption	$\leq 2\%$
Soundness	As per IS:383

#### **3.3 Fine Aggregate**

Fine aggregate shall: Conform to IS:383.

Consist of clean natural sand, crushed stone sand, or combination thereof.

Be free from organic impurities, clay and silt.

#### **3.4 Water**

Water used shall be: Clean and free from oils, acids, alkalis, salts and organic matter.

Conforming to IS:456 requirements.

### **4. Mix Design**

#### **4.1 Aggregate-Cement Ratio**

- Aggregate-cement ratio shall not exceed 15:1 by weight.

- Cement content shall be minimum 220 kg/m<sup>3</sup>.

#### **4.2 Aggregate Gradation**

Combined grading after blending shall conform to Table 600-1 of MoRTH.

<b>IS Sieve</b>	<b>Percentage Passing</b>
26.5 mm	100
19 mm	80 – 100
9.5 mm	55 – 75
4.75 mm	35 – 60
600 micron	8 – 30
75 micron	0 – 8

#### **4.3 Moisture Content**

Optimum Moisture Content (OMC) shall be determined through laboratory testing and confirmed during trial construction.

The moisture content at laying shall generally be maintained within:

OMC  $\pm$  2%

to achieve the specified density and strength.

#### **5. Strength Requirement**

The Dry Lean Concrete shall achieve:

- Minimum compressive strength of 10 MPa at 7 days.

Test specimens shall be prepared and tested in accordance with relevant IS procedures.

#### **6. Trial Length**

Before commencement of regular work:

- A trial length of minimum 100 m shall be constructed.
- Trial section shall establish:
- Mix proportions.
- Moisture content.
- Roller passes.
- Layer thickness.
- Surface finish.

- Density and strength compliance.

Regular production shall commence only after approval.

## **7. Preparation of Sub-Grade**

Before laying DLC:

- Sub-grade shall be finished to line, level, grade and cross-fall.
- Surface shall be compacted to specified density.
- Weak spots shall be corrected.
- Surface shall be clean and free from loose material.
- Levels shall be checked and approved.

## **8. Batching and Mixing**

### **8.1 Batching Plant**

DLC shall be produced in an approved:

- Automatic batching plant,
- Wet mix plant, or
- Central mixing plant.

The plant shall ensure:

- Accurate proportioning of aggregates, cement and water.
- Uniform mixing.

### **8.2 Mixing Time**

Mixing shall continue until:

- Uniform colour is achieved.
- Cement is evenly distributed.
- Moisture is uniformly incorporated.

Segregation shall not occur.

## **9. Transportation**

- Mixed DLC shall be transported by dumpers/tippers.
- Vehicles shall prevent moisture loss and segregation.
- Time between mixing and compaction shall be minimized.
- Material showing segregation or drying shall be rejected.



## **10. Laying**

### **10.1 Method**

DLC shall be laid by:

Fixed form paver, or Approved conventional method using mechanical spreaders.

### **10.2 Thickness**

- Thickness shall be as shown on drawings.
- Normally laid in a single layer where thickness permits.

### **10.3 Spreading**

The material shall be:

- Spread uniformly.
- Laid to proper grade and cross-fall.
- Protected against segregation.

## **11. Compaction**

Compaction shall commence immediately after spreading.

### **Equipment:**

Vibratory roller of 8–10 tonnes capacity.

### **Compaction shall continue until:**

- Full density is achieved.
- No visible movement occurs under roller.

The finished layer shall be dense and free from cracks, ridges and loose areas.

## **12. Surface Finish**

After compaction:

- Surface shall be trimmed to required levels.
- Irregularities shall be corrected immediately.
- Surface tolerance shall comply with MoRTH requirements.
- Finished surface shall be firm, even and true to grade.

### **Permissible tolerance:**

- $\pm 10$  mm in level.
- As specified by Engineer.

### 13. Curing

Immediately after finishing:

#### Methods

- Water curing.
- Wet hessian covering.
- Approved curing compound.

#### Duration:

Minimum 7 days continuous curing.

The surface shall remain continuously moist throughout the curing period.

### 14. Quality Control Tests

The following tests shall be carried out:

Test	Frequency
Aggregate Gradation	One per 400 m <sup>3</sup>
Moisture Content	Daily
Cement Content	Daily
Density Test	As directed
Compressive Strength	One set per 300 m <sup>3</sup>
Surface Level Check	Continuous
Thickness Check	As directed

### 15. Measurement

Measurement shall be made in: Cubic Metres (m<sup>3</sup>)

based on compacted dimensions measured in place.

### 16. Rate Includes

The contract rate shall include:

- Supply of cement, aggregates and water.
- Mixing in batching plant.
- Transportation to site.
- Trial mix and trial length.
- Spreading and laying.

- Compaction with 8–10 tonne vibratory roller.
- Finishing to required levels.
- Curing.
- Quality control testing.
- Labour, tools, plant, equipment and incidentals.
- All leads, lifts and wastage.
- Complete execution as per specifications and Engineer's directions.

### **Finished Requirement**

The completed DLC Sub-Base shall be:

- Uniform in thickness.
- Properly compacted.
- Free from segregation and honeycombing.
- Achieving minimum 10 MPa compressive strength at 7 days.
- Conforming to approved line, level, grade and cross-fall.
- Ready to receive the pavement quality concrete slab above.

**Item No.5 Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with concrete grade M300, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, or conventional method, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing & as directed by engineer in charge.**

### **Detailed Technical Specification**

Construction of Un-Reinforced, Dowel Jointed Plain Cement Concrete Pavement (PQC) – Grade M30

## **1. Scope**

This work shall consist of constructing un-reinforced, dowel jointed Plain Cement Concrete Pavement (PQC) of Grade M30 over a prepared Dry Lean Concrete (DLC) sub-base or approved sub-base, including supply of all materials, batching, mixing, transportation, laying, spreading, compacting, finishing, texturing, curing, construction of contraction, expansion, construction and longitudinal joints, installation of dowel bars, tie bars, joint filler boards, debonding arrangements, sealing of joints and all incidental works complete as per drawings, specifications and directions of the Engineer-in-Charge.

## **2. Applicable Standards**

The work shall conform to the latest editions of:

- Indian Roads Congress IRC:15 – Standard Specifications and Code of Practice for Construction of Concrete Roads.
- Indian Roads Congress IRC:58 – Guidelines for Design of Plain Jointed Rigid Pavements.
- Indian Roads Congress IRC:SP:62 – Guidelines for Quality Systems for Concrete Roads.
- Bureau of Indian Standards IS:456 – Plain and Reinforced Concrete.
- Bureau of Indian Standards IS:383 – Coarse and Fine Aggregates for Concrete.
- Bureau of Indian Standards IS:516 – Method of Tests for Strength of Concrete.
- Bureau of Indian Standards IS:9103 – Concrete Admixtures.
- MoRTH Specifications Clause 602.

## **3. Materials**

### **3.1 Cement**

Cement shall be:

- OPC Grade 43 or Grade 53 conforming to IS:8112 or IS:12269.
- Fresh and free from lumps.
- Stored in dry and weatherproof conditions.

### 3.2 Coarse Aggregate

Coarse aggregates shall:

- Conform to IS:383.
- Be crushed stone of approved quality.
- Be clean, hard, durable and free from deleterious matter.
- Have maximum aggregate size not exceeding 25 mm.

**Typical requirements:**

Property	Requirement
Los Angeles Abrasion Value	$\leq 35\%$
Aggregate Impact Value	$\leq 30\%$
Water Absorption	$\leq 2\%$
Flakiness & Elongation Index	$\leq 35\%$

### 3.3 Fine Aggregate

Fine aggregate shall:

- Conform to IS:383.
- Consist of clean natural sand, crushed sand or combination thereof.
- Be free from clay, silt, mica and organic impurities.

### 3.4 Water

Water shall conform to IS:456 and shall be clean, potable and free from harmful salts and organic matter.

### 3.5 Admixtures

Chemical admixtures, if used, shall:

- Conform to IS:9103.
- Be approved by the Engineer.
- Not adversely affect concrete strength and durability.

## 4. Concrete Mix Design

### 4.1 Grade of Concrete

Concrete shall be: M30 Grade (Characteristic Compressive Strength = 30 MPa at 28 Days)

## **4.2 Mix Design**

The mix shall be designed in an approved laboratory considering:

- Workability requirements.
- Flexural strength requirements.
- Durability requirements.
- Local material characteristics.

Trial mixes shall be conducted before commencement of work.

## **4.3 Flexural Strength**

The concrete shall achieve:

- Minimum flexural strength as specified in IRC/MoRTH requirements.
- Generally not less than 4.5 MPa at 28 days.

## **5. Preparation of Sub-Base**

Prior to paving:

- DLC/Sub-base shall be approved.
- Surface shall be true to line and grade.
- Loose material shall be removed.
- Defective portions shall be repaired.

## **6. Separation Membrane**

A separation membrane shall be provided between DLC and PQC.

**Material:**

- 125 micron thick polyethylene sheet or approved equivalent.

**Requirements:**

- Laid flat without wrinkles.
- Overlaps minimum 300 mm.
- Prevent loss of moisture from concrete.

## **7. Batching and Mixing**

### **7.1 Batching Plant**

Concrete shall be produced in:

- Automatic batching and mixing plant.

The plant shall ensure:

- Accurate weighing of materials.
- Controlled water-cement ratio.
- Uniform mixing.

## **7.2 Mixing**

Mixing shall continue until:

- Uniform colour is obtained.
- Cement is uniformly dispersed.
- Aggregates are thoroughly coated.
- No hand mixing shall be permitted.

## **8. Transportation**

Concrete shall be transported by:

- Transit mixers.
- Dumpers with suitable arrangements.
- Approved transportation equipment.

Requirements:

- No segregation.
- No excessive loss of moisture.
- Placement before initial setting of cement.

## **9. Laying of Concrete**

Concrete shall be laid by:

(a) Slip Form Paver

or

(b) Fixed Form Paver

or

(c) Conventional Approved Method

The method adopted shall ensure:

- Continuous operation.
- Uniform compaction.
- Correct pavement thickness.

## **10. Compaction**

Compaction shall be achieved using:

- Internal vibrators.
- Surface vibrators.
- Paver mounted vibratory systems.

Requirements:

- Full consolidation.
- No honeycombing.
- No segregation.
- Uniform density throughout pavement depth.

## **11. Finishing**

Immediately after compaction:

- Surface shall be struck off.
- Finished to required profile.
- Checked with straight edge.

Surface tolerances shall comply with MoRTH specifications.

## **12. Surface Texturing**

To improve skid resistance:

Longitudinal Texturing

or

Transverse Texturing

shall be provided using:

- Burlap drag.
- Artificial turf drag.
- Mechanical texturing equipment.

Texture depth shall comply with IRC requirements.

## **13. Joints**

### **13.1 Contraction Joints**

Contraction joints shall be provided:

- At spacing shown on drawings.



- Formed by saw cutting.

Requirements:

- Straight and vertical.
- Depth generally 1/3 slab thickness.

### 13.2 Expansion Joints

Expansion joints shall be provided:

- At locations indicated on drawings.
- Near structures and fixed objects.

Joint filler board shall be installed throughout slab depth.

### 13.3 Construction Joints

Construction joints shall be provided:

- At end of day's work.
- During interruptions in concreting.

Suitable dowels and tie arrangements shall be provided.

### 13.4 Longitudinal Joints

Longitudinal joints shall:

- Divide traffic lanes.
- Be tied using deformed tie bars.

## 14. Dowel Bars

Dowel bars shall be:

- Mild steel bars conforming to IS:432.
- Epoxy coated if specified.

Typical arrangement:

Item	Requirement
Diameter	32–38 mm
Length	450–500 mm
Spacing	300 mm c/c

Requirements:

- Precisely aligned.
- Parallel to pavement centreline.

- One half debonded using sleeves/caps.

## **15. Tie Bars**

Tie bars shall:

- Be high yield deformed steel bars.
- Conform to IS:1786.

### **Typical arrangement:**

Item	Requirement
Diameter	12–16 mm
Length	600–1000 mm
Spacing	As per design

## **16. Debonding Strip**

Debonding arrangement shall consist of:

- Bituminous coating.
- Plastic sleeve.
- Approved debonding cap.

Provided on one side of dowel bars to permit slab movement.

## **17. Joint Filler Board**

Joint filler material shall:

- Be compressible.
- Non-extruding.
- Resistant to decay.

Materials may include:

- Bitumen impregnated fibre board.
- Closed cell polyethylene board.
- Approved equivalent.

## **18. Joint Sealing**

### **Primer**

Joint walls shall be cleaned and coated with approved primer.

### **Sealant**

Sealant shall be:

- Hot poured sealant.
- Cold applied polysulphide sealant.
- Silicone sealant.
- Approved elastomeric sealant.

Requirements:

- Waterproof.
- Flexible.
- Durable under traffic and weather exposure.

## 19. Curing

Immediately after finishing:

### Curing Compound

White pigmented curing compound shall be sprayed uniformly at specified rate.

OR

Water Curing

Where directed.

### Duration:

Minimum 14 days.

The concrete surface shall remain protected from rapid moisture loss.

## 20. Opening to Traffic

Pavement shall not be opened to traffic until:

- Required strength is achieved.
- Minimum curing period completed.
- Approval of Engineer obtained.

## 21. Quality Control Tests

Test	Frequency
Slump Test	Every load
Compressive Strength	As specified
Flexural Strength	As specified
Thickness Check	Regular

Surface Regularity	Continuous
Joint Alignment	Continuous
Dowel Alignment	Continuous
Level Survey	Continuous

## 22. Measurement

Measurement shall be made in: Cubic Metres (m<sup>3</sup>) based on finished pavement dimensions.

Steel dowels, tie bars, joint sealants, filler boards, curing compound, separation membrane and admixtures shall be deemed included unless measured separately in the BOQ.

## 23. Rate Includes

The rate shall include:

- Supply of all materials.
- Approved mix design.
- Batching and machine mixing.
- Transportation.
- Separation membrane.
- Placement by slip form/fixed form paver.
- Vibrating and compaction.
- Surface finishing and texturing.
- Contraction, expansion, longitudinal and construction joints.
- Dowel bars and tie bars.
- Joint filler boards.
- Debonding strips and sleeves.
- Primer and joint sealant.
- Admixtures.
- Curing compound and curing.
- Testing and quality control.

- Labour, tools, plant, machinery and all incidentals.
- Complete execution as per drawings, specifications and directions of the Engineer-in-Charge.

**Finished Requirement**

The completed pavement shall be a dense, durable, crack-free, accurately aligned and properly jointed M30 Plain Cement Concrete Pavement, meeting all requirements of IRC and MoRTH specifications regarding strength, riding quality, durability, line, level, grade, thickness and surface finish.

**Executive Engineer  
Deesa Irrigation Division  
Deesa**

**SECTION - 6**  
**FORM OF BID**

## FORM OF BID

Description of the Works:

-----  
-----  
-----

BID

To :

Address :

1. We offer to execute the Works described above and remedy any defects therein in conformity with the conditions of Contract, specification, drawings, Bill of Quantities and 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 -----

-----

\_\_\_\_\_

(in block capitals or typed)

Address

---

---

Witness

---

---

Address

---

---

Occupation

---

---



**SECTION - 7**  
**BILL OF QUANTITIES**

## BILL OF QUANTITIES

### Preamble

1. The bill of Quantities shall be read in conjunction with the Instructions to Bidder, Conditions of Contract, Technical Specifications and Drawings.
2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices tendered in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.
3. The rates and prices tendered in the priced Bill of Quantities shall, except 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.

**BILL OF QUANTITIES****(A) Percentage Rate Tender (Up to INR 50 Cr. )****Constructing New C.C Road Between Ch.00 Mt To Ch.500 mt of main canal of D.R.P.**

<b>It. No.</b>	<b>Description of Item (with brief specification and reference to book of specifications)</b>	<b>Quantity</b>	<b>Unit</b>	<b>Rate in Rs.</b>	<b>Amount in Rs.</b>
1	Earthwork for embankment including breaking clods, dressing with all lead and lift (excluding watering and consolidation) (A) From Borrow pits within 3.0 Km lead	1655.50	Cu.M.	169.28	280243.04
2	Rolling & Watering of Earth work in layers with vibratory roller including filling in depressions which occur during the process.	1655.50	Cu.M.	22.96	38010.28
3	Construction of Grannular sub base of 150 mm thick in by Providing GSB Gr-I coarse graded material using B.T Metal 26.5mm to 53 mm @ 35 %, 26.5mm to 4.75mm 45% & Below 2.36mm 20% in uniform layer with motor grader on prepared surface mxing by mix in place method with vibratory roller to achive the desired density complete as per close 401.	355.00	Cu.M.	1313.68	466356.40
4	Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 220 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a fixed form paver or conventional method, compacting with 8-10 tonnes vibratory roller, finishing and curing etc. complete as directed.	178.00	Cu.M.	2427.67	432125.26
5	Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with concrete grade M300, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, or conventional method,	592.00	Cu.M.	6260.16	3706014.72

It. No.	Description of Item (with brief specification and reference to book of specifications)	Quantity	Unit	Rate in Rs.	Amount in Rs.
	compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing & as directed by engineer in charge.				
<b>Total Amount Rs.</b>					<b>4922749.70</b>

I/We am/are willing to carry out the work at.....% above/below percent (Should be written in figures and words) of the estimated rate mentioned above. Amount of my /our tender works out as under.

Estimated amount put to tender

Estimated amount put to tender

Deduct.....% below

Add.....% Above

Net

Net

In words

In words

**(B) — For Item Rate Tender (For above INR 50 Cr.):**

Item No	Description of Item (with brief specification and reference to book of specifications)	Quantity	Unit	Rate		Amount
				In figures	In Words	

(A) Total Tendered Amount

(B) Rebate on above 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. therefore in R.C.C. items where there is a change as per actual mix design the cost of difference of cement consumption have been deducted 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)

To, \_\_\_\_\_ (date)

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

To, \_\_\_\_\_ (date)

\_\_\_\_\_ (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**

## SECTION - 10

### **DOCUMENTS TO BE FURNISHED BY BIDDER**

Sr. No.	Name of Documents for qualification
1.	Registration Certificate E1 and above Class (Registration under renewal not be accepted).
2.	Current year bank solvency (20 percent value of estimated cost put to tender) shall be as per the registration category of the bidder as per clause 6 or as per bank rule whichever is earlier
6.	Pan Card
7.	GST
8.	Tender Fee (DD)
9.	EMD (FDR/Bank Guarantee) (FDR Validity not less than 165 days) (EMD /Exemption Certificate Under Renewal will not be accepted)
10.	Attach copy of Form3A Certificate of Similar Work 40% of Estimated Cost. (Suvidha Path).

ટેન્ડર ભરનાર ઇજારદારશ્રીએ ઉક્ત માંગ્યા મુજબના ડોક્યુમેન્ટ સિવાયના અન્ય કોઈપણ ડોક્યુમેન્ટ અપલોડ કરવા નહીં. જો અન્ય ડોક્યુમેન્ટ અપલોડ કરશે અને અત્રેથી ચકાસણીમાં શરતચૂકથી ડીસ્ક્વોલીફાય થશે તેની સઘળી જવાબદારી ઇજારદારશ્રીની રહેશે.

# Annexure-I

## CEMENT REQUIREMENT STATEMENT

It. No.	Description of item	Qty.	Unit	Rate of Cement Consumption in (bag/unit)	Total Cement Requirement in bags
4	Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 220 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a fixed form paver or conventional method, compacting with 8-10 tonnes vibratory roller, finishing and curing etc. complete as directed.	178.00	Cu.M.	4.40	783.20

It. No.	Description of item	Qty.	Unit	Rate of Cement Consumption in (bag/unit)	Total Cement Requirement in bags
5	Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with concrete grade M300, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, or conventional method, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing & as directed by engineer in charge.	592.00	Cu.M.	8.20	4854.40

**Total**                      **5637.60**  
**281.88**  
**in MT**

Executive Engineer  
Deesa Irrigation Division,  
Deesa