

**STANDARD BIDDING  
DOCUMENT PROCUREMENT OF  
CIVIL WORKS**



**NAME OF WORK: - CONSTRUCTION OF RAIN WATER HARVESTING  
SYSTEMS AT VARIOUS LOCATIONS UNDER UMARGAM NAGARPALIKA FOR  
GROUNDWATER RECHARGE AND SUSTAINABLE WATER MANAGEMENT.**

**THE CHIEF OFFICER  
UMARGAM NAGRAPALIKA  
UMARGAM**

## UMARGAM NAGRAPALIKA

NAME OF WORK: - CONSTRUCTION OF RAIN WATER HARVESTING SYSTEMS AT VARIOUS LOCATIONS UNDER UMARGAM NAGARPALIKA FOR GROUNDWATER RECHARGE AND SUSTAINABLE WATER MANAGEMENT.

### VOLUME -I – TECHNICAL BID

MILESTONE DATES	
Bid Documents Downloading Start Date	: Date: 23/06/2026
Last Date for Submission of Online Tender	: On Date : 10/07/2026 up to 18:00 Hrs.
Dates of Submitting the Tender Fee / E.M.D and relevant Documents of the Tender By R.P.A.D Only.	: Up to Date 13/07/2026 18:00 Hours At the UMARGAM NAGRAPALIKA, UMARGAM, Dist. VALSAD, Gujarat-India.
Openings Dates for online Tender Technical Bid Price Bid	: Technical Bid on Date 14/07/2026 at 12:00 Hrs. Price Bid date to be intimated later. (If Possible)
Estimated Cost	: Rs. 09,41,110/-
EMD	: Rs. 9,500/-
Tender Fee	: Rs. 2,400/-
Class Of Contract	: “ D” Class and Above
Duration Of Work	: 03 months.

**-: OFFICER INVITING BIDS: -**

THE CHIEF OFFICER  
UMARGAM NAGARPALIKA  
UMARGAM

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# **INVITATION FOR BID (IFB)**

**UMARGAM NAGRAPALIKA**  
**INVITATION FOR BID**  
**NATIONAL COMPETITIVE BIDDING**

1. The **Chief Officer UMARGAM NAGRAPALIKA** invites bids for the construction of works detailed in the table. The bidders may submit bids for any or all of the following works.

<b>Package No.</b>	--
<b>Name of work</b>	<b>Construction of Rain Water Harvesting Systems at Various Locations under Umargam Nagarpalika for Groundwater Recharge and Sustainable Water Management.</b>
<b>Approximate Value of Works</b>	<b>Rs. 09,41,110/-</b>
<b>Bid Security (EMD)</b>	<b>Rs. 9,500/-</b>
<b>Cost of document (Tender Fee)</b>	<b>Rs. 2,400/-</b>
<b>Period of Completion</b>	<b>03 months.</b>
<b>Class of Registration / Category of Contractor if required</b>	<b>"D" Class and Above</b>

2. Prospective / Interested bidder may download the Bid Documents from website <https://www.tender.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 **UMARGAM** and in favor of **CHIEF OFFICER UMARGAM NAGRAPALIKA**. 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, Dtd. 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 prequalification Technical Bid Documents, Demand Draft in original, and FDR in original / ~~Bank Guarantee~~ bidder shall be received by the Employer at the address specified above not later than **30/03/2026 up to 18.00 Hrs.** through registered post/ speed post only.

Penaltative action for not submitting Demand Draft / FDR / ~~Bank Guarantee~~ in original to Chief Officer / Tender Inviting Authority by bidder shall be initiated. **(WRD GR No. PRC-102014-1-MICell-K.1, Dtd. 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 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,

## **BID EVALUATION / PRE-QUALIFICATION CRITERIA / ELIGIBILITY CRITERIA**

~~For the works costing up to Rs. 7.5 crore (WRD Works), Rs. 7.0 crore (ROAD/BRIDGE/ BUILDING WORKS/WATER WORKS/SEWERAGE WORKS/STROM WORKS), Rs. 0.5 Crore (Electrical Works) kindly refer to GoG NWRWS & K Department's Circular No. Paracha/1097/1397(11)/pa.f.a./MICELL (k-1), dtd. 18/01/2018 and Dtd. 30/09/2022.~~

For the works costing under Rs. 7.5 crore for Construction work of Water Resources Department, Rs. 7.0 crore for Roads, Bridges and Building and Rs. 0.50 crore for Electrical work following documents shall be submitted in electronic format through online by scanning and also Technical Bid Documents, Demand Draft in original, and FDR in original / ~~Bank Guarantee~~ bidder shall be received by the Employer at the address specified above not later than **30/03/2026** up to 18.00 Hrs. through registered post/ speed post only.

Following Physical Document are compulsory to submit before the last date of submission of bid. Physical Document shall be sent through Register post A.D./Speed Post and Scan copy also must be submitted online along with tender. If any of the following documents is not attached with the technical bid and online tender, your tender shall not be considered valid.

1. Bid Document Fee / Tender Fee Original.  
Attach Required Tender Fee in Form of D.D in Original
2. Bid Security / EMD.  
Attach Required EMD in Form of D.D/F.D.R in Original
3. Registration Certificate of Appropriate Class.

**Registration:** Copy of Valid Registration of class **"D" Class and Above** with the Govt. of Gujarat, / Irrigation Dept./ Other state Govt./ Other Govt. bodies / GWSSB / Central Govt. having similar criteria as per magnitude of work also equivalent qualifying criteria to R&B Department of Gujarat State will have to be justified by the Bidder.

### **4. Work Experience,**

Experience of having successfully completed similar work of during last 7 years ending last day of the month previous to the one in which application are invited should be either of the following with Enhancement Value given in Enhancement Factor /Escalation factor Table (clause No.4.5.2) should be either of the Following.

- A. One similar completed work of costing not less than the amount equal to 80 % of the Estimated Cost. **i.e., Rs.07,52,888/-** (Only in Form 3-A Certificate from Government of Gujarat/ Semi Government Bodies only).
- OR
- B. Two similar completed work of costing not less than the amount equal to 50 % of the Estimated cost. **i.e., Rs.04,70,555/-** (Only in Form 3-A Certificate from Government of Gujarat/ Semi Government Bodies only).
- OR
- C. Three similar completed work of costing not less than the amount equal to 40% of the estimated cost. **i.e., Rs. 03,76,444/-** (Only in Form 3-A Certificate from Government of Gujarat/ Semi Government Bodies only).

The UMARGAM NAGRAPALIKA may verify the above certificate/documents from respective department if deemed Necessary.

The experience certificate from private individuals / company from whom the works are Executed/ being executed, Shall not be acceptable.

The experience of work carried out by bidder as a SUB CONTRACTOR to the other Agency will not be considered.

The above documents will be analyzed and after satisfaction, the price bid will be opened. UMARGAM NAGRAPALIKA

May verify the documents, experience certificates from authority who have issued such certificates / details.

**Work Experience only for Similar Nature works Attach Attested Copy of All Form 3A and Work Completed Related Documents.**

5. Average Annual Financial turnover during the last 3 years, ending 31st march of the previous financial year, should be at least **30% i.e., (Rs. 02,82,333/-)** of the Estimated Cost. (The audited balance sheet/C.A. Certificate for turnover should be submitted in support of the same.)
6. Latest Bank Solvency Certificate of minimum 20% amount of Estimated Cost of this work, **i.e., Rs. 1,88,222/-** for Current Calendar Year. Solvency Certificate from any Nationalized Bank / Schedule Bank / Co-operative Bank Ltd. As Per Attached G.R. of Government of Gujarat Finance Department of Dated: 11-04-2024.
7. Attach Attested Copy of PAN Card
8. Attach Attested Copy of Last Three Years Income Tax Return.
9. Attach Attested Copy of EPF Registration.
10. Attach Attested Copy of GST Registration.
- 11. Attach Attested - Site visit Certificate must be attached with tender Document with signature of Nagarpalika Engineer by Bidder (Format as per SBD-Section1 Clause 7.2).**
12. Anti-Blacklisting Information as PER SBD-Section1 Qualification Information Page No.44
13. The Bidder/Contractor will have to submit the Letter of Submission of Bid, Assurance Letter for Acceptance of Above terms and Condition Unconditionally and Signed by the Bidder and Attached the Same in Bidding Document. (As Per format given in SBD Section 8 Page No.179).

**Notes: -**

1. Above all documents must be attached online and same as in physical submission if the bidder fails to submit any one of the above documents, the bidder will be liable for disqualification.
2. The Bidder shall submit documentary evidences in support of all above Qualification criteria, failing in which the price bid shall not be opened. Chief Officer UMARGAM NAGRAPALIKA, UMARGAM also reserves the right to waive off the Qualifying criteria/ except or reject any or all Tender without assigning any reason thereof.



### **GENERAL IMPORTANT INSTRUCTION TO THE BIDDER**

1. Bidders have to carried out and submit following types of total station survey work. (1) Proposed/ existing road alignment survey & alignment demarcation on site. (2) Existing ground data survey work. (3) Earth Work / Embankment Qty (pre & post) survey with Reference to original ground data survey for earth work. Qty verification work. 4) Total Station works for land acquisition process if required by UMARGAM NAGRAPALIKA, UMARGAM 5) Necessary Permission for Building Use, GPCB Board, Fire Safety Related Permission etc. will have to be Obtained by the Successful Bidder from Competent Authority as per the Estimate Given in Schedule-B at his Own Risk and Expanse, No Extra Expanse/Payment for the same will be Made by UMARGAM NAGRAPALIKA, UMARGAM regarding the same.
2. Bidders have to carry out various types of Pre and Post total station survey work in connection with stipulated quantities in Schedule-B for smooth running of project and site layout management.
3. Bidder/Contractor will have to Obtained Soil Bearing Capacity Report (From Government Approved Laboratory) at various locations for Deciding the Depth of Foundation and other criteria and also verified the Soil Strata etc. considering the same the Structure Design Should be Prepared and verified from competent Authority (Such as competent Authority (Register Structure Engineer)/Government Engineering Collage etc. For Approval of Such type of Design and Drawings) having as possible as Economical and Safe Provision as per provision considering Latest IS Code's and Standard etc. at his Own Expanses UMARGAM NAGRAPALIKA will not pay any Extra Amount/Payment Regarding the same and also the Quantity, Item should be as far as possible in Limit and Connection to Uploaded Schedule-B/BOQ.
4. Foundation and Foundation Footing for Above Work are to be designed after obtaining Soil Bearing Capacity Report and considering the S.B.C Value Depth of Foundation Footing and Other Foundation depth should be Determined and taken with at most care and as far as possible economical and with respect to stipulated Quantity Given in Schedule B also Excess/Extra Quantity Should be avoided.
5. Construction Work should only be started after Approval of Structure Design from competent Authority and submission of the same to UMARGAM NAGRAPALIKA, UMARGAM having Quantity Should be in limit and in connection with Quantity given in Schedule B with reference to Obtained Soil Bearing Capacity.

6. All Material Used for Construction will have to be tested before execution as Per Schedule of Testing of Road and Building Department Attached Herewith.
7. For Leveling and fixing Datum Level for as far as Flat Ground and Contour Level for the reference should also be Obtained and the Quantity of Cutting and Filling should be workout in such a manner that the Quantity for the Filling should be as far as possible minimized and also should be assured that water lodging doesn't (Avoided) take place in the Premises.
8. R.C.C. and T.M.T Steel are as Per the Government Norms (company make mentioned in tender) should use by the Successful Bidder and Structure Design for the same should be approved by competent Authority.
9. Construction Material Testing and Concrete Work Testing according to Concrete Strength Should be Conducted from Government Approved Laboratory and GERI (ગેરી) as per norms Mentioned in R&B Resolution Letter SMR-1092-129-10-G Dated 24/10/1994,
10. Site Photographs Stage Wise, at Regular Interval and on Completion will have to be submitted by the Successful Bidder to UMARGAM Nagarpalika UMARGAM at regular interval to notified the progress of work and Final Completion of the Work (The Photographs should contain Following Details Name of Work, Ward Name, Amount of Expanse etc.
11. Work should be commenced only after obtaining required Building Construction Permission from Local Spatial Authority (Local Urban Authority) for Building Construction Drawing.
12. After Completion of the Building required Building Use Permission (B.U. Permission) will have to be Obtained from Local Spatial Authority (Local Urban Authority) or Competent Government Department.
13. Any Additional Instruction from Regional Commissioner Nagarpalika, Vadodara, Gujarat Municipal Finance Board, Government of Gujarat etc. will have to followed/ Obey.
14. Successful Bidder/Contractor will have to compulsory Place Holding/Big Permanent Granite Plate/Name Plate Mentioning necessary details such as Name of Work, Date of Starting of Work, Date of Completion, Name of Grant, Other Details required by Nagarpalika / Logo of Swarnim Gujarat/Amrut Mohotsav etc., Other Details Mentioned by Government of Gujarat etc. at his own expanse.

15. Bidders shall have to carry out Concrete MIX DESIGN for all Control Cement Concrete Works Items before Execution of works if required.
16. Bidders have to carry out all kinds of Tests For works as per various IS Code and Specification Listed in Material Section and Schedule of Material Testing.
17. Goods and Service Tax (GST) Amount as per Government Rules and Regulation will be Deducted from Contractors / Bidder Running Bill / Final Bill by Nagarpalika Stage / Bill Wise.
18. Consulting Engineer Service Charges as Approved with NAGARPALIKA (3.00 % + G.S.T) will Have to be considered while quoting rate, same will have to be bear by the Bidder.
19. Third Party Inspection Service Charges as Approved with Nagarpalika (1.15 %+ G.S.T) will have to be considered while quoting rate, same will have to be bear by the Bidder.
20. No objection Certificate and required permission after construction work of building for electrification work and fire safety work from component authority will have to obtain by bidder.
21. Overlap have to be done as per design specification no extra payment for the overlap will be done to the bidder. (as per resolution PDW/10-2017-01-C DATED 15-02-2017)
22. The bidder have to follow all instruction of Saheri vikas and Saheri Gruh-Nirman resolution No.SGY/102011/4144/Dated 23/08/2011.
23. All cost towards the testing shall be borne by the contractor.

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

## Section 1: Instructions to Bidders

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## **A. GENERAL**

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

1.1 The **Chief Officer UMARGAM NAGRAPALIKA** invites bids for the **CONSTRUCTION WORK OF CONSTRUCTION OF RAIN WATER HARVESTING SYSTEMS AT VARIOUS LOCATIONS UNDER UMARGAM NAGARPALIKA FOR GROUNDWATER RECHARGE AND SUSTAINABLE WATER MANAGEMENT**. 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.

1.1 The successful bidder will be expected to complete the works by the intended completion date specified in the Contract data.

1.2 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 Post Qualification)**

4.5.1 Qualification will be based on Applicant’s meeting all the following minimum pass/fail criteria regarding the Applicant’s general and particular experience, personnel and equipment capabilities and financial positions, as demonstrated by the applicant’s responses in the forms attached to the letter of application (~~specified requirement for joint ventures are given under para 4.6 below~~) Subcontractors experience and

resources shall not be taken in to account in determining the applicants compliance with the qualifying criteria To qualify for more than one contract, the applicant must demonstrate having experience and resources sufficient to meet the aggregate of the qualification criteria for each contract given in paragraphs 4.5.4, 4.5.5 and 4.5.9 below

#### 4.5.2 Base year and Escalation

The base year shall be taken as Current financial year

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

Year	Financial Year	Enhancement Factor
Base (year of inviting tender)	2025-2026	1.00
-1	2024-2025	1.10
-2	2023-2024	1.21
-3	2022-2023	1.33
-4	2021-2022	1.46
-5	2020-2021	1.61
-6	2019-2020	1.77
-7	2018-2019	1.94

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:

Achieved a minimum annual financial turnover (defined as billing for works in progress and completed in all classes of civil engineering construction works only) Average Annual Financial turnover during the last 3 years, ending 31st march of the previous financial year, should be at least 30% i.e., **(Rs. 06,28,232/-)** of the Estimated Cost. (The audited balance sheet/C.A. Certificate for turnover should be submitted in support of the same.)

- (a) Experience in successfully completing work As per Bid Evaluation Criteria on page no.7 or substantially completing at least **one contract of Similar nature of at least 80 percent/ two contract of at least 50 percent/ three contract of at least 40 percent of the value of proposed contract within the Seven 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.

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.

The Bidder must have suitably qualified personnel to fill the following positions. The Bidder will supply information on a prime candidate and an alternate for each position, both of whom should meet the qualification and Experience requirements specified below:

Sr No.	Position	Qualification	No. of Personnel's required	Total experience ( Years )	In similar works ( Years )	In similar work in similar capacity ( Years )

#### 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.

List of Plant & Equipment to be deployed on contract work.			
SL No.	Type of Equipment	Maximum Age on	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

#### 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 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.

~~**#4.6 — 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 =  $(A*N*2-B)$ , where**

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

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

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

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

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

Made misleading or false representation in the form, statements submitted; and /or Records 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 Bidder 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.

**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.

7.2 Letter of Confirmation of Site Visit.

**(ON COMPANY'S LETTER HEAD)**

To  
The Chief Officer  
UMARGAM Nagarpalika  
UMARGAM .

Dear Sir,

**SUB: CONSTRUCTION OF RAIN WATER HARVESTING SYSTEMS AT VARIOUS LOCATIONS UNDER UMARGAM NAGARPALIKA FOR GROUNDWATER RECHARGE AND SUSTAINABLE WATER MANAGEMENT.**

1. With reference to the tender invited by you for the above mentioned work/s, I/We do hereby confirm that I/We have carried out site visit and understood the project requirements in detail.
2. I / We have satisfied ourselves as to the current site conditions as on date \_\_\_\_\_, and agree to execute the project in accordance with the tender requirements.
3. We agree that at your sole discretion and without assigning any reason whatsoever, you reserve the right to accept and/or reject any or all tenders. The Chief Officer **UMARGAM NAGRAPALIKA, UMARGAM** does not bind itself to accept the lowest tender.

Signature of Engineer  
UMARGAM NAGRAPALIKA

Yours faithfully,

Date:

(Signature of the tenderer with the seal of the firm)

Witness:

## 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, and 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.

Intending bidders are advised to submit their queries in regards of the bidding documents through email np\_UMARGAM @yahoo.co.in and replies of which will be given through return mail.

## **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.

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

13.3 Deleted

- 13.4** 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 **The Chief Officer UMARGAM NAGRAPALIKA** payable at UMARGAM 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/22/2017/6369/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. Late Bids**

21.1. Any Bid received by the Employer after the deadline prescribed in Clause 20 will be returned unopened to the bidder.

### **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. Correction of Errors**

27.1. "Financial Bids" determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

- (a) Where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
- (b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

27.2. The amount stated in the "Financial Bid" will be corrected by the Employer in accordance with the above procedure and the bid amount adjusted with the concurrence of the Bidder in the following manner:

- (a) If the Bid price increases as a result of these corrections, the amount as stated in the bid will be the 'bid price' and the increase will be treated as rebate;
- (b) If the bid price decreases as a result of the corrections, the decreased amount will be treated as the 'bid price'

Such adjusted bid price shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount the Bid will be rejected, and the Bid security may be forfeited in accordance with Sub-Clause 16.6 (b).

## **28. Deleted**

## **29. Evaluation and Comparison of Financial Bids**

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

## **30. Deleted**

## **F. AWARD OF CONTRACT**

### **31. Award Criteria**

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

### **32. Employer's Right to accept any Bid and to reject any or all Bids**

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

### **33. Notification of Award and Signing of Agreement**

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

### **34. Performance Security**

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

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

- (a) If the Contract Price offered by the Selected Bidder is lower than 10% but upto 20% of the Estimated Project Cost, then the Additional Performance Security shall be calculated @ 20% of the difference in the (i) Estimated Project Cost (as mentioned in Bid Document) - Minus 10% of the Estimated Project Cost and (ii) Contract Price offered by the selected Bidder.
  - (b) If the Contract Price offered by the Selected Bidder is lower than 20% of the Estimated Project Cost, then the Additional Performance Security shall be calculated @ 30% of the difference in the (i) Estimated Project Cost (as mentioned in Bid Document) - Minus 10% of the Estimated Project Cost and (ii) Contract Price offered by the selected Bidder.
  - (c) This Additional Performance Security shall be treated as part of the Performance Security.
- (B) The Performance Security shall be valid beyond 60(sixty) days of the Defects Liability Period and the Additional Performance Security shall be valid beyond 28 (twenty-eight) days of Project Completion Date.

- 34.2. If the performance security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued either (a) at the Bidder’s option, by a Nationalized/Scheduled Indian bank or (b) by a foreign bank located in India and acceptable to the Employer. As per GoG Finance Department’s Circular No. FD/MSM/e-file/4/2023/0057/D.M.O. Date 21/04/2023 or as per their latest amendment.
- 34.3. Failure of the successful Bidder to comply with the requirement of Sub-Clause 34.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

### **~~35 — Advance Payment and Security~~**

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

### **36. Dispute Review Expert**

The Employer proposes that [name of proposed Dispute Review Expert as indicated in Appendix] be appointed as Dispute Review Expert under the Contract, at a daily fee as indicated in Appendix plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in the Bid. If in the Letter of Acceptance, the Employer has not agreed on the appointment of the Dispute Review Expert, the Dispute Review Expert shall be appointed by the Council of Indian Roads Congress at the request of either party.

### **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 The Chief Officer UMARGAM Nagar Palika UMARGAM .	[ Cl.1.1]
2.	The last five financial years.	
	2024 – 25	
	2023 – 24	
	2022 – 23	
	2021 – 22	
	2020 – 21	
3.	This Annual Financial Turnover Amount is Rs.....	[Cl.4.5.3(a)]
4.	Value of Work is Rs.	
5.	Deleted	
6.	The cost of electric work is Rs.....	
7.	The cost of water supply / sanitary works is Rs.	0
8.	Liquid assets and / or availability of credit facilities is Rs.....	[Cl. 4.5.6 ]
9.	Price level of the financial year 2024-25	[Cl. 4.5.2]
10.	The pre-bid meeting will take place at The Chief Officer UMARGAM NAGRAPALIKA	[Cl. 9.2.1]
11.	The technical Bid will be opened through website <a href="https://tender.nprocure.com">https://tender.nprocure.com</a> on <b>dt 14/07/2026 at 12.00 AM/PM</b>	
12.	Address of the Employer: The Chief Officer UMARGAM NAGRAPALIKA Main Bajar, Umargam town, Valsad district, Gujarat - 396170	
13.	Deleted	
14.	The bid should be submitted latest by 00/00/2026 at 18.00 hrs. As stated on online NIT.	[Cl. 20.1 & 20.2]
15.	The bid will be opened at <a href="https://www.tender.nprocure.com">https://www.tender.nprocure.com</a> on 00/00/2026 at 12.00 Hrs ( time and date) As stated on online NIT	[Cl. 23.1 ]
16.	The Bank Draft in favor of The Chief Officer UMARGAM NAGRAPALIKA and Payable at UMARGAM .	
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	2025-26	1.00
-1	2024-25	1.10
-2	2023-24	1.21
-3	2022-23	1.33
-4	2021-22	1.46
-5	2020-21	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 m 15years)	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 one Diploma Civil Engineer when the cost of work is less than Rs.15 lakhs but more than Rs.5 lakhs.
4. Minimum two 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 Chief Officer -in-charge of the work the Name, Qualifications, copy of marksheet, Colour 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 Work performed in the last five years (in Rs. Lakhs)**

2025-26

2024-25

2023-24

2022-23

2021-22

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

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

\* Attach certificate(s) from the Engineer(s)in-charge

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

#1.3.2 Quantities of work executed as prime contractor, work performed, in the past as a nominated sub-contractor, will also be considered provided the sub-contract involved execution of all main items of work described in the bid document, provided, further that all other qualification criteria are called (in the same name and style) in the last five years\*\* and in current year before the submission of the bid.

Year	Name of the work	Name of the Employer	Quantity of work performed (Cum/MT)				Remarks* (indicate contract Ref)
			Cement Concrete (Including RCC & PCC)	Masonry	Earth Works	Bituminous Work	
2025-26							
2024-25							
2023-24							
2022-23							
2021-22							

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.

<b>Position</b>	<b>Name</b>	<b>Qualification</b>	<b>Year of Experience (General)</b>	<b>Year of experience in the proposed position</b>

- 1.7 Proposed sub-contract and firms involved

<b>Sections of the works</b>	<b>Value of Sub-Contractor</b>	<b>Sub-Contractor (Name &amp; Address)</b>	<b>Experience in similar work</b>

- 1.8 Attach copies of certificates on possession of valid license for executing water supply/ sanitary work/ building electrification works.
- 1.9 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.
- 1.10 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.
- 1.11 Name, address, and telephone, telex, and fax numbers of the Bidders bankers who may provide references if contacted by the Employer.

1.12 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 \*.....)

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

1.14 Programme

## 2. Deleted

## 3. Additional Requirements

3.1 Bidders should provide any additional information required to fulfill the requirements of Clause 4 of the Instructions to the Bidders, if applicable.

- (i) Affidavit
- (ii) Undertaking

\* Fill the name of Consultant

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

(CLAUSE 4.5.6 OF ITB)

**BANK CERTIFICATE**

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

If the contract for the work, namely\_\_\_\_\_ is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs.\_\_\_\_\_ 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

**ANTI-BLACKLISTING INFORMATION**  
**(On Stamp Paper Rs. 300) Notarized.**

M/s \_\_\_\_\_ hereby certify and confirm that I or any of our Partner/ Promoter/s/director/s are not barred by Government of Gujarat (GOG)/any other entity of GOG or blacklisted by any State Government or Central Government/Department/Agency in India or from abroad from participating in Work/s, as individually/Partnership Firm as on Dt.\_\_\_\_\_. We further confirm that we are aware that our bid for the captioned tender would be liable for rejection in case any material misrepresentation is made or discovered about the requirements of this tender at any stage of the bidding process or thereafter during the agreement period. Dated this \_\_\_\_\_day of, 2026.

Name of the Bidder:

Signature of the Authorized person:

Name of the Authorized Person:

**SECTION - 3**  
**CONDITIONS OF CONTRACT**

# Conditions of Contract

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## CONDITIONS OF CONTRACT

### A. GENERAL.

#### 1. Definitions

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

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

**Compensation Events** are those defined in Clause 44 hereunder

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

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

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

The **Contractor** is a person or corporate body who's 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.

- 133 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.
- 134 Alterations to the terms of an insurance shall not be made without the approval of the Engineer.
- 135 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** (Higher Authority) 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, 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, both the parties have to refer to the #Secretary, Roads & Building 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 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) For all works costing more than Rs. 50,000 and up to Rs. 1 crore (amount put tender), the period shall be 12 (Twelve) months from the certified date of completion or one monsoon, whichever is later.
- (c) For major projects costing more than Rs. 1 crore, the period shall be 36 Months from the certified date of completion which should include three monsoons.
- (d) 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.

Modified vide R & B D Circular No. PAC-11-102008-2076-N dated 31/8/2009, PRCH/102013(2976) 2759-N, Dated 27/05/2013 and Circular No.TNC/10/2016/Clause 17A (Correction/(1)C Dated 12/05/2016]

### **33.2 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 / Chief officer 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 Chief Officer 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 Chief Officer 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** should be deducted from R.A. Bill of the contractor for testing the quality of material workmanship, irrespective of 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.

## **C. 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.
- 402 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.**

- 421 The Contractor shall submit to the Engineer monthly statements of the estimated value of the work completed less the cumulative amount certified previously.
- 422 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).
- 423 The value of work executed shall be determined by the Engineer.
- 424 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.
- 425 The value of work executed shall include the valuation of variations and compensation events.
- 426 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**

- 431 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.
- 432 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.
- 433 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**

- 441 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
- 442 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 Exclusive 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 labor, 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  
 $R = \text{Total value of work done during the month. It would include the amount of secured advance granted, if any, during the month less the amount of secured advance recovered, if any during the month. It will exclude value for works executed under variations for which price adjustment will be worked separately based on the terms mutually agreed.}$
- 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.

- 482 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.
- 483 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**

- 491 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.
- 492 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.
- 493 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.

- 494 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

- 501 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.
- 502 Bonus shall be paid only to works amounting to above INR 5 crore with time limit of the works is equal or more than 6 months. The bonus would be paid as under

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

## ~~51. Advance Payment.~~

- ~~511 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 Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to be at least 110% of the advance payment. The guarantee shall remain effective until the~~



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

~~512 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.~~

~~513 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.~~

514 Deleted

## **52. Securities**

521 The performance Security (including additional security for unbalanced bids) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer, and denominated in Indian Rupees. The performance Security shall be valid until a date 60 days from the date of expiry of Defects Liability Period and the additional security for unbalanced bids shall be valid until a date 28 days from the date of issue of the certificate of completion.

## **53. Deleted**

## **54. Cost of Repairs.**

541 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.

## **D. 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.

592 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.

593 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.

594 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.

- 602 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 Equipment's, 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.

## **E. 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 labor 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 labor enactments and rules made thereunder, regulations, notification and bye laws of the State or central Government or local authority and any other labor law (including rules), regulations, bye laws that may be passed or notifications that may be issued under any labor law in future either by the State or the Central Government or the local authority. Salient features of some of the major labor 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 labor 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 labor.
- 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) 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, 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, Roads & Building 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.



## **66. MODEL RULES FOR LABOUR WELFARE**

### **66.1 Definitions**

- a) Work place means a place at which, on an average, twenty or more workers and employed.
- b) Large work place means a site at which, on an average, 250 or more workers are employed

### **66.2 First Aid**

At every work place, there shall be maintained in a readily accessible place first aid appliances including an adequate supply of sterilized dressings and sterilized cotton wool as prescribed in the factory rules of the state in which the work is carried on the appliances shall be kept in good order and, in large work places, they shall be placed under the charge of a responsible person who shall be readily available during working hours.

At large workplaces where hospital facilities are not available within easy distances of the workers, first Aid posts shall be established and be run by a trained compounder.

Where large workplaces are remotely situated and away from regular hospitals, an indoor ward shall be provided with on bed for every 250 employees.

Where large work place are situated in cities or in their suburbs and no beds are considered necessary owing proximity of city or town hospitals, suitable transport shall be provided to facilitate removal of urgent cases to these hospitals. At other workplaces, some conveyance facilities shall be kept readily available to take injured person or persons suddenly taken seriously ill, to the nearest hospital.

At large workplace there shall be provided and maintained an ambulance room containing the prescribed equipment and in the charge of such medical and nursing staff as may be prescribed. For this purpose, the relevant provisions of the factory rules of the state government of the area, where the works carried on, may be taken as the prescribed standard.

### **66.3 Accommodation for Labour**

The contractor shall during progress of the work provide, erect and maintain necessary temporary living accommodation and ancillary for labour at his own expenses to the standards and scales as approved by the CONSULTANT .

### **66.4 Drinking Water**

In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.

Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where drinking water shall be stored.

Ever water supply storage shall be at a distance not less than 15 meters from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well which is within such proximity of latrine, drain or any other source of pollution, well shall be properly chlorinated before water drawn from it for drinking. All such wells

shall be entirely closed in and be provided with a trap door which shall be dust proof and water proof.

A reliable pump shall be fitted to each covered well. The trap door shall be kept and opened only for cleaning or inspection, which shall be done at least once a month.

#### 66.5 Washing and Bathing Places

Adequate washing and bathing places shall be provided separately for men and women, such places shall be kept in clean and drained condition.

#### 66.6 Scale of Accommodation in Latrines and urinals

There shall be provided within the precincts of every workplace, latrines and urinals in an accessible place and the accommodation, separately for each of these shall not be less than at the following scale.

	No of seats	
a) Where number of persons does not exceed	50	2
b) Where number of persons exceed but does not exceed	100	3
c) For additional person per 100 or part thereof	3	

In particular cases, the CONSULTANT shall have the power to increase the requirement, whenever necessary.

#### 66.7 Latrines and Urinals

Except in work places provided with water/flushed latrines connected with a water borne sewage system, all latrines shall be provided with receptacles on dry-earth system which shall be cleaned at least four time daily and at least twice during working hours and kept in a strictly sanitary condition. Receptacles shall be tarred inside and outside at least once a year.

If women are employed, separate latrine and urinals, screened from those for men and marked in the vernacular in conspicuous letters "For women only" shall be provided on the scale laid down in rule (vi) those for men shall be similarly marked "For Men only". A poster showing the figure of a man and women shall also be exhibited at the entrance to latrines for each sex. There shall be adequate supply of water, close to latrines and urinals.

#### 66.8 Construction of Latrines

Inside walls shall be constructed of masonry or other non- absorbent materials and shall be cement washed inside and outside at least once a year. The dates of cement washing shall be noted in a register maintained for the purpose and kept available for inspection. Latrines shall have at least thatched roof.

## 66.9 Disposal of Excreta

Unless otherwise arranged for by the local sanitary authority, arrangement for proper disposal of excreta by incineration at the workplace shall be made means of suitable incinerator approved by the local medical, health and, municipal or cantonment authorities. Alternatively, excreta may be disposed off by putting a layer or night soils at the bottom of a pucca tank prepared for the purposed and covering it with a 15 cm layer of waster or refuse and then covering it with a layer of earth for a fort night (when it will turn in to manure).

The contractor shall, at his own expense carry out all instructions issued to him y the CONSULTANT to effect proper disposal of soil and other conservancy work in respect of contractor's work purpose or employees on the site. The contractor shall be responsible for payment of any charges which may be levied by municipal or cantonment authority for execution of such work in his behalf.

## 66.10 Provision of shelters during rest

At every workplace, there shall be provided, free of cost, four suitable sheds, two for meals and two others for rest, separately for use of men and women labour. Height of each shelter shall not be less than 3 meters from floor level to lowest part of roof sheds shall be kept clean and the space provided shall be on the basis of at least 0.5 sq.m. per head.

## 66.11 Crèches

At a place at which 20 or more women are ordinarily employed, there shall be provided at least one hut for use of children under the age of 6 years belonging to such women. Huts shall not be constructed to a standard lower than that of thatched roof. Mud floor and wall with wooden planks spread over mud floor and covered with matting.

Huts shall be provided with suitable an sufficient openings, for light and ventilation. There shall be adequate provision of sweepers to keep the places clean. There shall be two maid servants in attendance. Sanitary utensils shall be provided to the satisfaction of local medical, health an municipal or cantonment authorities. Use of huts shall be restricted to children, there attendants and mothers of children.

Where the number of women workers is more than 25 but less than 50 the contractor shall provide at least one hut and one maid servant to look after children or women workers.

Size of crèche(s) shall very according to the number of women workers employed.

Crèche (s) shall be properly maintained and necessary equipment like toys, etc. Provide.

## 66.12 Canteen

A cooked fool canteen on a moderate scale shall be provided for the benefit of workers wherever it is considered necessary.

## 66.13 Planning, setting and erecting of the above mentioned structures shall be, approved by the CONSULTANT or his representative and the whole of such temporary accommodation shall at all times during the progress of the work be kept tidy and in a clean and sanitary condition to the satisfaction of the CONSULTANT or his representative and at the contractor's expense. The contractor shall conform generally to sanitary requirement of local medial health and municipal or cantonment authorities and at all times adopt such precautions as may be prevent soil pollution of the site.

On completion of the works, the whole of such temporary structures shall be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in an effectively sealed of and the whole of site left clean and tidy at the contractor's expense, to the entire satisfaction of the CONSULTANT .

#### **66.14 Enforcement**

Inspecting office mentioned in the contractor's labor regulations or any other officer nominated on his behalf by the CONSULTANT shall report to the CONSULTANT shall report to the CONSULTANT all cases of failure on the part of the contract and/of his sub-contractor to comply with the part of the contract and his sub-contractor to comply with the provisions of these rules either wholly or in part and the CONSULTANT shall impose such fines and other penalties as are prescribed in conditions of contract.

#### **66.15 Interpretations etc**

On any question as to the application, interpretation or effect of these rules, the decision of the chief labor commissioner or deputy chief labor commissioner (central) shall be final and binding.

66.16 The OWNER may, from time to time, add to or amend these rules and issue directions a it may be considered necessary for the proper implementation of these rules or for the purpose of removing and difficulty which arise in the administration thereof.

### **67.00 PROVISIONS OF SECTION 297/299 OF COMPANIES ACT**

The Certificate submitted by the CONTRACTOR as per the prescribed format in terms of section 297 / 299 of Companies Act 1956 (with latest amendment) forms part of the CONTRACT.

**67.1** The CONTRACTOR shall give all notices and pay / bear all duties, taxes, charges, fees and expenses, except where otherwise expressly provided in the CONTRACT, required to be given or paid by any National or State statute, ordinance or other law or any regulation or bye law of any International, local or other duly constituted authority in relation to the performance of the WORKS or of any TEMPORARY WORKS and by the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the WORKS or any TEMPORARY WORKS. The CONTRACTOR shall acquire all permits, approvals and or licenses from all local, State or Central Government authorities or Public Sector Undertakings in the country, where the SITE is located, which, such authorities require the CONTRACTOR to obtain in his name and which are necessary for the performance of the CONTRACT including interest limitations, import license for materials and VISAS for the CONTRACTOR's and SUB CONTRACTOR's personnel and entry permits for all imported CONSTRUCTIONAL PLANT AND EQUIPMENT and shall acquire all other permits, approvals and / or licenses, which are not the responsibility of the OWNER and which are necessary for the performance of the CONTRACT.

**67.2** The CONTRACTOR shall comply with and conform in all respects and shall ensure that all his SUB CONTRACTORS also comply with and conform in all respects with the provisions of any statute, ordinance or law as aforesaid and the regulations or bye laws of any international, local or other duly constituted authority, which may be applicable to the WORKS or to any TEMPORARY WORKS and with such rules and regulations of public bodies and companies as aforesaid and shall be responsible for all costs arising from compliance and / or violation of the same and shall keep the OWNER indemnified against all penalties and liabilities of every kind for breach of any statute, ordinance or

law, regulations or bye laws.

**67.3** The CONTRACTOR shall indemnify and hold the OWNER harmless from and against all penalties, liabilities, damages, claims, fines and expenses of whatever nature, arising out of or resulting from the violation of such laws or rules or regulation having the force of law within the scope of clause No.22.6, 22.8 & 22.9 by the CONTRACTOR or his SUB CONTRACTORS including their personnel.

#### **68. CONTRACTOR TO INDEMNIFY OWNER**

68.1 The CONTRACTOR shall indemnify the OWNER and every member, officer and employee of the OWNER , also the ENGINEER-IN-CHARGE and his staff against all actions, proceedings, claims, demands, costs and expenses whatsoever arising out of or in connection with the matters referred to in Labor Laws or clause mentioned in the CONTRACT / elsewhere and all actions, proceedings, claims, demands, costs and expenses which may be made against the OWNER for or in respect of or arising out of any failure by the CONTRACTOR in the performance of his obligations under the CONTRACT. The OWNER shall not be liable for or in respect of any demand or compensation payable by law in respect or in consequence of any accident or injury to any workman or other person in the employment of the CONTRACTOR or his SUB CONTRACTOR and CONTRACTOR shall indemnify and keep indemnified the OWNER against all damages and compensation and against all claims, damages, proceedings, costs, charges and expenses, whatsoever, in respect thereof or in relation thereto.

68.2 Should the OWNER have to pay any money in respect of such claims or demands as aforesaid and the costs incurred by the OWNER shall be charged will be paid by the CONTRACTOR and the CONTRACTOR shall not be at liberty to dispute or question for the same.

68.3 WAIVER OF RECOURSE Except for claims of breach of the CONTRACT or for claims specifically assumed or authorized therein, the CONTRACTOR and the OWNER waive recourse each against the other claims which may arise with respect to the WORKS.

#### **69.00 IMPLEMENTATION OF APPRENTICES ACT 1961**

The contractor shall comply with the provision of the apprenticeship Act 1961 and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer in charge may at his discretion cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the Act.

## 70.00 SAFETY PROVISIONS

The contractor shall comply with all precautions as required for the safety of the workmen by the I.L.O. convention No. 62 as far as they are applicable to the contract. The contractor shall provide all necessary safety appliances, gears like goggles, helmets, masks etc. to the workmen and the staff.

- i) Suitable scaffolds shall be provided for workmen for all work that cannot safely be done from the ground. Or from solid construction except for such short period work as solid construction except for such short period work as can be done safely from ladders. When a ladder is used, an extra labor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable foot holds and hand holds shall be provided on the ladder, which shall be given an inclination not steeper than 1/4 to 1(1/4) horizontal in 1 vertical )
- ii) Scaffolding or staging more than 3.25 meters above the ground or floor, swing, or suspended from an overhead support or erected with stationary support, shall have guard rail properly attached, bolted, braced and otherwise secured at least 1 meters high above the floor or platform of such scaffolding or staging and extending along the entire length may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the support for structure.
- iii) Working platform gangways, and stairways shall be so constructed that they do not sag unduly or unequally and if a height of a platform or gangway or stairway is more 3.25 meters above ground level or floor level, it shall have closely spaced boards, have adequate width and be suitably provided with guard rails as directed in (ii).
- iv) Every opening in floor of a structure or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing with a minimum height of one meter.
- v) Safe means of access shall be provided to all working platforms and other working places every ladder shall be securely fixed. No portable single ladder shall be over 9 meters shall in no case be less than 30 cm for ladders up to and including 3 meters in length. For longer ladders the width shall be increased at least 6 mm for each additional 30 cm of length. Spacing of steps shall be uniform and shall, not exceed 30 cm. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites shall be so stacked or place as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect public from accidents and shall be bound to bear expenses of defending every suit, action or other proceeding at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit, action or proceeding to any such person or which may with the consent of the contractor be paid to compromise any claim by any such person.
- vi) Excavation and Trenching

All trenches, 1.5 meters or more in depth, shall at any times be supplied with at least one ladder each 20 meters in length or fraction thereof ladder shall be extended from bottom of trench to at least 1 meters above surface of the ground sides of a trench which is 1.5 meters or more in depth shall be stepped back to



give suitable slope or securely held by timber bracing so as to avoid the danger of collapsing of sides. Excavated material shall not be placed within 1.5 meters of edge of trench or half the depth of trench whichever is more. Cutting shall be done from top to bottom. Under to circumstances, undermining or undercutting shall be done.

vii) Demolition

Before any demolition work is commenced and also during the process of the work

- a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
- b) No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by operator shall remain electrically charged.
- c) All practical steps shall be taken to prevent danger to persons employed by the OWNER, from risk of fire or explosion or flooding. No floor roof, or other part of a building shall be so overloaded with debris or materials as to render it unsafe.

viii) All necessary personal safety equipment as considered adequate by the CONSULTANT / EIC shall be available for use of persons employed on the site and maintained in a condition suitable for immediate use and the contractor shall take adequate steps to ensure proper use of equipment by those concerned.

- a) Workers employed on mixing asphaltic materials, cement, lime mortars/ concrete shall be provided with protective footwear and protective goggles.
- b) Those engaged in handling any material which is injurious to eyes shall be provided with protective goggles.
- c) Those engaged in welding works shall be provided with welder's protective eye-shield.
- d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- e) When workers are employed in sewers and manholes, which is in use, the contractor shall insure that manholes covers are open and manholes are ventilated at least for an hour before workers are allowed to get in to them. Manholes so open shall be cordoned off with suitable railing and provided warning signals or boards to prevent accident to public.

The contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Whenever men above the age of 18 years are employed on the work of lead painting, the following precautions shall be taken.

No paint containing lead or lead products shall be used except in the form or readymade paint.

Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry rubber and scrapped.

Overalls shall be supplied by the contractor to workmen and adequate facilities shall be provided to enable workers to wash during and on close of day's work.

- ix) When work is done near any place where there is risk of drowning all necessary equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
- x) Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following.
  - a - (i) These shall be of good mechanical construction, sound material and adequate strength and free from patent defects and shall be kept in good working order and properly maintained.
  - (ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, & free from defects.
  - b Every crane driver or hoisting appliance operators shall be properly qualified and no person under the age of 21 shall be in charge of any hoisting machine including scaffold or of signals to operator.
  - c In case of every hoisting machine and of every chain hook, shackle swivel and pulley block used in hoisting, lowering or as a means of suspension, safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with safe working load. In case of a hoisting machine or a variable safe working load, each safe working load and condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in the paragraph shall be loaded beyond safe working load except for the purpose of testing.
  - d In case of the OWNER's machine, safe working load shall be notified by the CONSULTANT or his representative. As regards contractor's machine the contractor shall notify safe working load of each machine to the CONSULTANT or his representative whenever he brings it to site of work and get it verified by him.
- xi) Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliance shall be provided with efficient safeguards. Hoisting appliance shall be provided with such means as will reduce the risk of accident during descent of load to the minimum. Adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, working apparel such as gloves, sleeves, and boots as may be necessary, shall be provided, workers shall not wear any rings, watches and carry keys or other material which are good conductors of electricity.



- xii) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places work.
- xiii) There safety provisions shall be brought tot he notice of all concerned by display on notice board at a prominent place at the work spot persons responsible for ensuring compliance with the safety code shall be named there in by the contractor.
- xiv) To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the contractor shall be open to inspections by the CONSULTANT or his representative and the inspecting officer as defined in the contractors labour regulation mentioned in thereafter these documents as annexure "A" of section IV.
- xv) Notwithstanding anything contained in conditions (i) to (xiv) above, the contractor shall remain liable to comply with the provisions of all acts, rules, regulations and bylaws for the time being in force in India and applicable in this matter.

#### **FOOTWEAR**

The contractor shall at his own expenses provide footwear for all labour engaged on concrete mixing work and all other types of work involving the use of tar, cement etc. to the satisfaction of the CONSULTANT or his representative, and on his failure to do so, the OWNER shall be entitled to provide the same and recover the cost from the contractor.

#### **LOCAL LABOUR**

The contractor is encouraged for as possible to employ, in the execution of the contract qualified India citizens as workmen. Employment of expatriate personal is subject to the Indian laws and regulations in case the contractor wished to employ expatriate personnel in any particular trade or skill required to execute the contract, the OWNER will assist the contractor in obtaining permission for which the contractor shall submit requisite date.

## **71. SAFETY CODE**

### **1.00 GENERAL RULES**

Smoking within the battery area, tank farm or dock limits is strictly prohibited. Violators of the no smoking rules shall be discharged immediately.

#### **1.1 Contractor's Barricades**

- a) Contractor shall erect and maintain barricades required in connection with his operations to guard or protect.
  - i) Excavation
  - ii) Hoisting area
  - iii) Areas adjudged hazardous by consultant or OWNER's inspectors
  - iv) OWNER's existing property subject to damage by contractor's operations
  - v) Rail / road unloading spots
- b) Contractor's employees and those of his sub-contractors shall get themselves acquainted with OWNER's protective barricading and shall respect the provisions thereof.
- c) Barricades and hazardous areas adjacent to but not located in normal routes or travel shall be marked by red flashers/ lanterns at nights.

#### **1.2 Care In Handling Inflammable Gas**

The contractor has to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinder/inflammable liquids / paints etc. as required under the law and /or as advised by the fire authorities of the OWNER.

#### **1.3 Temporary Combustible Structures**

Temporary combustible structures will not be built near or around work site.

#### **1.4 Precautions against Fire**

The contractor will have to provide fire extinguishers / fire buckets and drums at work site as recommended by engineer in charge. They will have to ensure all precautionary measures and cylinders / inflammable liquid / paints etc. as advised by engineer in charge. Temporary combustible structures will not be built near or around the work site.

#### **1.5 EXPLOSIVES**

Explosives shall not be stored or used on the work or on the site by the contractor without the permission of the engineer in charge in writing and then only in the manner and to the extent to which such permission is given. When explosive are required for the works they will be stored in a special magazine to be provided at the cost of the contractor in accordance with the license for the storage and the use of explosives and all operations in which or for which explosives are employed shall be at sole risk and responsibility of the contractor and the contractor shall indemnify the OWNER against any loss or damage resulting directly or indirectly there from.

### **2.00 MINES ACT**

## 2.1 SAFETY CODE

The contractor shall at his own expense arrange for the safety provisions as required by the engineer in charge in respect of all labor directly employed for performance of the works and shall provide all facilities in connection therewith. In case the contractor fails to make arrangements and provide necessary facilities as aforesaid, the engineer in charge shall be entitled to do so and recover the costs thereof from the contractor.

- 2.2 Failure to comply with safety code or the provisions relating to, report on accidents and to grant of maternity benefits to female workers shall make contractor liable to pay company Liquidated Damages an amount not exceeding Rs. 50 /- for each default or materially incorrect statement. The decision of the engineer in charge shall be final and binding and deductions for recovery of such liquidated damages may be from any amount payable to the contractor from all the provisions of the Mines Act-1952 or any statutory modifications or re-enactment thereof for the time being in force and any rules and regulations made there under in respect of all the persons employed by him under this contract and shall indemnify the OWNER from and against any claim under the mines act or the rules and regulation framed there under by or on behalf of any persons employed by him or otherwise.

## 3.00 PRESERVATION OF PEACE

The contractor shall take requisite precautions and use his best endeavor to prevent any riotous or unlawful behavior by or amongst his workmen and others employed on the works and for the preservation of peace and protection of the inhabitants and security of property in the neighborhood of the work. In the event of the OWNER requiring the maintenance of the work. In the event of the OWNER requiring the maintenance of the special police force in the vicinity of the site during the tenure of the works, the expenses thereof shall be borne by the contractor and if paid by the OWNER, shall be recoverable from the contractor.

## 4.00 OUTBREAK OF INFECTIOUS DISEASES

The contractor shall remove from his camp such labour and their families as refuse protective inoculation and vaccination when called upon to do so by the engineer in charge representatives. should cholera, plague or other infectious diseases break out, the contractor shall burn the huts, bedding, clothes and other belongings used by the infected parties and promptly erect new huts on healthy sites as required by the engineer in charge failing which within the time specified in the engineer requisition, the work may be done by the OWNER and the cost thereof recovered from the contractor.

## 5.00 USE OF INTOXICANTS

The unauthorized sale of spirits or other intoxicating beverages upon the work, in any of the buildings, encampments or tenements owned, occupied by or within the control of the contractor shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.

## 6.00 SAFETY REGULATIONS

6.1 In respect of all labour, directly or indirectly employed in the WORK, the CONTRACTOR shall at his own expense arrange for all the safety provisions as per safety codes of CPWD, Indian Standard Institution, the Electricity Act, the Mines Act. Regulations, Rules and Orders and such other Acts as applicable.

6.2 Contractor shall maintain first aid facilities for his employees and those of his Sub-contractors.

## 7.00 WATCHING AND LIGHTING

The Contractor shall, in connections with the Works, provide and maintain at his own cost all lights, guards, fencing, markers and watching when and where necessary for the safety and convenience of the public and others.

8.00 In addition to the above, the Contractor shall abide by the safety code provision as per CPWD safety code and Indian Standard safety code framed from time to time.

**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 Name: The Chief Officer UMARGAM NAGRAPALIKA Main Bajar, Umargam town, Valsad district, Gujarat - 396170	[CL.1.1]
2.	The Engineer is  Name of Authorized Representative: Deputy Executive Engineer/City Engineer/ PWD Engineer of UMARGAM Nagarpalika UMARGAM .	
3.	The Defects Liability Period is <b>12 months</b> 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>03 Months</b> after start of work with the following milestones:  Milestone dates: <u>Physical works to be completed Period from the start date</u> Milestone 1 i.e. 16 % 80 days. Milestone 2 i.e. 50 % 165 days. Milestone 3 i.e. 75 % 247 days. Milestone 4 i.e. 100 % 330 days.	[CL. 1.1, 17 & 2] [CL. 2.2 & 49.1]
6.	The Site is located at UMARGAM City, Ta. UMARGAM , Dist. VALSAD	[CL.1.1]
7.	The name and identification number of the Contract is:	[CL.1.1]
8.	The works consist of <b>(Water Harvesting work)</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) Building Works</b> Site clearance; setting –out and layout, carried out survey work, Construction, furniture work, electrical work and five years of Operation &amp; Maintenance, 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.</p> <p><b>(B) Road Works</b> Site clearance; setting – out and layout; widening of existing carriageway and strengthening including camber corrections; construction of new road/ Parallel service road; bituminous pavements remodeling/construction of Junctions, intersections, bus bays, lay-bays; supplying and placing of drainage Channels, flumes, guard posts and guard other related items; construction/extension of cross drainage works, bridge, approaches and other related stones; protective works for roads/bridge; all aspects of quality assurance of various components of the works; rectification of The defects in the completed works during the Defects Liability Period; submission of “As- built” drawings and any other related documents; and other item of work as may be required to be carried out for completing the work in accordance with the drawings and the provisions of the contract and to ensure safety.</p> <p><b>(C) Bridge Works</b> provision of foundations, piers abutments and bearing; prestressed/reinforced cement concrete superstructure; wearing coat, hand railings, expansion joints, approach slabs, drainages spouts/ down take pipes, arrangements for fixing light posts, water mains, utilities etc.; provision of suitably designed protective works; providing wing/return walls; provision of road markings, road signs etc.; all aspects of quality assurance; clearing the site and handing over the 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</p> <p><b>(D) Other Items</b> Any Other Items as required to fulfill all contractual obligations as per the Bid documents.</p>	

- |     |   |             |
|-----|---|-------------|
| 10. | The following documents also form part of the Contract:<br>_____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. | <del>Limit of subcontracting</del> _____ <del>25% of the Initial Contract Price</del>   | [CL.7.1]    |
| 14. | The Schedule of Other Contractors   | [CL.8]      |
| 15. | The Schedule of Key Personnel                      As per Annex – II to Section I   | [CL.9]      |
| 16. | The minimum insurance cover for physical property, injury and death is Rs. 5 lakhs per occurrence with the number of occurrences limited to four. After each occurrence, the contractor will pay an additional premium necessary to make insurance valid for four occurrences always.   | [CL13]      |
| 17. | Site Investigation report   | [CL.14]     |
| 18. | The Site Possession dates shall be .....  | [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<br>Substantially adverse ground conditions encountered during the course of execution of work not provided for in the bidding document.<br>(i)      Removal of underground utilities detected subsequently<br>(ii)     Significant changes in classification of soil requiring additional mobilization by the contractor, e.g. ordinary soil to rock excavation,<br>(iii)    Removal of unsuitable material like marsh, debris dumps, etc. not caused by the contractor. | [CL. 44]    |

- (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:~~

$$V_L = \text{---} 0.85 \times (P_i/100) \times R \times (L_i - L_0)/L_0$$

~~V<sub>L</sub> = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local labour~~

~~L<sub>0</sub> = 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<sub>i</sub> = 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<sub>i</sub> = 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<sub>c</sub> = Increase or decrease in the cost of work during the month under consideration due to changes in rates for cement.~~

~~C<sub>0</sub> = 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<sub>i</sub> = 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<sub>c</sub> = 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<sub>s</sub> = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for steel~~

~~S<sub>0</sub> = 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<sub>i</sub> = 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<sub>s</sub> = 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<sub>b</sub> = Increase or decrease in the cost of work during the month under consideration due to changes in rates for bitumen.~~

~~B<sub>0</sub> = 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<sub>i</sub> = The official retail price of bitumen of IOC depot at the nearest centre for the 15<sup>th</sup> day of the month under consideration.~~

~~P<sub>b</sub> = 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<sub>f</sub> = Increase or decrease in the cost of work during the month under consideration due to changes in rates for fuel and lubricants.~~

~~F<sub>0</sub> = 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<sub>i</sub> = 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<sub>f</sub> = 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<sub>p</sub> = Increase or decrease in the cost of work during the month under consideration due to changes in rates for plant and machinery spares~~

~~P<sub>0</sub> = 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<sub>i</sub> = 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<sub>p</sub> = Percentage of plant and machinery spares component of the work.~~

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

## Adjustment of other materials Component

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

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

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

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

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

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

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

1. Labour - $P_l$	.....%
2. Cement - $P_c$	.....%
3. Steel - $P_s$	.....%
4. Bitumen - $P_b$	.....%
5. POL - $P_f$	.....%
6. Plant & Machinery Spares $P_p$	.....%
7. Other Materials - $P_m$	.....%
<hr/>	
Total	100 %
<hr/>	

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 in completion of works
- For Whole of work {CL.49} delay (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. ~~Amount of Bonus for early completion~~ ~~Amount of bonus for early Completion of work shall be given as per CL.50 of Section 3~~
29. ~~Maximum limit of bonus for early Completion of work~~ ~~5 percent of the Contract {CL. 50} Price~~
30. The amount of the advance payment are: {CL. 51 & 52}

#### #Nature of Advances

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

- |     |   |   |  |
|-----|---|---|--|
| 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 Advance for Non-persish able material Brought to site |   | <b>Deleted</b>   |

(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**

## **GENERAL TECHNICAL SPECIFICATIONS**

### **1.0 General:**

All measurements shall be made in the metric system. Different items of work shall be measured in accordance with the procedures set forth in the relevant sections read in conjunction with General Conditions of Contract. The same shall not however apply in the case of lump-sum items. All measurements and computations unless otherwise indicated shall be carried nearest to the following limits :

- (i) length and breadth... .... 10 mm
- (ii) height, depth or thickness of earthwork, sub-base, bases, surfacing, and structural members .....5 mm
- (iii) areas, .....0.01 Sq Metre
- (iv) cubic contents..... 0.01 cubic metre.

in recording dimensions of work the sequence of length, width and height or depth or thickness shall be followed.

### **2.0 Measurement of lead for Materials:**

Where lead is specified in the contract for construction materials, the same shall be measured as described hereunder.

Lead shall be measured over the shortest practicable route and not the one actually taken and the decision of the Engineer-in-charge in this regard shall be taken as final. Distance upto and including 100 meters shall be measured in units of 50 metres, exceeding 100 metres but not exceeding 1 KM. in units of 100 metres and exceeding 1 km. in units of 500 metres. The half and greater than half of the units shall be reckoned as one and less than half of the units ignored. In this regard, the source of the material shall be divided into suitable blocks and for each block the distance from the centre of the block to the centre of placing pertaining to that block shall be taken as the lead distance.

### **3. Surface Regularity of Sub grade & Pavement Courses :**

The surface regularity of completed sub-base courses and wearing surfaces in the longitudinal and transverse directions shall be within the tolerances indicated in Table below. The longitudinal profile shall be checked with a 3 metre long straight edge, at the middle of each traffic lane along a line parallel to the centre line of the road. The transverse profile shall be checked with a set of three camber boards at intervals of 10 metres.

#### **PERMITTED TOLERANCES OF SURFACE REGULARITY FOR PAVEMENT COURSES**

Sr. No	Type of Construction	Longitudinal Profile with 3 metre straight edge					Cross Profile
		Maximum Permissible undulation in mm	Maximum number of undulation permitted in any 300m. length exceeding in mm.				Maximum permissible variation from specified profile camber template-mm
			18	12	10	6	
1	2	3	4	5	6	7	8
1	Earth Sub grade	36	30	-	-	-	15

2	Granular / lime / Cement Stabilised Sub – base.	23	-	30	-	-	12
3	Water Bound Macadam with nominal size metal (20-50) mm	18	-	-	30	-	8
4	Semi – Dense Carpet @	15	-	-	-	20	6

**Notes:-**

1 . These are for machine laid surfaces. If laid manually, due to unavoidable reason, tolerance upto 50 percent above these values in this column may be permitted. However, this relaxation does not apply to the values of maximum undulation for longitudinal and cross profiles mentioned in columns 3 and 8 in the table.

2. Surface evenness requirements in respect of both the longitudinal and cross profiles should be simultaneously satisfied.

3. **Rectification** : Where the surface irregularity of subgrade and the various pavement courses fall outside the specified tolerances, the contractor shall be liable to rectify these in the manner described below and to the satisfaction of the Engineer-in-charge at his own cost.

(i) **Subgrade** : Where the surface is high, it shall be trimmed and suitably compacted. Where the same is low, the deficiency shall be corrected by adding fresh material. The degree of compaction and the type of material to be used shall conform to the specified requirements.

(ii) **Granular/Sub-base** : Same as at (i) above except that the degree of compaction and the type of material to be used shall conform to the specified requirements.

(iii) **Lime/Cement stabilized soil sub-base** : For Lime/Cement treated materials where the surface is high, the same shall be suitably trimmed while taking care that the material below is not disturbed due to this operation. However, where the surface is low, the same shall be corrected as described herein below.

For cement treated material, when the time elapsed between detection of irregularity and the time of mixing of the material is less than 2 hours, the surface shall be scarified to a depth of 50 mm, supplemented with freshly mixed material as necessary and recomposed to the relevant specification. When this time is more than 2 hours, the full depth of the layer shall be removed from the pavement and replaced with fresh material to specification. In either case, the area treated shall not be less than 5 metres long by 2 metres wide. This shall also apply to lime treated material except that the time criterion shall be 3 hours instead of 2 hours.

(iv) **Water Bound Macadam Base** : Where the surface is high or low, the top 75mm shall be scarified, reshaped with added material as necessary and recompacted. The area treated at a place shall not be less than 5 metres long and 2 metres wide.

(v) **Bituminous Constructions** : For bituminous constructions, other than wearing course, where the surface is low, the deficiency shall be corrected by adding fresh material and recompaction to specifications.

Where this surface is high, the full depth of the layer shall be removed and replaced with fresh material and compacted to specifications. For wearing course, where the surface is high or low; the full depth of the layer shall be removed and replaced with fresh material and compacted to specifications in all cases where the removal and



replacement of a bituminous layer is involved, the area treated shall not be less than 5 metre long and not less than 1 lane wide.

#### **4. Quality Control Tests During Construction :**

The materials supplied and the works carried out by the Contractor shall conform to the enclosed relevant specifications. For ensuring the requisite quality of construction, the materials and works shall be subjected to quality control test as described hereinafter, by the Engineer-in-charge. The testing frequencies set forth are the desirable minimum and the Engineer-in-charge shall have the full authority to carry out test as frequently as he may deem necessary to satisfy that the materials at work comply with the appropriate specifications. Test procedures for the various quality control tests are indicated in the respective sections of the specifications or for certain tests within this section. Where no specific testing procedure is mentioned, the test shall be carried out as per prevalent accepted engineering practice to the directions of the Engineer-in-charge.

#### **5. Tests on embankfor Embankment Construction :**

##### **5.1 Borrow Material:**

- (a) Sand Content (IS : 2720 Part IV)  
Two test per 8000 Cubic Metres of soil.
- (b) Plasticity Test (IS : 2720 Part-V)  
Each type to be tested. Two tests per 8000 Cubic Metres of soil.
- (c) Density test (IS : 2720 Part VII)  
Each soil type to be tested. Two tests per 8000 Cubic Metres of soil.
- (d) Moisture Content Test (IS : 2720 Part-II)  
One test for every 250 Cubic Metres of soil.

##### **5.2 Compaction Control :**

Control shall be exercised by taking at least one measurement of density for each 1000 square meters of compacted area, or closer as required to yield the minimum number of test results for evaluating day's work on statistical basis. The determination of density shall be in accordance with IS. : 2720 (Part XXVMI). Test locations shall be chosen only through random sampling techniques. Control shall not be based on the result of any one test but on the mean value of a set of 5-10 density determinations. The number of tests in one set of measurements shall be 5 as long as it is felt that sufficient control over borrow material and the method of compactions is being exercised. If considerable variations are observed between individual density results, the minimum number of tests in one set of measurement shall be increase to 10. The acceptance of work shall be subject to the condition that the mean dry density equals or exceeds the specified density and the standard deviation for any set of results is below 0.08 gm/cc. However for earthwork in shoulders and in top 500 mm portion of the embankment below the sub grade at least one density measurement shall be taken for every 500 square meters of the compacted area provided further that the number of the tests in each set-of measurement shall be at least 10. In other respects, the control shall be similar to that described earlier.

#### **6. Following materials shall conform to the Indian Standards shown against them :**

- (1) ....Cement.....
- (2) ....Sand for masonry.

- (3).....Sand for concrete.  
 (4).....Coarse aggregate.  
 (5).....Mild Steel...  
 (6) ....High yield strength deformed bars  
     (a) Hot Rolled..... IS : 1139  
     (b) Cold Twisted..... IS : 1786

**7. Barrel thickness of pipes of different class shall be as under :**

Sr. No.	Internal Diameter of pipe in mm	Barrel thickness (in mm).		
		NP1	NP2	NP2
1	80	25	25	-
2	100	25	25	-
3	150	25	25	-
4	250	25	25	-
5	300	30	30	-
6	350	32	32	75
7	400	32	32	75
8	450	35	35	75
9	500	-	35	75
10	600	-	40	80
11	700	-	40	80
12	800	-	45	90
13	900	-	50	100
14	1000	-	55	100
15	1100	-	60	115
16	1200	-	65	115

## **DETAILED TECHNICAL SPECIFICATION**

GENERAL SPECIFICATIONS

## GENERAL :

- 1.1 All the items occurring in the work and as found necessary during actual execution shall be carried out in the best workman like manner as per specification and the written order of the Engineer-in-charge.
- 1.2 Extra claim in respect of extra work shall be allowed only if such work is ordered to be carried out in writing by the Engineer-in-charge.
- 1.3 The Contractor shall engage a qualified Engineer for the Execution of work who will remain present for all the time on site and will receive instructions and orders from the Engineer-in-charge or his authorised representative. The instruction and orders given to the contractor's representative on site shall be considered as it will be to the contractor himself.
- 1.4 The work order book as prescribed shall be maintained on the site of the work by the Contractor and the contractor shall sign the orders given by the inspecting officers and shall carry out them properly.
- 1.5 Quantities specified in the tender may vary at the time of actual execution and the contractor shall have no claim for compensation on account of such variation.
- 1.6 Figured dimensions of drawings shall supersede measurements by scale,. Special dimensions in the specification shall supersede all other dimensions.
- 1.7 Use of I. S. Code shall mean its latest applicable version for respective items.

## GENERAL TECHNICAL SPECIFICATION FOR BUILDING WORKS

### GENERAL:

1. In the specification "as directed"/"Approved" shall be taken to mean "as directed"/approved by the Engineer-in-charge.
2. Wherever a reference to any Indian Standard appears in the specifications, it shall be taken to mean as a reference to the latest edition of the same in force on the date of agreement.
3. In "Mode of Measurement" in the specification wherever a dispute arises in the absence of specific mention of a particular point or aspect, the provisions on these particular point or aspects in the relevant Indian Standards shall be referred to.

All measurements and computations, unless otherwise specified, shall be carried out nearest to the following limits:

- |                                     |                    |
|-------------------------------------|--------------------|
| (i) Length, width and depth (height | ..... 0.01 Mt.     |
| (ii) Areas                          | ..... 0.01 Sq. Mt. |
| (iii) Cubic Contents                | ..... 0.01 Cu.Mt.  |

In recording dimensions of work.

The sequence of length, width and height (depth) or thickness shall be followed.

5. The distance which constitutes lead shall be determined along the shortest partial route and not necessarily the route actually taken. The decision of the Engineer-in-charge in this regard shall be taken as final.
6. Where no lead is specified, it shall mean "all leads".
7. Lift shall be measured from plinth level.

8. Definite particulars covered in the items of work, though not mentioned or elucidated in its specifications shall be deemed to be included therein.
  9. Reference to specifications of materials as made in the detailed specification the items of works is in the form of a designation containing the number of the specification of the material and prefix 'M' e.g. 'M-s'.
  10. Approval of the samples of various materials given by the Engineer-in-charge shall not absolve the contractor from the responsibility of replacing defective material brought on site or materials used in the work found defective at a later date. The contractor shall have no claim to any payment or compensation whatsoever on account of any such materials being rejected by the Engineer-in-charge.
  11. The contract rate of the item of work shall be for the work completed in all respects.
- No collection of materials shall be made before it is got approved from the Engineer-in-charge.
13. Collection of approved materials shall be done at site of work in a systematic manner. Materials shall be stored in such a manner as to prevent damage, deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work.
  14. Materials, if and when rejected by the Engineer-in-charge, shall be immediately removed from the site of work.
  15. No materials shall be stored prior to, during and after execution of a structure in such a way as to cause or lead to damage on overloading of the various components of the structure.
  16. All work shall be carried out in a workmanlike manner as per the best techniques for the particular item.
  17. All tools, templates, machinery and equipment for correct execution of the work as well as for checking lines, levels, alignment of the works during execution shall be kept in sufficient numbers and in good working condition on the site of the work.
  18. The mode procedure and manner of, execution shall be such that it does not cause damage or over-loading of the various components of the structure during execution of after completion of the structure.
  19. Special modes of construction not adopted in general Engineering practice, if proposed to be adopted by the Contractor, shall be considered only if the contractor provides satisfactory evidence that such special mode of construction is safe, sound and helps in speedy construction and completion of work to the required strength and quality. Acceptance of the same by the Engineer-in-charge shall not, however, absolve the contractor of the responsibility of any adverse effects and consequences of adopting the same in the course of execution of completion of the work.
  20. All installations pertaining to water supply and fixtures thereof as well as drainage lines and sanitary fittings shall be deemed to be completed only after giving satisfactory tests by the Contractor.

21. The contractor shall be responsible for observing the rules and regulations imposed under the "Minor Minerals Act", and such other laws and rules prescribed by Government from time to time.
22. All necessary safety measures and precautions (including those laid down in the various relevant Indian Standards) shall be taken to ensure the safety of men, materials and machinery on the works as also of the work itself.
23. The testing charges of all materials shall be borne by the Contractor.
24. Approval to any or the executed items for the work dose not in any way relieve the contractor of his responsibility for the correctness, soundness and strength of the structure as per the drawings and specifications.

## SPECIFICATIONS OF MATERIALS

Note: Latest addition of I.S. code shall be applied.

### M-1 WATER:

Water shall not be salty or brackish and shall be clean, reasonably clear and free from objectionable quantities of silt and traces of oil and injurious alkalis, salts, organic matter and other deleterious material which will either weaken the mortar or concrete or cause efflorescence or attack the steel in R.C.C. Container for transport, storage and handling of water shall be clean. Water shall conform to the standards specified in I.S. 456-2000.

If required by the Engineer-in-charge it shall be tested by comparison with distilled water. Comparison shall be made by means of standard cement tests for soundness, time of setting and mortar strength as specified in I.S. 269-1989. Any indication of unsoundness, change in time of setting by 30 minutes or more or decrease of more than 10 percent in strength of mortar prepared with water sample when compared with the results obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

Water for curing mortar, concrete or masonry should not be too acidic or too alkaline. It shall be free of elements which significantly affect the hydration reaction or otherwise interfere with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces.

Hard and bitter water shall not be used for curing.

Portable water shall generally be found suitable for curing mortar or concrete.

### M-2 LIME:

Lime shall be hydraulic lime as per I.S. 712-1984. Necessary tests shall be carried out as per I.S. 6932 (Parts I to X) 1995.

The following field tests for limes are to be carried out ---

a] A very rough idea can be formed about the type of lime by its visual examination i.e. fat lime bears pure white colour, lime in form of porous lumps of dirty white colour, indicates quick lime, and solid lumps the unburnt lime stone.

b] Acid tests for determining the carbonate content in lime. Excessive amount of impurities and rough determination of class of lime.

Storage shall comply with I.S. 712-1984. The slaked lime, if stored, shall be kept in a weather proof and damp proof shed with impervious floor and sides to protect it against rain, moisture, weather and extraneous materials mixing with it. All lime that has been damaged in any way shall be rejected and all rejected materials shall be removed from site of work.

Field testing shall be done according to I.S. 162-1989 to show the acceptability of materials.

**M-3 CEMENT:**

Cement shall be ordinary Portland slag cement as per I.S. 269-1989 or Portland slag cement as per I.S. 455-1976 and revised latest I.S.

**M-4 WHITE CEMENT:**

The white cement shall conform to I.S. 8042-1989.

**M-5 COLOURED CEMENT:**

Coloured cement shall be with white or grey Portland cement as specified in the item of the work.

The pigments used for Coloured cement shall be of approved quality and shall not exceed 10% of cement used in the mix. The mixture of pigment and cement shall be properly ground to have a uniform colour and shade. The pigments shall have such properties as to provide for durability under exposure to sun-light and weather.

The pigment shall have the property such that it is neither affected by the cement nor detrimental to it.

**M-6 SAND:**

Sand shall be natural sand, clean, well graded, strong, durable and gritty particles free from injurious amounts of dust, clay, kankar nodules, soft or flaky particles, shale, alkali, salts, organic matter, loam, mica or other deleterious substances and shall be got approved from the Engineer-in-charge. The sand shall not contain more than 8% of silt as determined by field tests. If necessary the sand shall be washed to make it clean.

Course Sand: The fineness modulus of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse shall be as under ---

I.S. Sieve Designation	% by weight passing sieve	I.S. Sieve Designation	% by weight passing sieve
4.55 mm	100	600 Micron	30-100
2.36 mm	90-100	300 Micron	5-70
1.18 mm	70-100	150 Micron	0-60

Fine Sand: The fineness modulus shall not exceed 1.0. The sieve analysis of fine sand shall be as under ---

I.S. Sieve Designation	% by weight passing sieve	I.S. Sieve Designation	% by weight passing sieve
4.55 mm	100	600 Micron	40-85
2.36 mm	100	300 Micron	5-50
1.18 mm	75-100	150 Micron	0-10

**M-7 STONE DUST:**

This shall be obtained from crushing hard black tray or equivalent; it shall not contain more than 8% of silt as determined by field test with measuring cylinder. The method of determining silt contents by field test is given as under.

A sample of stone dust to be tested shall be placed without drying in 200 mm measuring cylinder. The quantity of the sample shall be such that it fills the cylinder up to 100 mm mark.



The clean water shall be added up to 150 mm mark. The mixture shall be stirred vigorously and the content allowed to settle for 3 hours.

The height of silt visible as settled layer above the stone dust shall be expressed as percentage of the height of the stone dust below. The stone dust containing more than 8% silt shall be washed so as to bring the silt content within the allowable limit.

The fineness modulus of stone dust shall not be less than 1.80.

#### M-8 STONE GRIT:

Grit shall consist of crushed or broken stone and be hard, strong, dense, durable, clean, of proper gradation and free from skin or coating likely to prevent proper adhesion of mortar. Grit shall generally be cubical in shape and as far as possible flaky elongated pieces shall be avoided. It shall generally comply with the provisions of I.S. 383-1990. Unless a special stone of a particularly quarry is mentioned, grit shall be obtained from the best black trap or equivalent hard stone as approved by the Engineer-in-charge. The grit shall have no deleterious reaction with cement.

The grit shall conform to the following gradation as per sieve analysis:

I.S. Sieve Designation	% by weight passing sieve	I.S. Sieve Designation	% by weight passing sieve
12.50 mm	100%	4.75 mm	2.20%
10.00 mm	80-100%	2.36 mm	0.25%

The crushing strength of grit will be such as to allow the concrete in which it is used to build-up the specified strength of concrete.

The necessary tests for grit shall be carried out as per the requirements of I.S. 2338 (Parts I to VIII) 1988, as per instruction of the Engineer-in-charge. The necessity of test will be decided by the Engineering-in-charge.

#### M-9 CINDER:

Cinder is well burnt furnace residue which has been fused or sintered into lumps of varying sizes.

Cinder aggregates shall be well burnt furnace residue obtained from furnace using coal fuel only. It shall be sound clead and free from clay, dirt, ash or other deleterious matter.

The average grading for cinder aggregates shall be as mentioned below:

20 mm	100
10 mm	86
5.75 mm	70
2.36 mm	52

#### M-10 LIME MORTAR:

LIME: Shall conform to specification M-2. WATER: Water shall conform to specification M-1.

SAND: Sand shall conform to specification M-6.

PROPORTION OF MIX: Mortar shall consist of such proportions of slaked lime and sand as may be specified in the item. The slaked lime and shall be measured by volume.

**PREPARATION OF MORTAR:** Lime mortar shall be prepared by wet process as per I.S. 1625-1971. Power driven mill shall be used for preparation of lime mortar. The slaked lime shall be placed in the mill in an even layer and ground for 180 revolutions with sufficient water. Water shall be added as required during grinding (care being taken not to add more water) that will bring the mixed material to a consistency of stiff paste. Thoroughly wetted sand shall then be added evenly and the mixture ground for another 180 revolutions.

**STORAGE:** Mortar shall always be kept damp, protected from sun and rain till used up, covering it by tarpaulin or open sheds.

**USE:** All mortar shall be used as soon as possible after grinding. It should be used on the day on which it is prepared. But in no case mortar made earlier than 36 hours shall be permitted for use.

#### **M-11 CEMENT MORTAR:**

Water shall conform to specification M-1. Cement shall conform to specification M-3. Sand shall conform to M-5.

**PROPORTION OF MIX:** 11.2.1 Cement and sand shall be mixed to specified proportions, sand being measured by measuring boxes. The proportion of cement shall be by volume on the basis of 50 Kg./Bag of cement being equal to 0.0342 cu.m. The mortar may be hand mixed or machine mixed as directed.

**PREPARATION OF MORTAR:** 11.3.1 In hand mixed mortar, cement and sand in the specified proportions shall be thoroughly mixed dry on a clean impervious platform by turning over at least 3 times or more till a homogeneous mixture of uniform colour is obtained. Mixing platform shall be so arranged that no deleterious extraneous material shall get mixed with mortar or mortar shall flow out. While mixing, the water shall be gradually added and thoroughly mixed to form a stiff plastic mass of uniform colour so that each particle of sand shall be completely covered with a film of wet cement. The water cement ratio shall be adopted as directed.

The mortar so prepared shall be used within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30 minutes.

#### **M-12 STONE COARSE AGGREGATE FOR NOMINAL MIX CONCRETE:**

Coarse aggregate shall be of machine crushed stone of black trap or equivalent and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

The aggregate shall generally be cubical in shape. Unless special stones of particular quarries are mentioned aggregates shall be machine crushed from the best black trap or equivalent hard stone as approved. Aggregate shall have no deleterious reaction with cement. The size of the coarse aggregate for plain cement concrete and ordinary reinforced cement concrete shall generally be as per the table given below. However, in case of reinforced cement concrete the maximum limit may be restricted to 6 mm. Less than the minimum lateral clear distances between bars or 6mm. less than the cover whichever is smaller.

**TABLE**

I.S. Sieve Designation	Percentage Passing for single sized aggregates of nominal size	I.S. Sieve Designation	Percentage Passing for single sized aggregates of nominal size

	40 mm	20 mm	16 mm		40 mm	20 mm	16 mm
80 mm	-	-	-	12.5 mm	-	-	-
63 mm	100	-	-	10.0 mm	0.50	0.20	0.30
40 mm	80-100	100	-	4.75 mm	-	0.50	0.50
20 mm	0-20	85-100	100	2.75 mm	-	-	-
10 mm	-	-	85-100				

NOTE:- This percentage may be varied somewhat by the Engineer-in-charge when considered necessary for obtaining better density and strength of concrete.

The grading test shall be taken in the beginning and at the change of source of materials. The necessary tests indicated in I.S. 383-1990 and I.S. 456-2000 shall have to be carried out to ensure the acceptability. The aggregates shall be stored separately and handled in such a manner as to prevent the intermixing of different aggregates. If the aggregates are covered with dust, they shall be washed with water to make, them clean.

#### M-13 BLACK TRAP OR EQUIVALENT HARD STONE COURSE:

Aggregate for Design Mix Concrete: Course aggregate shall be of machine crushed stone of black trap or equivalent hard stone and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

The aggregates shall generally be cubical in shape, unless special stones of particular quarries are mentioned, aggregates shall be machine crushed from the best, black trap or equivalent hard stones as approved. Aggregate shall have no deleterious reaction with cement.

The necessary tests indicated in I.S. 383-1990 and I.S. 456-2000 shall have to be carried out to ensure the acceptability of the material.

If aggregate is covered with dust it shall be washed with water to make it clean.

#### M-14 BRICK BATS AGGREGATE:

Brick bat aggregate shall be broken from well burnt or slightly over burnt and dense bricks. It shall be homogeneous in texture, roughly cubical in shape, clean and free from dirt of any other foreign material. The brick bats shall be of 40 mm to 50 mm size unless otherwise specified in the item. The under burnt or over burnt brick bats shall not be allowed.

The brick bats shall be measured by volume by suitable boxes as directed.

#### M-15 BRICKS:

The bricks shall be hand or machine moulded and made from suitable soils and kiln burnt. They shall be free from cracks and flaws not nodules of free lime. They shall have smooth rectangular faces with sharp corners and shall be of uniform colour. The bricks shall be moulded with a frog of 100mm x 40 mm and 10mm to 20mm deep on one of its flat sides. The bricks shall not break when dropped on the ground from a height of 600 mm.

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

The size of conventional bricks shall be as under ---

225 x 110 x 75mm.

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

Length : 3.00 mm

Width : 1.50 mm

Height: 1.50 mm

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

#### M-15AFLYASH BUILDING BRICKS :

The Fly ash building bricks shall conform to Grade-5 of IS-13757.

The frog of the 80 to 100 mm x 40 mm x 10 to 20 mm size.

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

The size of conventional brick shall be 230 mm x 110 mm x 70 mm.

Only bricks of one standard size shall use on one work. The following tolerances shall permit in the conventional size adopted in a particular work:

Length : + 4 mm

Width : + 2 mm

Height: + 2 mm

The physical characteristic of bricks shall be as follows:

The minimum compressive strength of Fly ash building bricks shall not be less than 70 Kg/Sq.Cm. and the test shall be conform to IS-3495 (Part-I).

The averages water absorption not more than 20 percentages by weight and the test shall conform to IS-3495(Part-3). Sampling of Fly ash building bricks and criteria for conformity shall be as per I.S.:5454.

#### M-16 STONE:

The stone shall be of the specified variety such as Granite/Trap stone/Quartzite or any other type of good hard stones. The stones shall be obtained only from the approved quarry and shall be hard, sound, durable and free from defects like cavities, cracks, sand holes, flaws, injurious veins, patches of loose or soft materials etc. And weathered portions and other structural defects or imperfections tending to affect their soundness and strength. The stone with round surface shall not be more than 5% of dry weight. When tested in accordance with I.S. 1134-1985. The minimum crushing of the strength of the stone shall be 200 Kg./Sq.Cm. unless otherwise specified.

The samples of the stone to be used shall be got approved before the work is started.

The khanki facing stone shall be dressed by chisel as specified in the item for khanki facing in required shape and size. The face of the stone shall be so dressed that the bushing on the exposed face shall not project by more than 40 mm. from the general wall surface and on face to be plastered it shall not project by more than 19 mm nor shall it have depressions more than 10 mm from the average wall surface.

#### M-17 LATERITE STONE:

Laterite stone shall be obtained from the approved quarry. It shall compact in texture, sound, durable and free from soft patches. It shall have a minimum crushing strength of 100 Kg/Sq.Cm. in its dry condition. It shall not absorb water more 20% of its own weight, when immersed for 25 hours in water. After quarrying, the stone shall be allowed to weather for some time before using in work.

The stone shall be dressed into rectangular blocks so that all faces are free from waviness and unevenness and the edges true and square.

Those type of stone in which white clay occurs should not be used.

Special corner stones shall be provided where so directed.

#### M-18 MILD STEEL BARS/TMT /CRS BARS with Epoxy Coating:

Mild steel bars reinforcement TMT/CRS Bars with Epoxy Coating for R.C.C. work shall conform to I.S. 432 (Part-II)-1982 and shall be of tested quality. It shall also comply with the relevant part of I.S. 456-1978 and revised latest I.S. Code.

All the reinforcement shall be clean and free from dirt, paint, grease, mill scale or loose or thick rust at the time of placing.

For the purpose of payment the bar shall be measured correct up to 10 mm length and weight payable worked out as per the rate specified below:

	6 mm	0.22 Kg/Rmt.
	8 mm	0.38 Kg/Rmt.
	10 mm	0.62 Kg/Rmt.
	12 mm	1.89 Kg/Rmt.
	14 mm	1.21 Kg/Rmt.
	16 mm	1.58 Kg/Rmt.
	18 mm	2.00 Kg/Rmt.
	20 mm	2.47 Kg/Rmt.
	22 mm	2.98 Kg/Rmt.
	25 mm	2.85 Kg/Rmt.
	28 mm	4.38 Kg/Rmt.
	32 mm	6.31 Kg/Rmt.
	36 mm	7.31 Kg/Rmt.
	40 mm	9.86 Kg/Rmt.

#### M-19 HIGH YIELD STRENGTH STEEL DEFORMED BARS:

High yield strength steel deformed bars shall be either cold twisted or hot rolled and shall conform to I.S. 1739-1978 and I.S. 1139-1966 respectively.

Other provision and requirements shall conform to specification no. M-18 for Mild Steel Bars.

#### M-20 HIGH TENSILE STEEL WIRES:

The high tensile wires for use in prestressed concrete shall conform to I.S. 2090-1983.

The tensile strength of the high tensile steel bars shall be as specified in the item. In absence of the given strength and minimum strength shall be taken as per para 6-1 of the I.S. 1785-1962. Testing shall be done as per I.S. requirements.

The high tensile steel shall be free from loose mill scale, rust, oil, grease or any other harmful matter. Cleaning of steel bars may be carried out by immersion in solvent solution, wire brushing or passing through a pressure box containing carborundum.

The high tensile wire shall be obtained from manufactures in coils having diameter not less than 350 times the diameter of wire itself so that wire springs back straight on being uncoiled.

#### M-21 MILD STEEL BINDING WIRE:

The mild steel wire shall be of 1.63mm or 1.22mm (16 or 18 gauge) diameter and shall conform to I.S. 280-1978.

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

#### M-22 STRUCTURAL STEEL:

All structural steel shall conform to I.S. 226-1975. The steel shall be free from the defects mentioned in I.S. 226-1975 and shall have a smooth finish. The material shall be free from loose mill scale, rust pits or other defects affecting the strength and durability. Rivet bars shall conform to I.S. 1148-1992.

When the steel is supplied by the contractor test certificates of the manufacturers shall be obtained according to I.S. 226-1975 and other relevant Indian Standards.

#### M-23 GALVANISED IRON SHEETS:

The galvanized iron sheets shall be plain or corrugated sheets of gauge as specified in item. The G.I. Sheets shall conform to I.S. 277-1992. The sheets shall be undamaged in carriage and handling either by rubbing off of zinc coating or otherwise. They shall have clean and bright surface and shall be free from dents, bends, holes, rust or white powdery deposit.

The length and width of G.I. sheets shall be as directed as per site condition.

#### M-23-A G.I. VALLEYS GUTTER, RIDGES:

The G.I. ridges and hips shall be of plain galvanized sheets class-3 of the thickness as specified in item. These shall be 600 mm width and properly bent up to shape without damage to the sheets in process of bending.

Valleys gutters and flashings shall be also of galvanized sheet of thickness as specified in item. Valleys shall be 900 mm. Wide overall and flashing shall be 380 mm wide over all. They shall be bent to the required shape without damage to the sheet in the process of bending.

#### M-24 ASBESTOS CEMENT SHEETS :

Asbestos cement sheets plain, corrugated or semi-corrugated shall conform to I.S. 459-1970. The thickness of the sheets shall be as specified in the item. The sheet shall be free from all defects such as cracks, holes, deformities, chipped edges or otherwise damaged.

Ridges and Hips:

Ridges and hips shall be of same thickness as that of A. C. sheets. The types of ridges shall be suitable for the type of sheets and locations.

Other accessories to be used in roof such as flashing pieces, eaves filler pieces; valley gutters, north light and ventilator curves, barge boards etc. shall be of standard manufacture and shall be suitable for the type of sheets and location.

#### M-25 MANGALORE PATTERN ROOF TILES :

The Mangalore pattern tiles shall conform to I.S. 654-1992 for Class 'AA' or 'A' type as specified in item. Samples of the tiles to be provided shall got approved from the Engineer-in-charge. Necessary tests shall be carried out as directed.

#### M-26 SHUTTERING:

The shuttering shall be either of wooden planking of 30mm minimum thickness with or without steel lining or of steel plates stiffened by steel angles. The shuttering shall be supported on battens and beams and props of vertical ballies properly cross bracked together so as to make the centering rigid. In places of Ballie props, bricks pillar of adequate section built in mud mortar may be used.

The form work shall be sufficiently strong and shall have camber, so that it assumes correct shape after deposition of the concrete and shall be able to resist forces caused by vibration of concrete, live load of men working with it and other incidental loads associated with it. The shuttering shall have smooth and even surface and its joints shall not permit leakage of cement grout.

If at any stage of work during or after placing concrete in the structure, the form work sags or bulges out beyond the required shape of the structure, the concrete shall be removed and work redone with fresh concrete and adequately rigid form work. The complete form work shall be got inspected by and approved from the Engineer-in-charge, before the reinforcement bars are placed in position.

The props shall consists of bullies having 100mm minimum diameter measured at mid length and 80mm at thin end and shall be placed as per design requirement. These shall rest squarely on wooden sole plates 40 mm. Thick and minimum bearing area of 0-10 Sq.M. laid on sufficiently hard base.

Double wedges shall further be provided between the sole plate and wooden props so as to facilitate tightening and easing of shuttering without jerking the concrete.

The timber used in shuttering shall not be so dry so as to absorb water from concrete and swell or bulge nor do so green or wet so as to shrink after erection. The timber shall be properly sawn and planed on the sides and the surface coming in contact with concrete. Wooden form work with metal sheet lining or steel plates stiffened by steel angles shall be permitted.

As far as practicable, clamps shall be used to hold the forms together and use of nails and spikes avoided.

The surface of timber shuttering that would come in contact with concrete shall be well wetted and coated with soap solution before the concreting is done. Alternatively coat of raw linseed oil or oil of approved manufacture may be applied in place of soap solution. In case of steel shuttering either soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Under no circumstances black or burnt oil shall be permitted.



The shuttering for beams and slabs shall have camber of 4mm per meter (1 in 250) or as directed by the Engineer-in-charge so as to offset the subsequent deflection. For cantilevers, the camber at free end shall be 1/50 of the projected length or as directed by the Engineer-in-charge.

#### M-27 EXPANSION JOINTS - PREMOULDED FILLER:

The item provides for expansion joints in R.C.C. frame structures for internal joints, as well as exposed joints, with the use of pre-moulded bituminous joint filler.

Pre-moulded bituminous joint filler i.e. performed strip of expansion joint filler shall not get deformed or broken by twisting, bending or other handling when exposed to atmospheric condition. Pieces of joint filler that have been damaged shall be rejected.

Thickness of the pre moulded joint filler shall be 25 mm unless otherwise specified.

Pre-moulded bituminous joint filler shall conform to 1.5 1838-1961.

#### M-28 EXPANSION JOINTS - COPPER STRIPS AND HOLD FASTS:

The item provides for expansion joints in R.C.C. frame structure for internal joints as well as for exposed joints with the use of necessary copper strip and holdfasts.

Copper sheet shall be 1.25 mm thick and of 1.25 mm with 'U' shape in the middle, copper strip shall have holdfast of 3 mm diameter copper rod fixed to the plate soldered on strip at intervals of about 30 cm. or as shown in the drawing or as directed. The width of each flange (horizontal side) of the copper plate to be embedded in the concrete work shall be 25 mm Depth of 'U' to be provided in the expansion joint, in the copper plate shall be of 25 mm.

#### M-29 NON-TEAK WOOD:

The non-teak wood shall be chemically treated, seasoned as per I.S. Specifications and of good quality. The type of wood shall be got approved before collecting the same on site. Fabrication of wooden members shall be started only after approval. For this purpose wood of Bio, Kalai, Sires, Saded, Behda, Jamun, Sisoo will be used for door frames whereas only Kalai, Siras, Halda, Kalam etc. will be permitted for shutters after proper seasoning and chemical treatment.

The non-teak wood shall be free from large, loose dead or cluster knots, flows, shakes, warps, bends, or any other defect. It shall be uniform in substance and of straight fibers as far as possible. It shall be free from rots, decay, harmful fungi and other defects of similar nature which will affect the strength, durability or its usefulness for the purpose for which it is required. The color of the wood shall be uniform as far as possible. The scantlings, planks etc. shall be sawn in straight lines and planes in the direction of grain and of uniform thickness.

The department will use the Agency to produce a certificate from the Forest Department in the event of a dispute and the decision of the Department shall be final and binding to the contractor.

The tolerance in the dimension shall be allowed at 1.5 mm. per face to be planed.

#### M-30 WOODEN FLUSH DOOR SHUTTERS (SOLID CORE):

The solid core type flush door shutters shall be of decorative or non-decorative type as specified in the drawing. The size and thickness of the shutter shall be as specified in drawings or as directed. The timber species for core shall be used as per I.S. 2202-(Part-I) - 1980. The timber shall be free from decay and insect attack. Knots and knot holes less than half the



width of cross-section of the members, pitch streaks and harmless pin holes shall be permissible except in the exposed edges of the core members.

The commercial plywood, cross bands shall conform to I.S. 303-1275.

The face panel of the shutters shall be formed by gluing by the hot press process on both faces of the core with either plywood or cross bands, and face veneers. The lipping, rebating, opening of glazing, venetion etc. shall be provided if specified in the drawing.

All edges of the door shutters shall be square. The shutters shall be free from twist or warp in its plane. Both faces of the shutters shall be sand papered to smoot even texture.

The shutters shall be tested for ---

- i End Immersion Test: The test shall be carried out as per I.S. 2202 (Part-I) 1980. There shall be no delamination at the end of the test.
- ii Knife Test: The face panel when tested in accordance with I.S. 1659-1979 shall pass the test.
- iii Glue Adhesion Test: The flush door shall be tested for glue adhesive test in accordance with I.S. 2202 (Part-I)-1980. The shutters shall be considered to have passed the test if no delamination occurs in the glue lines in the plywood and if no single delamination more than 80 mm. in length and more than 3 mm. in depth has occurred in the assembly glue lines between the plywood face and the style and rail. Delamination at the corner shall be measured continuously around the corner. Delamination at the knots knot, hole and other permissible wood defects shall not be considered in assessing the sample.

The tolerance in size of solid core type flush doors under:

In nominal thickness # 1.2 mm. In nominal height # 3 mm. The thickness of the shutters shall be uniform throughout with a permissible variation of not more than 0.8 mm. when measured at any two points.

#### M-31 ROLLING SHUTTERS:

The rolling shutters shall conform to I.S.6248-1979. Rolling shutters shall be supplied of specified type with accessories. The size of the rolling shutters shall be specified in the drawings. The shutters shall be constructed with interlocking lath sections formed from cold rolled steel strips not less than 0.9 mm. thick and 80 mm. wide for shutters up to 3.5 m. Width not less than 1.25 mm. thick and 80 mm. wide for shutters 3.5 m. in width and above unless otherwise specified.

Guide channels shall be of mild steel deep channel section and of rolled pressed or built up (fabricated) joint less construction. The thickness of sheet used shall not be less than 3.15 mm.

Hood covers shall be made of M.S. sheets not less than 0.92 mm. thick. For shutters having width 3.5 mts. and above, the thickness of M.S. sheet for the hood covers shall be not less than 1.25 mm.

The spring shall be of best quality and shall be manufactured from tested high tensile spring steel wire or strip of adequate strength to balance the shutters in position. The spring pipe

shaft etc. shall be supported on strong M.S. or malleable C.I. brackets. The brackets shall be fixed on the or under the lintel as specified with rawl plugs and screws bolts etc.

The rolling shutters shall be of self-rolling type up to 8 sq.m. clear area without ball bearing and up to 12 sq.m. clear area with ball bearing. If the rolling shutters are of larger then gear operated type shutters shall be used.

The locking arrangement shall be provided at the bottom of shutter at both ends. The shutters shall be opened from outside.

The shutters shall be completed with door suspension, shafts, locking arrangements, pulling hooks, handles and other accessories.

#### M-32 COLLAPSIBLE STEEL GATE:

The collapsible steel gate shall be in one or two leaves and size as per approved drawings or as specified. The gate shall be fabricated from best quality mild steel channels, flats etc. Either steel pulleys or ball bearings shall be provided in every double channel. Unless otherwise specified the particulars of collapsible gate shall be as under ---

i Pickets: These shall be of 20 mm. M.S. channels of heavy sections unless otherwise shown on drawings. The distance centre to centre of pickets shall be 12 cms. with an opening of 10 cms.

ii Pivoted M.S. flats shall be 20 mm. x 6 mm.

iii Top and bottom guides shall be from tee or flat iron of approved size.

if The fittings like stoppers, fixing hold fasts, locking cleats, brass handles and cast iron rollers shall be of approved design and size.

#### M-33 GLASS:

All glass shall be of the best quality, free from specks, bubbles, smokes, veins, air holes blisters and other defects. The kind of glass to be used shall be as mentioned in the item or specification or in the special provisions or as shown in detailed drawings. Thickness of glass panes shall be uniform. The specifications for different kinds of glass shall be as under ---

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##### Sheet Glass:

In the absence of any specified thickness or weight in the item or detailed specifications of the item of work, sheet glass shall be weighing 7.5 Kg./Sq.m. for panes up to 600 mm. x 600 mm.

For panes larger than 600 mm. x 600 mm. and up to 800 mm. x 800 mm. glass weighing not less than 8.75 Kg./Sq.m. shall be used. For bigger panes up to 900 mm. x 900 mm. glass weighing not less than 11.25 Kg./Sq.m. shall be used.

Sheet glass shall be patent flattened glass of best quality and for glassing and framing purposes shall conform to I.S.761-1960. Sheet glass of the specified colors shall be used, if so shown on detailed drawings or so specified. For important buildings and for panes with any dimensions over 900 mm. plate glass of specified thickness shall be used.

##### Plate Glass:

When plate glass is specified it shall be "Polished Patent Plate Glass" of best quality. It shall have both the surface ground flate and parallel and polished to obtain clear undisturbed

vision and reflection. The plate glass shall be of the thickness mentioned in the item or as shown in the detailed drawing or as specified. In the absence of any specified thickness, the thickness of plate glass to be supplied shall be 6 mm. and a tolerance of 0.20 mm. shall be admissible.

#### Obscured Glass:

This type of glass transmits light so that vision is partially or almost completely obscured. Glass shall be plain rolled, figured, ribbed or fluted, or frosted glass as may be specified as required. The thickness and type of glass shall be as per details on drawings or as specified or as directed.

#### Wired Glass:

Glass shall be with wire netting embedded in a sheet of plane glass. Electrically welded 13 mm. Georgian square mesh shall be used. Thickness of glass shall not be less than 6 mm. wired glass shall be of type and thickness as specified.

### M-34 FIXTURES & FASTENINGS:

#### General ---

- i The fixtures and fastenings, that is, butt, hinges, tee and strap hinges, sliding door bolts, tower bolts, door latch, bath-room latch, handles, door stoppers, casement window fasteners, casement stays and ventilator catch shall be made of the metal as specified in the item or its specifications.
- ii They shall be of iron, brass, aluminum, chromium plated iron, chromium plated brass, copper oxidized iron, copper oxidized brass or anodized aluminum as specified.
- iii The fixtures shall be heavy, medium or light type. The fixtures and fastenings shall be smooth finished and shall be such as will ensure ease of operation.
- if The samples of fixtures and fastenings shall be got approved as regards quality and shape before providing them in position.
- v Brass and anodized aluminum fixtures and fastenings shall be bright finished.

#### Holdfasts:

- i Holdfasts shall be made from mild steel flat 30 cm. length and one of the holdfasts shall be bent at right angle and two nos. of 6 mm. dia. holes shall be made in it for fixing it to the frame with screws. At the other end, the holdfast shall be forked and bent at right angles in opposite directions.

#### Butt Hinges:

- i Railway standard heavy type butt hinges shall be used when so specified.
- ii Tee and strap hinges shall be manufactured from M.S. sheet.

#### Sliding Door Bolts (Aldrops):

- i The aldrops as specified in the item shall be used and shall be got approved.

#### Tower Bolts (Barrel Type):

- i Tower bolts as specified in the item shall be used and shall be got approved.

#### Door Latch:

- i The size of door latch shall be taken as the length of latch.

#### Bathroom Latch:

- i Bathroom latch shall be similar to tower bolt.

#### Handle:

- i The size of the handles shall be determined by the inside grip length of the handles. Handles shall have a base plate of length 50 mm. more than the size of the handle.

#### Door Stoppers:

- i Door stoppers shall be either floor door stopper type or door catch type. Floor stopper shall be of overall size as specified and shall have a rubber cushion.

#### Door Catch:

- i Door catch shall be fixed at a height of about 900 mm. from the floor level such that one part of the catch is fitted on the inside of the shutter and other part is fixed in the wall with necessary wooden plug arrangements for appropriate fixity. The catch shall be fixed 20 mm. inside the face of the door for easy operation of catch.

#### Wooden Door Stop with Hinge:

- i Wooden door stop of size 100 mm. x 60 mm. x 40 mm. shall be fixed on the door frame with a hinge of 75 mm. size and at a height of 900 mm. from the floor level. The wooden doorstop shall be provided with 3 coats of approved oil paint.

#### Casement Window Fastener:

- i Casement window fastener for single lead window shutter shall be left or right-handed as directed.

#### Casement Stays (Straight Peg. Stay):

- i The stays shall be made from a channel section having three holes at appropriate position so that the window can be opened either fully or partially as directed. Size of the stay shall be 250 mm. to 300 mm. as directed.

#### Ventilator Catch:

- i the pattern and shape of the catch shall be as approved.

#### Pivot:

- i The base and socket plate shall be made from minimum 3 mm. thick plate, and projected pivot shall not be less than 12 mm. dia. and 12 mm. length and shall be firmly riveted to the base plate case of iron pivot and in single piece base in the case of brass pivot.

#### M-35 PAINTS:

##### Oil Paints:

Oil paints shall be of the specified color and shade, and as approved. The ready mixed paints shall only be used. However, if ready mixed paint or specified shade or tint is not available white ready mixed paint with approved strainer will be allowed. In such a case, the contractor shall ensure that the shade of the paint so allowed shall be uniform.

All the paints shall meet with the following general requirements ---

- i Paint shall not show excessive setting in a freshly opened full can and shall easily be Redis pressed with paddle to a smooth homogeneous state. The paint shall show no curdling, livering, caking or color separation and shall be free from lumps and skins.
- ii The paint as received shall brush easily, possess good leveling properties and show no running or sagging tendencies.
- iii The paint shall not skin within 48 hours in a three quarters filled closed container.
- if The paint shall dry to a smooth uniform finish free from roughness, grit un evenness and other imperfections.

Ready mixed paid shall be used exactly as received from the manufacturers and generally according to their instructions and without any admixtures whatsoever.

#### Enamel Paints:

The enamel paint shall satisfy in general requirements as mentioned in specification of oil paints. Enamel paints shall conform to I.S. 2933-1975.

#### M-36 FRENCH POLISH:

The French polish of required tint and shade shall be prepared with the below mentioned ingredients and other necessary materials :

- i Denatured spirit of approved quality.
- li Shellac.
- lii Chandras.
- lv Pigment.

The French polish so prepared shall conform to I.S. 348-1968.

#### M-37 MARBLE CHIPS FOR MARBLE MOSAIC TERRAZZO:

The marble chips shall be of approved quality and shades. It shall be hard, sound, dense and homogeneous in texture with crystalline and coarse grains. It shall be uniform in color and free from stains, cracks, decay and weathering.

The size of various colors of marble chips ranging from the smallest up to 20 mm. shall be used where the thickness of top wearing layers is 6 mm. in size. The marble chips of approved quality and colors only as per grading as decided by the Engineer-in-charge shall be used for marble mosaic tiles or works.

The marble chips shall be machine crushed. They shall be free from foreign matter, dust etc. Except as above the chips shall conform to I.S. 2114-1962.

#### M-38 FLOORING TILES:

##### A Plain Cement Tiles -

The plain cement tiles shall be of general-purpose type. These are the tiles in the manufacture of which no pigments are used. Cement used in the manufacture of tiles shall be as per Indian Standards.

The tiles shall be manufactured from a mixture of cement and natural aggregates by pressure process. During manufacture, the tiles shall be subjected to a pressure of not less than 140 Kg./Sq.cm. The proportion of cement to aggregate in the backing of the tiles shall be not

leaner than 1:3 by weight. The wearing face, though the tiles are of plain cement, shall be provided with stone chips of 1 to 2 mm size. The proportion of cement to the marble chips aggregate in the wearing layer of the tiles shall be three parts of cement to one part of chips by weight. The minimum thickness of wearing layer shall be 3 mm. The color and texture of wearing layer shall be uniform throughout its face and thickness. On removal from mould, the tiles shall be kept in moist condition continuously at least for seven days and subsequently, if necessary, for such long period as would ensure their conformity to requirements of I.S. 1237-1980 requiring resistance to wear and water absorption.

The wearing face of the tiles shall be plain, free from projections, depressions and cracks and shall be reasonably parallel to the back face of the tile. All angles shall be right angle and all edges shall be sharp and true.

The tile sizes shall generally be square shape 24.85cm. x 24.85cm. or 25cm. x 25cm. The thickness of the tiles shall be 20 mm.

The tolerance of length and breadth shall be plus or minus 1 mm. The tolerance on thickness shall be plus 5 mm.

The tiles shall satisfy the tests as regards transverse strength, resistance to wear and water absorption as per I.S. 1237-1980.

#### B Plain Coloured Tiles:

These tiles shall have the same specifications as for plain cement tiles as per (A) above except that they shall have a plain wearing surface wherein pigments are used. They shall conform to I.S. 1237-1980.

The pigment used for coloring cement shall not exceed 10% by weight of cement used in the mix. The pigments, synthetic or otherwise, used for coloring tiles shall have permanent color and shall not contain materials detrimental to concrete.

The color of the tiles shall be specified in the item or as directed.

#### C Marble Mosaic Tiles:

These tiles have the same specifications as per plain cement tiles except the requirements as stated below ---

The marble mosaic tiles shall conform to I.S. 1237-1980. The wearing face of the tiles shall be mechanically ground and filled. The wearing face of tiles shall be free of projections, depressions and cracks and shall be reasonably parallel to the back face of the tiles. All angles shall be right angles and all edges shall be sharp and true.

Chips used in the tiles be from smallest up to 20 mm. size. The minimum thickness of wearing layer of tiles shall be 6 mm. For pattern of chips to be laid on the wearing face, a few samples with or without their full size photographs as directed shall be presented to the Engineer-in-charge for approval.

Any particular samples, if found suitable shall be approved by the Engineer-in-charge, of he may ask for particular sized chips to be more or less in the sample presented.

The samples shall have to be made by the contractor till a suitable sample finally approved for use in the work. The contractor shall ensure that the tiles supplied for the work shall be in

conformity with the approved sample only, in terms of its dimensions, thickness of backing layer and wearing surface, materials, ingredients, color shade, chips, distribution etc. required.

The tiles shall be prepared from cement conforming to Indian Standards or Coloured Portland cement generally depending upon the color of tiles to be used or as directed.

#### D Chequered Tiles:

Chequered tiles shall be plain cement tiles or marble mosaic tiles. The former shall have the same specification as per (A) above and the latter as per marble mosaic tiles as per (C) except as mentioned below.

The tiles shall be of nominal size of 250mm x 250mm or as specified. The centre-to-centre distance of the Chequer shall not less than 25mm. and not more than 50mm. The overall thickness of the tile shall be 28mm.

The grooves in the Chequer shall be uniform and straight. The depth of the grooves shall not be less than 3mm. The Chequered tiles shall be plain, Coloured or mosaic as specified. The thickness of the upper layer measured from the top of the Chequer shall not be less than 6mm. The tiles shall be given the first grinding with machine before delivery to site.

Tiles shall conform to relevant I.S. 1237-1980.

#### E Chequered Tiles for Staircases:

The requirements of these tiles shall be the same as Chequered tiles as per (D) above except in following respects:

- i the length of a tile including nose shall be 330 mm.
- ii the minimum thickness shall be 28 mm.
- iii the nosing shall have also the same wearing layer at the top.
- iv the nosing edge shall be rounded.
- v The front portion of the tile for a minimum length of 75mm. from and including the nosing shall have grooves running parallel to nosing and at centers not exceeding 25mm. Beyond that the tiles shall have normal Chequer pattern.

#### M-39 ROUGH KOTAH STONE:

The kotah stones shall be hard, even, sound and regular in shape and generally uniform in color. The color of the stone shall generally be green. Brown Coloured stones shall not be allowed for use. They shall be without any soft veins, cracks or flaws.

The size of the stones to be used for flooring shall be size 600 mm. x 60 mm. and/or size 600 mm. x 450 mm. as directed. However, smaller sizes will be allowed to be used to the extent of maintaining the required pattern. Thickness shall be as specified.

Tolerance of minus 30 mm. on account of chisel dressing of edges shall be permitted for length as well as breadth. Tolerance in thickness shall be plus 3mm.



The edges of stones shall be truly chiseled, and table rubbed with coarse sand before paving. All angles and edges of the stone shall be true, square and free from chipping and the surface shall be true and plain.

When machine cut edges are specified, the exposed edges and the edges at joints shall be machine cut. The thickness of the exposed machine cut edges shall be uniform.

#### M-40 POLISHED KOTAH STONES:

Polish kotah stone shall have the same specifications as per rough kotah stone except as mentioned below.

The stone shall have machine polished smooth surface. When brought on site, the stones shall be single polished or double polished depending upon its use. The stones for paving shall generally be single polished. the stones to be used for dedo, skirting, platforms sink, veneering, sills, steps etc. where machine polishing after the stones are fixed in situ is not possible shall be double polished.

#### M-41 WHITE GLAZED TILES:

The tiles shall be of best quality as approved by the Engineer-in-charge. They shall be flat and true to shape. They shall be free from cracks, crazing, spots, chipped edges and corners. The glassing shall be of uniform shade.

The tiles shall be of nominal size of 150mm. x 150mm. unless otherwise specified. The maximum variation from the stated sizes, other than the thickness of tile, shall be plus or minus 1.5mm. The thickness of the tile shall be 6mm. except as above the tiles shall conform to I.S. 777-1970.

#### M-42 GALVANISED IRON PIPES AND FITTINGS:

Galvanized iron pipe shall be of the medium type and of required diameter and shall comply with I.S. 1239-1979.

The specified diameter of the pipes shall refer to the inside diameter of the bore. Clamps, screw and all galvanized iron fittings shall be of the standard 'R' or equivalent make.

#### M-43 BIB COCK AND STOP COCK:

A bib cock is a draw off tap with a horizontal inlet and a free outlet. A stop cock is a valve with a suitable means of connection for insertion in a pipe line for controlling or stopping the flow.

They shall be of screw down type and or brass chromium plated and of diameter as specified in the description of the item. They shall conform to I.S. 781-1977 and they shall be of best Indian make. They shall be polished bright.

The minimum finished weight of bib cock and stop shall be as given below ---

Dia.	Bib Cock	Stop Cock	Dia.	Bib Cock	Stop Cock
8 mm.	0.25 Kg.	0.25 Kg.	15 mm.	0.40 Kg.	0.40 Kg.
10 mm.	0.30 Kg.	0.35 Kg.	20 mm.	0.75 Kg.	0.75 Kg.

#### M-44 GUN METAL WHEEL VALVE:



The gun metal wheel valve shall be of approved quality. These shall be of gun metal fitted with wheel and shall be of gate valve opening full way and of the size as specified. These shall conform to I.S. 778-1971.

**M-45 WHITE GLAZED PORCELAIN WASH BASIN:**

Wash basin shall be of white porcelain first quality best Indian make and it shall conform to I.S. 2556-(Part-IV)-1972 and I.S. 771-1979. The size of the wash basin shall be as specified in the item. The wash basin shall be of one piece construction with continued over-flow arrangements. All internal angles shall be designed so as to facilitate cleaning. Wash basin shall have single tap hole or two holes as specified. Each basin shall have a circular waste hole which is either rebated or beveled internally with 65 mm. dia. at top and 10 mm. depth to suit the waste fitting. The necessary stud slot to receive the bracket on the underside of the basin shall be provided. Basin shall have an internal soap holder recess which shall fully drain into the bowl.

White glazed pedestal of the quality and color as that of the basin shall be provided where specified in the item. It shall be completely recessed at the back for reception of supply and water pipe. It shall be capable of supporting the basin rigidly and adequately and shall be so designed as to make the height from the floor to top of the rim of basin 750 mm. to 800 mm. as directed.

**M-46 BITUMEN FELT FOR WATER PROOFING AND DAMP PROOFING:**

Bitumen felt shall be on the fiber bases and shall be of type 2, self-finished felt grade-2 and shall conform to I.S. 1322-1970.

**M-47 MARBLE SLAB:**

Marble slabs shall be white or of other color and of best quality as approved by the Engineer-in-charge. Slab shall be hard, close, uniform and in texture. They shall also be free of defects and cracks. The surface shall be machine polished to an even and perfectly plane surface and the edges, machine cut true and square. The rear face shall be rough enough to provide key for the mortar.

Marble slabs with natural veins, if selected shall have to be laid as per the pattern given by the Engineer-in-charge. Size of the slabs shall be minimum 450mm. x 450mm. and preferably 600mm. x 600mm. However, smaller sizes will be allowed to be used to the extent of maintaining required pattern.

The slab shall not be thinner than the specified thickness at its thinnest part. A few specimen of finished slab to be used shall be deposited by the contractor in the office for reference.

Except as above, the marble slabs shall conform to I.S.1130-1969 or as revised from time to time.

**M-48 INDIAN TYPE WATER CLOSET:**

The Indian type white glazed water closet of first class quality, size as specified in the item and conforming to I.S. 771-1979 and I.S. 2556-(Part-II)-1981. Each pan shall have integral flushing ring of suitable type with adequate number of holes all around as directed to have satisfactory flushing. It shall also have an inlet at back of front for connecting flush pipe as directed. The inside of the bottom of the pan shall have sufficient slope from the front towards the outlet and the surface shall be uniform and smooth. Pan shall be provided with 100 mm. diameter 'P' or 'S' trap with approximately 50 mm. water seal and 50 mm. diameter vent horn.

**M-48(A) FOOTRESTS:**

A pair of white glazed earthen ware rectangular foot rests of minimum size 250 mm. x 130 mm. x 20 mm. shall be provided with the water closet.

**M-49 GLAZED EARTHEN WARE SINK:**

The glazed earthenware sink shall be of specified size, color and quality. The sink shall conform to I.S. 771-Part-II-1979. The brackets for sinks shall conform to I.S. 775-1970.

The pipes shall conform to I.S. 1239-Part-I-1973 and I.S.404-1962 for steel and lead pipes respectively. 32 mm. brass waste coupling of standard pattern with brass chain and rubber plug shall be provided with sink.

**M-50 GLAZED EARTHEN WARE LIPPED TYPE FLAT BACK URINAL/CORNER TYPE URINAL:**

The lipped type urinal shall be flat back or corner type as specified in the item and shall conform to I.S. 771-1979. It shall be of best Indian make and size as specified and approved by the Engineer-in-charge. The flat back or corner type urinal must be of first class quality, free from any defects, cracks etc.

**M-51 FLUSH COCK:**

Half turn flush cock (heavy weight) shall be of gun metal chromium plated of diameter as specified in the description of the item. The flush cock shall conform to relevant Indian Standards.

**M-52 NAHNI TRAP:**

Nahni trap shall be of cast iron and shall be sound and free from porosity or other defects which affect serviceability. The thickness of the base metal shall not be less than 6.5 mm. The surface shall be smooth and free from crack, chips and other flaws or any other kind of defects which affect serviceability. The size of Nahni trap shall be as specified and shall be of self-cleansing design.

The Nahni trap shall be of quality approved by the Engineer-in-charge and shall generally conform to the relevant Indian Standards.

The Nahni trap provided shall be with deep seal, minimum 50 mm. except at places where trap with deep seal cannot be accommodated. The cover shall be cast iron. Perforated cover shall be provided on the trap of appropriate size.

**M-53 GULLY TRAP:**

Gully trap shall conform to I.S. 651-1960. It shall be sound, free from defects such as fire cracks or hair cracks. The glaze of the traps shall be free from crazing. They shall give a sharp clear note when struck with light hammer. There shall be no broken blisters.

The size of the gully trap shall be as specified in the item.

Each gully trap shall have one C.I. grating of square size corresponding to the dimensions, of inlet of gully trap. It will also have a water tight C.I. cover with frame inside dimensions 300mm. x 300mm. the cover weighing not less than 4,53 Kg. and the frame not less than 2.72 Kg. The grating cover and frame shall be of sound and good casting and shall have truly square machined seating faces.

**M-54 GLAZED STONE WARE PIPE AND FITTINGS:**

The pipes and fittings shall be of best quality as approved by the Engineer-in-charge. The pipe shall be of best quality manufactured from stone-ware of fire clay, salt glazed thoroughly burnt through the whole thickness, of a close even texture, free from air blows, fire blisters, cracks and other imperfections, which affect the serviceability. The inner and outer surfaces shall be smooth and perfectly glazed. The pipe shall be capable to withstand pressure of 1.5 m. lead without showing signs of leakage. The thickness of the wall shall not be less than (1/12)th of the internal dia. The depth of socket shall not be less than 38 mm. The socket shall be sufficiently large to allow a joint of 6 mm. around the pipe. The pipes shall generally conform to relevant I.S. 651-1980.

#### M-55 CRYDON BALL VALVE:

Ball valve of screwed type including polythene float and necessary lever etc. shall be of the size as mentioned in the description of item and shall conform to I.S. 1703-1977.

#### M-56 CRACKSEAL:

Crack seal manufactured by Chemistic/Chemisol Indian Ltd., is an acrylic base ready application compound.

#### M-57 BARBED WIRE:

The barbed wire shall be of galvanized steel, and it shall generally conform to IS: 278. The barbed wire shall be of type I, whose nominal diameter for line wire, shall be 2.5 mm and for point wire shall be 2.24mm. The nominal distance between two barbs shall be 75mm, unless otherwise specified in the item. The barbed wire shall be formed by twisting together two lines wires, one of them containing the barbs. The size of line and point wires and barbs spacing shall be as specified above. The permissible deviation from the nominal diameter of the line wire and point wire shall not exceed +0.08 mm.

The barbs shall carry four points and shall be formed by twisting two-point wires, each two turns, lightly round one line wire, making altogether four complete turns. The barbs shall be so finished that the four points are set locked at right angle to each other. The barbs shall have length of not less than 13 mm and not more than 18 mm. The points shall be sharp and cut an angle not greater than 350 of the axes of the wire, forming the barbs.

The line and point wires shall be of circular section, free from scale and other defects and shall be uniformly galvanized. The line wire shall be in continuous length and shall not contend any weld other than those in the rod before it is drawn. The distance between two successive splices shall not less than 15m.

The length per 100kg of barbed wire, IS type I, shall be as under:

Nominal 1000m.

Minimum 934 m.

Maximum 1066 m.

#### M-58 ASBESTOS CEMENT SHEET

Asbestos cement sheet plain, corrugated or semi corrugated and curved shall be from Everest or equivalent as approved by the Architect or Engineer-in-charge. It shall confirm to IS :459. The thickness of the sheet shall be as specified in the item. The sheet shall be free from all the defects such as cracks, holes, deformation, chipped edge or otherwise damaged.

It shall manufacture by reinforcing Asbestos in cement, in such a manner that every fiber is covered with fine particles of cement to ensure maximum strength. It shall be alkali resistance and anti-corrosive. It should not break during transportation, handling, laying etc. and should be non-destructible, non-inflammable and non-organic. It shall have high tensile strength and high slenderness ratio.

The minimum nominal thickness of sheets shall be 6mm, having covering efficiency of about 90% and weight 1518 kg/ cm<sup>2</sup>. The sheet shall be free from all defects such as cracks, holes, deformation, chipped edge or otherwise damaged. The permissible bending stress shall be 130 kg/ cm<sup>2</sup>

The accessories shall be same thickness that of AC sheets. They shall be suitable for all types of sheets and locations. They also shall be from approved manufacturer and shall be free from any defects. The fixing of AC sheets and accessories shall conform to IS: 730.

#### Ridges & Hips:

Ridges & hips shall be of same thickness as that of AC sheets. The different types of ridges shall be suitable for its corresponding type of sheets and locations.

Other accessories to be used in roof such as flashing piece, coves, filler pieces, valley gutters, north light and ventilator curves, barge boards etc. shall be from standard manufacture and shall be suitable for the different type's of sheet location.

#### M-59 SELECTED EARTH:

The selected earth shall be that obtained from excavated material or shall have to be brought from outside as indicated in the item. If item does not indicate anything, the selected earth shall have to be brought from outside.

The selected earth shall be good yellow soil and shall be got approved from the Engineer-in-charge. In no case black cotton soil or similar expansive and shrinkable soil shall be used. It shall be clean and free from all rubbish and perishable materials, stones or brick bats. The clods shall be broken to a size of 50 mm. or less. Contractor shall make his own arrangements at his own costs for land for borrowing selected earth. The stacking of materials shall be done as directed by the Engineer-in-charge in such a way as not to interfere with any constructional activities and in proper stacks.

When excavated material is to be used, only selected stuff got approved from the Engineer-in-charge shall be used. It shall be stacked separately and shall comply with all the requirements of selected earth mentioned above.

#### M-60 POLYPROPYLENE STEPS:

The polypropylene steps shall be clean, well-cast and they shall be free from air and sand holes, cold shuts and warping which are likely to impair the utility of the castings. The portion of the step which projects from walls of the Machine hole shall have a raised required designed above the general plane of the top surface of the step along the edges of the tread to provide adequate non-slip grip. The steps shall be of dimensions 263 mm x 165 mm x 25 mm (as shown in drawings) with necessary holding arrangement and casting minimum weight of 0.90 Kg. conforming to an ASTM D-4101.

List of Indian Standard Codes for Particular Building Materials		
Sr No	Material	IS Code
1	Water	IS 456-2000
2	Lime	IS 712-1982

3	Cement	IS 269-1989, IS 455-1976
4	White Cement	IS 8042-1989
5	Coloured Cement	--
6	Sand	IS 1542-1992
7	Stone Dust	IS 383-1990
8	Stone Grit	IS 383-1990
9	Cinder	--
10	Lime Mortar	IS 1625-1971
11	Cement Mortar	IS 2250-1905
12	Stone Corse Aggrigate for Nominal Mix Concrete	IS 383-1990
13	Black Trap or Equivelent Hard Stone Course	IS 383-1990
14	Bricks Bats Aggregate	IS 383-1990
15	Bricks	IS 3495-1992
16	Fly ash building bricks	IS 13757
17	Stone	IS 1134-1985
18	Laterite Stone	IS 1134-1985
19	mild Steel bars/TMT/ CRS bars with epoxy coating	IS 432 (PART 2)-1984
20	HYSD Bars	IS 1739-1978
21	High Tensile steel wires	IS 2090-1983
22	Mild Steel Binding Wires'	IS 280-1978
23	Structural steel	IS 226-1975
24	Galvanised Iron Sheet	IS 277-1992
25	GI Valley Gutter, Ridges	IS 277-1992
26	Asbestos Cement Sheets	IS 459-1970
27	Manglorian Pattern Roof Tiles	IS 654-1992
28	Shuttering	IS 4009-2011
29	Expansion Joints-Remould Filler	IS 1838-1961
30	Expansion Joints-coper strips and hold fasts	IS 1838-1961
31	Non Teak Wood	IS 1141-1958
32	Wooden Flush Door	IS 303-1975
33	Rolling Stutter	IS 6248-1979
34	Collapsible Steel Gates	IS 5620-1985
35	Glass	IS 761-1960
36	Fixtures and fastenings	IS 1367-2002
37	Paints	IS 2933-1975
38	french Polish	IS 348-1968
39	Marble Chips for Marble Mosaic terrezzo	IS 2114-1962
40	Flooring Tiles	IS 1237-1980
41	Rough Kotah Stone	IS 1128-1974
42	Polished Kotah Stone	IS 1128-1974
43	White Glazed Tiles	IS 777-1970
44	Galvanised Iron Pipes and Fittings	IS 1239-1979
45	Bib Cock and Stop Cock	IS 781-1977
46	Gun Metal wheel Valve	IS 778-1971
47	White Glazed Pochelain Wash Basin	IS 2556(PART-II)-1972
48	Bitumin Felt for water proofing and Damp Proofing	IS 1322-1970
49	Marble Slabs	IS 1130-1969
50	Indian Type WC	IS 771-1979
51	Foot Rest	--
52	Glazed Earthenwere Sink	IS 771-1979
53	Glazed Earthenwere lipped typed flat back urinal	IS 771-1979

54	Flush cock	IS 9758-1981
55	Nahni Trap	IS 1742-1983
56	Gully trap	IS 651-1960
57	Glazed Stoneware Pipes	IS 651-1980
58	crydon ball valve	IS 1703-1977
59	crackseal	--
60	Barbed wires	IS 278
61	Asbestos Cement Sheets	IS 459-1970
62	Selected Earth	--
63	Polypropelyn Steps	IS 10910-1984

## ITEMWISE DETAILED TECHNICAL SPECIFICATION

### 4.1 SCHEDULE B1:

#### ITEM NO. : 1

Excavation for foundation upto 1.5 m depth including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead.(A) Loose or soft soil

Excavation for base footings upto depth 1.5 to 3.0 m. including sorting out and disposing of the excavated material upto 50 m lead (loose or soft soil).

#### 304.1. Scope

Excavation for structures shall consist of the removal of material for the construction of foundations for bridges, culverts, retaining walls, headwalls, cutoff walls, pipe culverts and other similar structures, in accordance with the requirements of these Specifications and the lines and dimensions shown on the drawings or as indicated by the Engineer, work shall include construction of the necessary cofferdams and cribs their subsequent removal; all necessary sheeting, shoring, bracing, and pumping; the removal of all logs, stumps, grubs and other matter and obstructions, necessary for placing the foundations; trimming bottoms of excavations; backfilling and clearing up the site the disposal of all surplus material.

#### 304.2. Classification of Excavation

All materials involved in excavation shall be classified by the Engineer in the following manner:

##### (a) Soil

This shall comprise topsoil, turf, sand, silt, loam, clay, mud, peat, black cotton soil, soft shale or loose moorum, a mixture of these and similar material which yields 10 the ordinary application of pick, spade and/or shovel, rake or other ordinary digging implement. Removal of gravel or any other nodular material having dimension in any one direction not exceeding 75 mm occurring in such strata shall be deemed to be covered under this category.

Authority for classification : The classification of excavation shall be decided by the Engineer and his decision shall be final and binding on the Contractor. Merely the use of



explosives in excavation will not be considered as a reason for higher classification unless blasting is clearly necessary in the opinion of the Engineer.

### 304.3. Construction Operations

304.3.1. Setting out : After the site has been cleared according to Clause 201, the limits of excavation shall be set out true to lines, curves and slopes to Clause 301.3.1.

304.3.2. Excavation : Excavation shall be taken to the width of the lowest step of the footing and the sides shall be left plumb where the nature of soil allows it. Where the nature of soil or the depth of the trench and season of the year do not permit vertical sides, the Contractor at his own expense shall put up necessary shoring, strutting and planking or cut slopes to a safer angle or both with due regard to the safety of personnel and works and to the satisfaction of the Engineer. The depth to which the excavation is to be carried out shall be as shown on the drawings, unless the type of material encountered is such as to require changes, in which case the depth shall be as ordered by the Engineer. Propping shall be undertaken when any foundation or stressed zone from an adjoining structure is within a line of 1 vertical to 2 horizontal from the bottom of the excavation. Where blasting is to be resorted to, the same shall be carried out in accordance with Clause 302 and all precautions indicated therein observed. Where blasting is likely to endanger adjoining foundations or other structures, necessary precautions such as controlled blasting, providing rubber mat cover to prevent flying of debris etc. shall be taken to prevent any damage.

304.3.3. Dewatering and protection : Normally, open foundations shall be laid dry. Where water is met with in excavation due to stream flow, seepage, springs, rain or other reasons, the Contractor shall take adequate measures such as bailing, pumping, constructing diversion channels, drainage channels, bunds, depression of water level by well-point system, cofferdams and other necessary works to keep the foundation trenches dry when so required and to protect the green concrete/masonry against damage by erosion or sudden rising of water level. The methods to be adopted in this regard and other details thereof shall be left to the choice of the Contractor but subject to approval of the Engineer. Approval of the Engineer shall, however, not relieve the Contractor of the responsibility for the adequacy of dewatering and protection arrangements and for the quality and safety of the works. Where cofferdams are required, these shall be carried to adequate depths and heights, be safely designed and constructed and be made as watertight as is necessary for facilitating construction to be carried out inside them. The interior dimensions of the cofferdams shall be such as to give sufficient clearance for the construction and inspection and to permit installation of pumping equipments, etc., inside the enclosed area. If it is determined beforehand that the foundations cannot be laid dry or the situation is found that the percolation is too heavy for keeping the foundation dry, the foundation concrete shall be laid under water by tremie pipe only. In case of flowing water or artesian springs, the flow shall be stopped or reduced as far as possible at the time of placing the concrete. Pumping from the interior of any foundation enclosure shall be done in such a manner as to preclude the possibility of the movement of water through any fresh

concrete. No pumping shall be permitted during the placing of concrete or for any period of at least 24 hours thereafter, unless it is done from a suitable sump separated from the concrete work by a watertight wall or other similar means. At the discretion of the Contractor, cement grouting or other approved methods may be used to prevent or reduce seepage and to protect the excavation area. The Contractor shall take all precautions in diverting channels and in discharging the drained water as not to cause damage to the works, Crops or any other property.

- 304.3.4. Preparation of foundation : The bottom of the foundation shall be levelled both longitudinally and transversely or stepped as directed by the Engineer. Before footing is laid, the surface shall be slightly watered and rammed. In the event of excavation having been deeper than that shown on the drawings or as otherwise ordered the Engineer, the extra depth shall be made up with concrete masonry of the foundation at the cost of the Contractor. Ordinary filling shall not be used for the purpose to bring the foundation to level. When rock or other hard strata is encountered, it shall be freed of all soft and loose material, cleaned and cut to a firm surface either level and stepped as directed by the Engineer. All seams shall be denied out and filled with cement mortar or grout to the satisfaction of the Engineer. In the case of excavation in rock, annular space around footing shall be filled with lean concrete (1:3:6 nominal mix) upto the top level of rock. If the depth of fill required is more than 1.5m above the top of the footing, filling upto 1.5m above top of footing shall be done with lean concrete (1:3:6 nominal mix) followed by boulders grouted with cement. When foundation piles are used, the excavation of each pit shall be substantially completed before beginning pile-driving operations therein. After pile driving operations in a given pit are completed, all loose and displaced materials therein shall be removed to the elevation of the bottom of the footings.
- 304.3.5. Slips and slip-outs : If there are any slips or slip-outs in the excavation, these shall be removed by the Contractor at his own cost.
- 304.3.6. Public safety : Near towns, villages and all frequented places, trenches and foundation pits shall be securely fenced, provided with proper caution signs and marked with red lights at night to avoid accidents. The Contractor shall take adequate protective measures to see that the excavation operations do not affect or damage adjoining structures. For safety precautions, guidance may be taken from IS: 3764.
- 304.3.7. Backfilling : Backfilling shall be done with approved material after concrete or masonry is fully set and carried out in such a way as not to cause undue thrust on any part of the structure. All space between foundation masonry or concrete and the sides of excavation shall be refilled to the original surface in layers not exceeding 150 mm compacted thickness. The compaction shall be done with the help of suitable equipment such as mechanical tamper, rammer, plate vibrator etc., after necessary watering, so as to achieve a density not less than the field density before excavation.
- 304.3.8. Disposal of surplus excavated materials : All the excavated materials shall be the property of the Employer. The material obtained from the excavation of roadway, shoulders, verges, drains, cross-drainage works etc., shall be used for filling up of



(i) roadway embankment, (ii) the existing pits in the right-of-way and (iii) for landscaping of the road as directed by the Engineer, including levelling and spreading with all lifts and lead and no extra payment shall be made for the same. All hard materials, such as, hard moorum, rubble, etc., not intended for use as above shall be stacked neatly on specified land as directed by the Engineer with all lifts. Unsuitable and surplus material not intended for use within the lead specified above shall also, if necessary, be transported with all lifts and lead and disposed of or used as directed by the Engineer.

#### 304.4. Measurements for Payment

Excavation for structures shall be measured in cu. m. for each class of material encountered, limited to the dimensions shown on the drawings or as directed by the Engineer. Excavation over increased width, cutting of slopes, shoring, shuttering and planking shall be deemed as convenience for the Contractor in executing the work and shall not be measured and paid for separately. Foundation sealing, dewatering, including pumping shall be deemed to be incidental to the work unless separate provision is made for in the Contract

#### 304.5. Rates

304.5.1. The Contract unit rate for the items of excavation for structures shall be payment in full for carrying out the required operations including full compensation for :

- (i) setting out;
- (ii) construction of necessary cofferdams, cribs, sheeting, shoring and bracing and their subsequent removal;
- (iii) removal of all logs, stumps, grubs and other deleterious matter and obstructions, for placing the foundations including trimming of bottoms of excavations;
- (iv) foundation sealing, dewatering including pumping when no separate provision for it is made in the Contract;
- (v) backfilling, clearing up the site and disposal of all surplus material within all lifts and leads and
- (vi) all labour, materials, tools, equipment, safety measures, diversion of traffic and incidentals necessary to complete the work to Specification.

304.5.2. The Contract unit rate for preparation of rock foundation shall be full compensation for cutting, trimming and cleaning the foundation surface and filling/sealing of all seams with cement grout or mortar including all materials, labour and incidentals required for completing the work.

Item : -2

Excavation for foundation for depth from 1.5 m to 3.0 m including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead.(A) Loose or soft soil

Detailed Technical Specification As Per Item No.1

**Item :- 3**

Providing and laying cement concrete 1:3:6 (1-Cement : 3- coarse sand : 6- hand broken stone aggregates 40 mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth

The concrete shall be consisting of one part of cement three parts of sand and six parts of stone aggregate. The concrete shall be thoroughly mixed dry in spell batches and mixed clean portable water properly so that every part of aggregate is uniformly coated with cement plaster.

The cement concrete must be laid gently so as not to be permit segregation of aggregate consolidation shall be rapidly carried out and sufficient labour shall be employed to permit the rolling spreading consolidation etc. being complete within short time and shall be finished neatly and care properly for 10 days.

The rate shall include the bailing out of watering etc. till the completion of the work.

Cement:

The cement shall be Portland cement manufactured as per I.S.S. 455/1967 (revised). The cement shall be stacked properly. The contractor shall see that sufficient quantity of cement is kept ready on site for the work of hand. The contractor shall also see that cement supplied shall be good quality. The cement shall be got tested in approved Govt. Laboratory with his own cost for various test of cement.

Sand:

The sand shall sharp hard durable and free from the organic impurities sand shall be clean and shall not contain any lumps flaky particulars sulking or any other deleterious substances and shall be of good quality and got previously approved properly graded and shall be washed before use if necessary.

Excessive bulking of sand is not allowed and shall confirmation I.S.S.(revised) No.883/1970.

Metal:

Metal shall be of black trap be salt or granite without skin or face coloring and shall be of best quality and previously approved by the Engineer in charge. The metal shall not contain any deleterious materials which may impair the quality of the concrete and shall conform to I.S.S.No.385/1970 (revised).

All metal before use in the work shall be well graded, thoroughly clean and washed if found necessary for various proportion of concrete shall be as under for R.C.C.

1:11/2:3	12MM TO 18 MM
1:2:3	12MM TO 18 MM
1:3:6	12MM TO 38 MM

Water:

Water used in the all works shall be clean and potable and of quality as specified under B.R.C. of Indian part. VI section 5 clause 4.1.5. To 4.1.5 the arrangement for storing sufficient quality of water of site shall be made by the contractor at his own cost.

#### Mixing:

The concrete shall nearly be mixed in a mechanical mixer. Mixing shall be continuous till there is uniform distribution of the material and the mass is uniform color is consistency but in no case shall be mixing as done in the less than two minutes. The consolidation of concrete shall be done by the mixer.

Switched in immediately curing shall be done for a period not less than 14 days after the concrete is placed in position. The concrete cube of 15 cm x 15cm shall be taken and shall be got tested in the laboratory for its crushing strength at the contractor's cost. At least two samples of cubes for each day's work for the same proportion shall be taken.

Necessary register for the cube test register shall be maintained at the site of the work. Any unsatisfactory work carried out or the contractor shall have to be removed and redone without any extra payment.

The concrete surface on the removal of the work shall be finished with cement mortar 1:2 No extra payment shall be made for finishing the work. For small work like block pre cast RCC steps etc. Hand mixing may be allowed on request with 10% extra use of cement.

The general of the task of concrete work i.e. grading proportioning aggregate fines and course mixing placing remaining consolidation curing and removing for form work etc. shall be done as per the I.S.S. part I general 1370/1965 and part II 3370/1965.

#### Form Work:

The form work shall be conform to the straight line dimensions as shown in the plan and constructed as to remain sufficiently rigid the placing the compacting of concrete and shall be sufficiently tight to prevent load liquid from the concreting. All rubbish parts particularly chipping showing of snow dust shall be removed from the interior of form before the concrete is placed and form work is contact with the concrete shall cleaned and thoroughly wetted or treated with oil and approved composition.

Care shall be taken that such approved composition is kept out of concrete with the reinforcement. In no circumstances shall forms trust until the concrete reaches strength of the set twice the stress to which the concrete may be subjected in the time of sticking and days of removal shall be specified in I.S. The form work shall be sufficiently strong and free from knots to with stand all the loads such as not concrete live impact load due to vibration etc.

The centering shall be got approved from the Engineer in charge before concreting. The form work shall be stripped off as per the instruction of the Engineer-in-charge. The current relevant ISS No shall be followed. The payment is made on M3 basis.

Item :- 4

Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:5. (1- Cement : 5 -fine sand)(B)  
Conventional

#### 1.0 General :

This specification lays down the requirements for B. B. masonry first class in lime cement mortar of specified proportion required for various structures, including necessary scaffolding watering, etc. The specification shall confirm to I.S. 2212-1962 or its latest revision.

#### 2.0 Materials :

##### 2.1 Bricks :

First class bricks shall be used for this item and sample of bricks shall be got approved by the Engineer, who will keep it in his office for reference.

##### 2.2 Mortar :

Mortar shall fulfill the requirement laid down in Item No. WSP-A-(iii) for cement mortar. The quantity of mortar to be used for one cubic meter for thin masonry to 0.26 cubic meter for massive masonry of conventional bricks (about 240 liters to 260 liters) and 0.25 cubic meter for thin masonry to 0.27 cubic meter for massive masonry of ISI bricks (about 250 liters to 270 liters). The proportion of cement mortar shall be as specified in the Item and special provisions of the tender.

#### 3.0 Constructional Features :

##### 3.1 Size :

Bricks of difference dimensions will not be allowed on the same work, unless specially permitted by the Engineer.

##### 3.2 Soaking :

All bricks to be used on work shall be immersed in water for 2 hours before being used in the work so that all the bricks are saturated and shall not absorb water from mortar. Immersion in water shall also assist in removing dirt and dust. The surface shall be just

moist, but not too wet at the time of laying.

### 3.3 Laying :

The bricks shall be laid in mortar to line, level and shapes as shown on the drawings, slightly, pressed and thoroughly bedded in the mortar and shall be grouted full at every course and all joints shall be properly flushed and packed with mortar so that all the joints shall be completely filled with mortar and no hollows shall be left anywhere. Bricks shall be handled carefully so as not to damage their edges. Bricks shall be put on ground gently. All courses shall be laid truly horizontal and vertical joints made truly vertical. All vertical joints in one course and the next below shall not come over one and other thus all the vertical joints shall be staggered in two successive courses, shall not normally be nearer than quarter of a brick length. For bettered faces, bedding shall be at right angles to the face, fixtures, plugs, gables etc. if any shall be put in as per sanctioned plans or as instructed by the Engineer while laying the courses only and not later by removal of bricks already laid.

Care shall be taken during and after laying, to see that edges of bricks at joints, sills, heads etc. are not damaged.

The verticality of masonry and the horizontality of courses shall be checked very often with plumb-bob and spirit level respectively.

### 3.4 Joints :

The thickness of joints shall not exceed 10 mm. and shall be uniform throughout the work. The joints shall be raked out not less than 10mm. deep, when the mortar is green, where pointing is to be done. Otherwise, joints shall be struck flush with the face at the time of laying.

### 3.5 Bond :

Bond to be used in masonry shall be English or any other as may be specified or ordered and shall be

carried out throughout the work. AT all corners, alternative courses of bricks work shall be laid header and stretcher wise, as seen on the face, so as to secure good bond. The arrangement of bond at quoins shall be symmetrical.

### 3.6 Face Work :

As far as practicable, bricks of entirely uniform color and of best shape and which have grater resistance to weathering and penetration by rain shall be selected for the face work, when it is not to be plastered.

### 3.7 Bats :

No bat or cut bricks shall be used in the work, unless absolutely necessary around irregular openings or for adjusting the dimensions of difference courses obtaining the specified bond and four closers, the bats being placed in the middle of the courses.

### 3.8 Uniform Raising :

Brick work shall be carried up regularly in all cases, when the nature of work will admit, not leaving any part 60 cm. lower than another, but when circumstances render it is necessary to carry on the same section of a building at different levels, the breaks shall be stopped so as to give later uniform level and effective bond. Horizontal courses shall to be in line and level and even and face lump or to better as shown on the plan. The rate of laying masonry shall be up to a height of 60 cm. per day, if cement mortar is used and 45 cm. per day, if line mortar is used. Greater heights may be built only if permitted by the Engineer-in-charge.

### 3.9 Scaffolding :

Scaffolding will be double or single as is warranted for the particular work. The ends of poles, is required to rest on the brick work shall located at convenient places. Scaffolding shall be erected with bullies, steel sections pipes are bamboos of adequate strength so as to safe for all the dead live and impact loads likely to come on them due to construction operations. The contractor shall take all measures to ensure the

safety of the work and the working persons. Any instructions of the Engineer-in-charge in this regard shall immediately be complied with. The contractor shall be entirely responsible for any damage to work, properly are injury to persons, resulting from ill erected scaffolding, defective ladders and materials otherwise arising out of his default in this respect. Perfect scaffolding shall be provided to allow easy approach to every part of work.

### 3.10 Dewatering :

Where water is met with the working space shall be kept free of water by the contractor, while the bricks works in progress and until the Engineer considers the mortar has sufficiently set. Dewatering shall also be done when required for taking measurements etc. Dewatering shall be carried out in such a manner as not to injure work in any way, dewatering will be included in the rate of brick work, unless separately provided in the tender.

### 3.11 Watering :

Brick work shall continuously to be kept wet by sprinkling water for 14 days after laying. Brick work when laid shall be initially protected against direct rays of sun, if necessary by wet soaking or straw of similar absorbent materials. At no time during the curing period shall mortar be allowed to dry. Initial watering shall be done carefully so as not to disturb or wash out mortar. On Sunday and holidays or at the close of days work or other periods of cessations work, the masonry shall be kept wet watered by employing sufficient number of labours. If the contractor fails to water the work as specified, the Engineer may employ the requisite labour, materials and equipments to water the work properly at the cost of the contractor.

### 3.12 Final Finishing :

If the brick work is not to be plastered, the face of the pointing is properly cured shall be washed down and all stains and adhered mortar lumps shall be removed. Put log holes etc. shall be solidly filled in the interior with cement concrete 1:2:3 and the face

with bricks to match the adjoining work.

### 3.13 Bad Workmanship :

If the mortar perish i.e. become dry or power due to negligence in watering or masonry be bellow or the work not done according to plan and specifications, the work shall be pulled down and rebuilt at the cost of contractor. If bellow or other defects are suspected a brick may be removed here and there for confirmation. If hollows or there defect are confirmed such portions shall be dismantled and rebuilt at the cost of contractor.

### 3.14 Items to Includes :

1. All labor, materials use of tools equipments and other items incidental to the satisfactory completion of brick masonry.
2. Erecting and removing of all scaffolding ladders and plant required for the erection of the work to the height, depth and shapes as shown in the drawings or as ordered by the Engineer-in-charge.
3. Dewatering for completion of the Item and till the matter or masonry pointing, plastering is properly is set, unless separately provided in the tender.
4. Constructing brick work to lines, levels, batters, curves and to any position or shape to the height and depths as shown in the drawings are as directed by the Engineer including sticking the joints, racking out the joints and housing frames, fixtures etc. during laying and rectifying the defective work.
5. Watering the masonry.
6. Clearing the site for the brick work so as to restore the surrounding area to its original condition.

### 3.15 Measurements :



1. The rate shall be for a unit of one cubic meter of brick masonry fully completed. The quantity of brick work to be paid under this item shall be measured for the completed the work and to the lining dimension in to exceeding those shown on the plans or as ordered in writing by the Engineer. Battered tapered and curved portion shall be measured bet. Dimensions shall be measured and quantity are individual items worked out contact to two places of decimals of a meter and cubic meter respectively.
2. No deduction shall be made for :
  - a. Ends of dissimilar materials like griders, beams, lintels, refers, etc. up to 500 sq.mm. in section and
  - b. Opening up to 0.1 sq. m. in face area.
3. When the brick is to be plastered, measurement shall be exclusive of plaster.
4. Brick work shall normally be measured as under :
  - a. Half brick wall shall be measured in sq. meter staring the thickness.
  - b. Brick walls up to and including three bricks in thickness shall be measured in multiples of half bricks, which shall be deemed to be inclusive of the mortar joints as under...

	Width for Conventional Bricks	Width for measurement purpose bricks
1. One Brick wall shall be measured as	22.86 cm.	23.00 cm.
2. One and half brick wall shall be measured as	35.56 cm.	35.00 cm.
3. Two bricks wall shall be measured as	47.00 cm.	45.00 cm.

4. Two and half brick wall  
shall be measured as 59.70 cm. 55.00 cm.

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Width of more than three bricks in wall shall be measured actually and limited to the width specified.

10.5 Where the fractions of half bricks occur due to architectural requirement this shall be measured as actual.

**Item : -5**

1. Providing 15mm thick cement plaster in single coat on Rough (Similar) side of single or half brick walls for interior plastering upto floor two level and finished even and smooth in (i) Cement mortar 1:3 (1-cement:3-sand).

**1.0. Materials.**

Water shall conform to M-1. Cement mortar shall conform to M-11.

**2.0. Workmanship**

**2.1. Scaffolding:**

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

**2.2. Preparation of back-ground :**

**2.2.1.** The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be toughened by wire brushing if it is not hard and by hacking if it is hard. In case of concrete surface, if a chemical retarded has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the readers if left on the surface. Trimming of projections on brick/concrete surfaces where necessary shall be carried out to get an even surface.

**2.2.2.** Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plaster work.

**2.2.3.** The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry, such area shall be moistened again.

**2.2.4.** For external plaster, the plastering operation shall be started from top floor and carried downwards. For internal plaster, the plastering operations may be started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

**Application of plaster:**

The plaster about 15x15 cms. shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surfaces of these gauges shall

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

The specifications of item shall be followed except that the thickness of black coat shall be 12 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tapers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.

The second coat shall be completed to 8 mm. thickness in C.M. 1:1 as described above, including raising sand facing by bushing. The sample of sand face shall be got approved before the work is started. The whole work shall be carried out uniformly as per sample approved.

### **2.3. Curing :**

The curing shall be started overnight after finishing of plaster. The plaster shall be kept wet for a period of 7 days. During this period, it shall be protected from all damages.

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

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

**3.2.** All plastering shall be measured in square meters unless otherwise specified. Length breadth or height shall be measured correct to a centimeter.

**3.3.** Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 10 mm. at any point on this surface.

**3.4.** This item includes plastering up to floor two level.

**3.5.** The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.

**3.6.** Soffits of stairs shall be measured as plastering on ceilings, following soffits shall be measured separately.

**3.7.** For jambs, soffits, sills etc. for openings not exceeding 0.5 sq. met each in area for ends of joints beams, posts, girders, steps etc. not exceeding 0.5 sq. mt each in area and for openings exceeding 0.5. sq. mt and not exceeding 3.00 sq. mt. in each area deductions and additions shall be made in the following manners.

(a) No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.5 sq. mt each and no addition shall be made for reveals, jambs, soffits, sils etc. of these openings, for finish to plaster around ends of joints, beams posts etc.

(b) Deduction for openings exceeding 0.5 sq. mt but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for ravel, jambs, soffits, sills etc. of these openings, (i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only, (ii) When two faces of wall are plastered with different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the other side. Where width of reveals on both faces of all are equal, deductions of 50% of area of opening on each face shall be made from areas of plaster and / or pointing as the case may be.

**3.8.** For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of the wall.

**3.9.** In case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits and sills shall be measured.

**3.10.** The rate shall be for a unit of One sq. meter.

**Item no:- 6**

Supplying of screened cleaned pea (rounded) gravel of following sizes)(B) Supplying of unscreened gravel

As per Engineer In charge

**Item no:- 7**

**Supplying of Crushed stone aggregate for Hard Quality 63mm size**

As per Engineer In charge

**Item no:- 8**

**Providing and laying controlled cement concrete M.200 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (A) Foundations, footings, Base of columns and Mass concrete (Top Cover)**

1.0 General :

1.1 The specification cover the requirements of ordinary cement concrete of specified proportions for plain and reinforced concrete works, Special requirements for a particular, Item shall be laid down in the specification for that IS 456-1979 shall apply except for deviation laid down in the specification. For liquid retaining structure, specification narrated in IS 3370-1971 shall apply.

2.0 Materials :

2.1 Cement : Cement shall conform to the latest specification. When type of cement is not specified ordinary Portland cement shall be used.

2.2 Water : Water shall conform to the latest specification.

2.3 Fine Aggregates : Fine aggregate 0.15 mm to 6 mm IS. sieve No. 15 to 480 shall conform to the latest specification.

2.4 Coarse Aggregates :

2.4.1 Coarse aggregate 6 mm. to 12 mm shall conform to the latest specification.

2.4.2 Size : The maximum size of coarse aggregate shall be as large as possible but normally not greater than 1/4th of the minimum thickness of concrete member provided that in the case of R.C.C. this size presents no difficulty to surround the reinforcement thoroughly and fill up the corners of the form work fully and is less than the minimum over by 6 mm. For plain concrete, maximum size of the above limitation and provided no limiting size is specified in the special provisions.

2.4.3 For heavily reinforced concrete members such as ribs of beams. etc. the maximum size of aggregate shall be restricted to 6mm. less than the reinforcing bars of 6 mm less than the cover, whichever is smaller.

2.4.4 Generally a maximum size of 20 mm shall be found satisfactory for reinforced concrete work.

2.4.5 The grading between the maximum size and minimum size of 5 mm. shall be such as to produce a dense concrete of specified proportion and consistency that will work readily into position without any segregation and without the use of excessive water content.

3. Grade of concrete :

3.1 The concrete shall be in seven grades designated as M. 100, M.150, M.200, M.250, M.300, M.350, M.400. In designating a concrete mix, letter M. refers to the mix and number to the specified 28 days cube compressive strength of that mix expressed in Kg/cm<sup>2</sup>.

#### 4.0 Strength Requirements of Concrete :

4.1 The compressive strength requirements for various grades of concrete shall be as given in Table-I, in case of ordinary Portland cement. Where rapid hardening Portland cement is used, the 28 days compressive strength requirements specified in Table-I shall be met with at 7 days.

4.2 The strength requirements of different grades of concrete shall be as under.

Grade of Concrete	Compressive strength of 15 cms, 28 days conducted in accordance preliminary test work test Min.	Cubes in Kg/cmt. at with I.S. 516-1959 Min.
M-150	200	150
M-200	260	200
M-250	320	250
M-300	380	300
M-350	440	350
M-400	500	400

#### 5.0 Concrete :

##### 5.1 Mixing :

5.1.1 For all important works, concrete shall be mixed in a mechanical mixer and the other accessories are in first class working condition and maintained so throughout the construction. Mixing shall be continued until there is a uniform distribution of the materials and a uniform color of the mix is obtained and each individual particle of coarse aggregate shall show a complete coating of mortar containing its proportionate amount of cement. But in no case, the mixing shall be done for less than two minutes.

5.1.2 When hand mixing is permitted by the Engineer-in-charge it shall be carried out on a smooth water tight platform large enough to allow efficient turning over of the ingredients of concrete before and after adding water. Care shall be taken to

ensure that mixing is continued until the mass is uniform in color and consistency. Mixing platform shall be so arranged that no foreign material shall get mixed with concrete nor the mixing water shall flow out.

5.1.3 The cement in required quantity shall be spread in uniform layer on top of the measured quantity of fine aggregate required, also spread in a layer of uniform depth of mixing platform. Dry fine aggregate (Sand) and cement shall then be mixed thoroughly by turning over to get a mixture of uniform color. Enough water shall then be added gradually and the mass turned over till a mortar of required consistency obtained. The measured quantity of coarse aggregate shall then placed on the mixing platform and wetted and the prepared mortar added and the entire mass turned and returned until all the particles of coarse aggregate are fully coated with mortar and the mixture is of uniform colour and required consistency. In hand mixing quantity of cement shall be increased by 10% above the specified quantity without any extra cost.

5.1.4 For vibrated concrete slump shall range between 1.5 cms to 5.0 cms and for hand tamped concrete slump shall range between 8 cms to 13 cms according to type and nature of concrete work. The slump shall be determined as prescribed in appendix 6 of IS. 456-1979 and maintained throughout the concreting operation of a member.

5.1.5 Concrete shall be handle from the place of mixing to the place of final deposit as rapidly as practicable by the methods which will prevent the segregation or loss of any of the ingredients. If segregation does occur during transport, the concrete shall be remixed before it is placed.

5.1.6 Placing and Compacting :

5.1.6.1 General :

The concrete shall be placed into its final position, compacted and finished within 30 minutes of mixing the water and before setting commences and should not be subsequently disturbed. The method of placing shall be such as to avoid segregation. The placing of concrete shall be done in a balanced manner to avoid eccentric loads on formwork.

5.1.7 Compacting :

Concrete shall be thoroughly compacted during

the operation of placing and thoroughly worked around the reinforcement around embedded fixtures and into corners of the formworks, by tamping or surface vibrator.

#### 5.1.8 Curing :

The concrete shall be initially protected from damage on account of impact, undue pressure, excessive heat of sun, rain etc. and covered with wet sacking, canvas, hessian or similar absorbent material soon after the initial set. After final set, the concrete shall be kept continuously wet preferably by ponding water for a period of not less than seven days from the date of placing of concrete. When rapid hardening cement is used, special attention shall be given to the curing of concrete during the initial stages. On Sundays, holidays and days of cessation of work, arrangement shall be made to keep the concrete continuously watered.

If the contractor fails to water the concrete continuously, the Engineer-in-charge may provide labour, materials and equipments required for watering and recover the cost from the contractor.

### 5.2 Scaffolding :

- 5.2.1 All scaffolding, hoisting arrangements and ladders etc. required for the facility of concreting shall be provided by the contractor at his own expense and removed on the completion of work. The scaffolding, hoisting, arrangement and ladders etc. shall be strong enough to with stand all live, dead and impact loads expected to act and shall be subject to the approval of the Engineer-in-charge. However the contractor shall be solely responsible for the safety of the scaffolding, hoisting arrangements, ladder, work, and workmen, The contractor shall pay all the necessary compensation arising out of the use of the scaffolding, hoisting arrangements and ladders and for damages to work property and injuries to persons.

The Scaffolding, hoisting arrangements and ladders shall allow each approach to the work spot and afford easy inspection.

### 5.3 Form Work :



### 5.3.1 General :

5.3.1.1 The form work shall be confirm to the shapes, lines and dimensions as shown on the plans and be so constructed as to remain sufficiently rigid during the placing and compacting of the concrete and shall be sufficiently tight to prevent loss of liquid from the concrete.

5.3.1.2 Forms shall be mortar tight and shall be made sufficiently rigid by the use of ties and bracing to prevent displacement or sagging between supports and to withstand all pressure, ramming and vibration, without deflection from the prescribed lines occurring during and after the placing of concrete. The internal dimension of the formwork shall be within the tolerances specified by the Engineer-in-charge.

5.3.1.3 For shuttering the forms to be used shall be preferable M.S. sheets shaped and stiffened suitably within M.S. Angles. Formwork of materials like teakwood, ply wood and approved varieties of timber of adequate thickness may be allowed to be used, if found satisfactory. The supporting frame work of forms or staging for holding the forms in position shall be of strong and of durable nature prepared of good quality of wood, steel or other materials as may be approved by the Engineer-in-charge. The type, size, shape, quality and strength of all materials of which the shuttering and supporting frames are made and the design of the same shall be prepared by the contractor but subject to the approval of the Engineer-in-charge.

5.3.1.4 Curved and special form shall be of the character that will enable smooth surfaces for the concrete. Special attention must be paid to see that ties and bracings are sufficiently secure, tight and where the forms appear in sufficiently braced or unsatisfactorily built, the concreting work shall not be started until the defects have been

removed or rectified without any compensation.

#### 5.3.2 Design :

The detailed design of the formwork and false work shall be prepared by the contractor and got approved by the Engineer well in time, Such an approval, however, will not relieve the contractor of his responsibility for the adequacy and strength of the formwork and false work.

#### 5.3.3 Materials :

The forms false work shall be made of wood or metal. The timber from which the forms are prepared should preferably be partially seasoned as too dry a timber will swell from absorption of moisture while green timber will dry and shrink. It shall be free from sap, shakes, loose knots, worm holes or other defects. The planks and scantlings shall be sawn straight and free from wraps. The strength of the wood shall not be less than that assumed in the design. Internal forms of steel sheets of the designed gauge strengthened with framing of angle or other sections shall be used, i.e., M. S. Plates. Wooden forms may also be lined with thin steel sheets or plywood to give the required surface of finish.

#### 5.3.4 Fabrication :

The timber planks and scantlings of the designed dimensions shall be used in the formwork with appropriate spacing of studs, yokes, joists, girders etc. as provided in the designs.

All timber in contact with concrete shall be wrought on one face and two edge, the unwrought face being on the outside. The joints shall be made mortar tight. This may be done either by providing tongued and grooved or rebated joints or by caulking or nailing metal strips or applying adhesive tape of the joints. The form shall be built with sufficient strength and rigidity and held in shape by bolts, clamps, nails, Wales or other contravances to prevent distortion or collapse due to pressure of concrete and other loads incidental to the construction operations. The nuts and bolts heads inside the formwork adjoining the concrete shall be

countersunk. The form work shall allow finished concrete to have smooth surface and confirm to the shapes, lines and dimensions shown on the plans and true to line and grade.

The effect of vibration shall be taken into account in the design and fabrication of forms and false work. Forms shall be so designed and constructed as to be removable in sections without damaging the surface of the concrete and with facilities of removal in the ascending order of removal time, without disturbing the remaining forms required to be remove later.

#### 5.3.5 Cleaning and treatment of Works :

All rubbish, particularly chipping, shavings saw dust etc. shall be removed from the interior of the forms before the concrete is placed and the formwork in contact with the concrete shall be cleaned and thoroughly wetted or treated or coated with mineral oil or any other suitable material approved by the Engineer, which will prevent adhesion of concrete to the forms, but will not discolor the concrete. When oil is used, it shall be applied before reinforcement is placed. Care shall be taken to see that reinforcement does not come in contact with the coating. When formwork is to be erected by reusing timbers that have been removed from another form work, all nails from the component pieces shall be withdrawn and blocks and other attachments to boards removed and split and splayed ends sawn off.

#### 5.3.6 Inspection :

The form and false work will be inspected, checked and approved by the Engineer before concreting is commenced. But this will not relieve the contractor of his responsibility for strength, adequacy and safety of the formwork of false work.

#### 5.3.7 Stripping Time :

5.3.7.1 In no circumstances shall form be struck until the concrete reaches a strength of at least twice the stress to which concrete may be subjected at the time of striking.

5.3.7.2 The strength referred to shall be that of concrete using the same cement and aggregates with the same proportions and cured under conditions of temperature and moisture similar to those existing on the work. Where possible, the form work shall be left longer, as it would assist the curing.

5.3.7.3 In normal circumstances (generally) where temperature is above 20°C and where ordinary cement is used, forms may be struck after the expiry of the below mentioned periods.

1. Wall, columns and vertical sides of beams. 24 to 48 hrs. as may be decided by the Engineer-in-charge.
2. Slabs (props left under) 3 days
3. Beams soffits (props left under) 7 days
4. Removal of props to slab.
  - a. Spanning up to 4.5 m. 7 days
  - b. Spanning over 4.5 m. 14 days
5. Removal of props to beams and arches.
  - a. Spanning up to 6m. 14 days
  - b. Spanning over 6 m. 20 days

In important structure the sequence of striking form work shall be approved by the Engineer. This shall be approved in advance by the Engineer-in-charge after consultation, if necessary with the Designer.

5.3.8 Immediately after removal of formwork, the concrete shall be inspected carefully for defects or blemish if any. If any major defects are observed, defective concrete shall be removed. In case of surface blemished or similar minor defects which in the opinion of the Engineer-in-charge, would not affect the strength or durability of the concrete, the defects shall immediately, before the concrete has fully hardened, be rectified as follows :

Immediately after the removal of forms any irregular projections shall be removed, cavities, holes or honey combed spots filled, broken corners repaired and other defects carefully removed with cement mortar in the proportions used in the concrete. The resulting surfaces shall be true and uniform. But the necessity of such finishing must be exceptional and the total surface requiring finishing shall not exceed 1% on an average. If the initial experience shows that this percentage is exceeded, the method of working itself should be changed to get the required finishing. Plastering shall not be permitted and steel trowel shall not be used to finish surfaces.

#### 5.3.9 Camber :

It is generally desirable to give forms an upward camber to ensure that the beams do not have a sag when they have taken up their deflection, but this should not be done unless allowed for in the design calculation of the beams.

#### 5.4 Sampling and Testing :

5.4.1 Sampling of materials and concrete shall be done carefully by the contractor under the direct supervision as per IS. 456-1976 at the cost of the contractor. All necessary labour, materials, equipments etc. for sampling, preparing test cubes, curing etc. shall be provided by the contractor. Testing of materials and concrete will be arranged by the Contractor in an approved laboratory at the cost of the contractor. No plea will be entertained later on the ground that casting of the test specimen was faulty and that the result of the test specimen did not give a correct indication of the actual quality of the concrete.

5.4.2 One set of 6 Nos. of 15 cm. cubes shall be prepared from the concrete to be used in the work for compression test on each of the first three days operation and thereafter for every 60 cmt of concrete or three days work whichever is less, by the contractor in the presence of Engineer-in-charge. If the source of aggregate or grading is changed, one set of six test cubes shall be taken for each changed batch. Three cubes shall be used for test at 7 days age and three at 28 days.

#### 6.0 Items to Include :

- 6.1 All labors, materials, use of equipment, tools, and plant. installing and removal of scaffolding, false work and forms and bracing necessary for the satisfactory completion of the Item.
- 6.2 Providing Machine Mix, Vibrated cement concrete of specified proportion including transporting, placing and compacting, curing, finishing to the dimensions and shapes shown on plans or as directed by the Engineer.
- 6.3 Necessary sampling the tests for materials and concrete.
- 6.4 Compensation for injury to persons and damage to work or property.
- 7.0 Measurement :
- 7.1 The contract rate shall be for a unit of one cubic meter of concrete. The concrete shall be measured for its length, breadth, and depth, limiting dimensions to those specified on the plan or as ordered by the Engineer. No deduction shall be made for reinforcement in concrete in R.C.C work. Individual dimensions shall be measured correct to one centimeter and quantities shall be worked out correct up to two places of decimals of a cubic meter.

**Item : - 9**

**Providing and fixing in position Fe 500D TMT for R.C.C. bored piles as per detailed drawing, including cutting, bending hooking tying and welding complete and including forming the cage and lowering it in position. (up to 10 ton)**

The work shall be carried out in general as per relevant specification of P.W.D. Hand Vol. I and II, latest edition and as per general instructions given by the Consulting Engineer/Architect or his authorized agent during the execution of work.

The reinforcement bars shall be cut to the required size and necessary bends, hooks, over laps etc. shall be provided as per the schedule of the design and direction of the Consulting Engineer/Architect or his authorized agent.

The bars shall be then placed on the centering and bound properly with binding wires keeping necessary allowance for over etc.

The Mild Steel binding wires shall be of 1.63 mm. or 1.22 mm. (16 to 18 gauge) dia. and shall conform to IS:280-1951, it shall be free from rust, oil paint, grease, loose mill scale and other undesirable coating which will prevent adhesion of cement mortar. No

measurement will be taken of the wire used for binding reinforcement bars. The rate of reinforcement steel shall include the cost of binding wire.

The reinforcement thus placed be got approved by the Consulting Engineer/Architect or his authorized agent and measurement before the concreting is started and no extra payment shall be paid for wastage.

The mode of measurement shall be on Rmt. basis of the bars actually used and the weight shall be arrived at for purpose of payment by adopting the following weight/Rmt. of different bars.

Dia	Kg/Rmt.
6 mm.	0.22
8 mm.	0.39
10 mm.	0.62
12 mm.	0.89
14 mm.	1.21
16 mm.	1.58
18 mm.	2.00
20 mm.	2.47
22 mm.	2.90
25 mm.	3.85
28 mm.	4.83
32 mm.	6.31

If there is any variation between the weight of steel measured for payment and the weight of steel received by the contractor from the supplier, no compensation is payable to the contractor for such variation. The rate quoted by the contractor is inclusive of such element of variation and no extra payment is admissible.

No deduction of the volume of bars shall be made from the item of concrete. If required contractor shall have to do welding of bars where necessary for which contractor shall be paid the cost of one lap at the rate of 45 dia. for bars coming in beams and slabs 30 dia. for bars in columns. The measurements of welds

shall be paid in steel by working out the said quantity which will be the product of the Nos. of weld and length of lap as worked out at the rate mentioned above.

The item includes cutting, straightening the coils and binding, hooking the reinforcement, placing them as per design on wall floors including binding wire, labor charges etc. complete.

The tor steel reinforcement shall be medium strength deformed bars of specified diameter. The medium strength deformed bars shall conform to IS:1886-1986 (revised ) or IS:1139-116 and shall have minimum yield point stress of 4250 Kg./Smt. The necessary tests shall be carried out at the cost of the contractor.

The reinforcement bars shall be clean and free from loose mill scale dust loose rust, and coats of paint, oil or other coating which may destroy or reduce bond.

The necessary bends over laps, etc. shall be provided as per schedule of design and direction of Consulting Engineer/Architect or his authorized agent. No hooks are necessary for deformed bars wherever applicable specification o M. S. reinforcement shall be applied. The weight for various dia bars shall be applied. The weight for various dia bars shall be same to respective dia. of M. S. Bars. The mode of payment shall be on Kg. basis of work done. Overlaps shall be paid as specified in IS.

The rate include cost of all materials, labors, Octroi, transport arrangement etc. as required for satisfactory completion of item.



## **LIST OF REGISTERS TO BE MAINTAINED AT SITE**

### **ANNEXURE – 1**

#### **FOLLOWING DOCUMENTS/REGISTERS TO BE MAINTAINED AT SITE FOR ENSURING PROPER QUALITY CONTROL OF WORK IN PROGRESS.**

1. A complete set of Contract Documents
2. A Complete set of drawings (tender drawings and Good for Execution Drawings)
3. A complete set of change in specification or scope if any and approval thereof.
4. Master Test Register for Material for field Test.
  - i) Lab Report
  - ii) Lab/Field Test.
5. Register for bricks testing. Lab/Field
6. Concrete Pouring Card
7. Bitumen Test Register
8. Paint Register
9. Empty Bags Of Cement Shall Be Deposited On Monthly Basis At Store Of Valsad Nagarpalika Valsad And Same Shall Be Recorded In Store Register For Cement.
10. Register for approval of samples for various materials.
11. Site Order Book.
12. Register showing defects noticed during execution of work and compliance reports.
13. Hindrance Register

**APPROVED LIST OF MATERIALS**  
**LIST OF APPROVED MAKE / MANUFACTURER/ BRAND OF MATERIALS FOR CIVIL**  
**ITEMS**

The following are approved brand makes/manufacture's makes listed below. In case it is established that material as listed below is not available in the market, approved equivalent material and finished of any other specialized brand names/ manufacturer's makes may be used as per approval of Architect.

Material certificate: Material tests as required by the Engineer, if any, shall be carried out by the Contractor from the approved laboratories and the tests reports shall be submitted in the required formats before use of such material. The Engineer shall have the right to reject any material or work, if he finds that the quality of material used/intended to be used and work are not satisfactory. The Contractor shall make good such defective material or the works at his own cost (within the contract price) and without causing any delay to the completion time as specified in the TENDER.

<b>N o</b>	<b>Item</b>	<b>Approved make</b>
1	Cement	Ambuja, Ultratech, JK Laxmi, Jaypee, Sanghi, Siddhee, ACC or approve by Architect/EIC
2	White Cement	Birla, J.K
3	Sand	Locally available & as approved sample
4	Aggregates	Vadagam or approved by Client
5	Bricks	As per approved sample by Client
6	Reinforcement bar/TMT Bars	Sail ,Tata, Rini, Jindal , Vizag , GUJ NRE, Kamdhenu, National Electotherm, ASR Thermax, Gallant, Sanghi, Friends, Vinayak, Varsana, Utkarsh, Aditya, Grace, God
7	Structural steel	Sail ,Tata, Rini, Jindal, Essar, Vizag, Asian, Appolo
8	Paver blocks	Vyara, Super, Sona tiles, Asian or equivalent
9	Shuttering plywood	Kitply, Anchor, Green, Pragati or equivalent
10	Anti-termite treatment	Pest control India, Bayer-Premise, Rallis India-Termex, Item Secure
11	Waterproofing compound	Pidilite, Sikka, Balendura, Fosroc, Kerakoll, BASF, Sunanda Chemical
12	Weather sealant	Kerakoll, Down corning, Fosroc, Sikka, Dr. Fixit(Pidilite), Bostik, Wacker
13	Joint Filler / silicon paint	Wacker, Dowcorning, Sika, Chokshi, Saudal.

14	Tile adhesive	Saint gobain - Weber, Balendura , Kerakoll, Pidilite ,Roff , Myk Laticrete
15	Epoxy grouting	Myk Laticrete, Dubond, Kerakoll, Bal Endura, Fosroc ,Saint Gobain –Weber, Pidilite
16	Paint, primer	Jotun, Asian, Berger, Nerolac, Indigo, ICI
17	Putty	Birla , Berger, Asian
18	Polish	MRF, Asian, ICI, Taralac
19	Water stops	Arti Cables, Fixopan
20	Granite	As per approved sample
21	Vitrified tiles/ Glazed tiles/ Ceramic tiles	Varmora, Sunheart, Nitco, Kajaria, Somany, Asian, Simpolo, Motto, Silon, Johnson
22	Glass Mosaic	Pavit, Italia, Bissaza , Piccolo
23	Auto sensor Door	Dorma, Geze , Ozone
24	Glass door hardware & fittings	Dorma, Geze, Haffle, Enox, Kitch
25	Door Window & Furniture Hardware	Kitch, EPPW, Dorma, Palladium, Ozon, Magnum, Yale.
26	Adhesives	Fevicol, Kitcol, Araldite, BAL.
27	Anchor fastener / bolts	Hilti. Fischer, Mungo
28	Linseed oil	Saffola
29	Floor spring	Ozone, Everite, Hemco, Godrej, Hyper, Starling, Dorma , Enox
30	Door closer	Godrej, Dorma, Enox , Efcient Gadget, Yale
31	Locks	Godrej, Dorset, Yale, EPPW, Dorma, Kitch.
32	Glass	Modiguard, Saint-Gobain, Asahi, HNG
33	Wood	Teak, Sal sycamore, Merandi
34	Flush door- decorative / non decorative	Greenly-door, century- door, Archidply - door, Eurodoor, Nippon, Duro
35	MS Rolling shutter	Sarvottam, Suryoday, Gandhi, Sagar
36	Ply (BWP - IS 710 & BWR 303)	Green ply, Euro ply, Nippon, Duro, Century, Silicon (evoke)
37	Laminate	Greenlam, Century, Merino, Euro, Royal touch, Formica, Nippon
38	Veneer	Greenlam, Century ply, Euro ply, Timex, Natural Decowood
39	MDF	Nuwood ,Maftalal, Duratuff
40	Prelam particle board	Novapan, Bhutan. (exterior grade only)
41	Cement bonded particle board	NCL (Bison board), Everest (Eternite), Shera
42	Compact sheet	Vir, Bloom, Formica.
43	Alluminium heavy duty section	Jindal, Domal series, Hindalco, Banco, Gujarat Extrusion
44	Sanitary vessels	Kohler, Jaquar, Hindware, Cera, Parryware , Johnson
45	Sanitary accessories	Kohler, Jaquar, Hindware, Cera, Parryware, Johnson
46	Hand drayer	Euronics , Cera, Jaquar

47	Toilet Cubical	Marino, Greenlam, Matalium, T-Line
48	CPVC & UPVC , PVC pipe	Prince, Supreme, Astral, Finolex, Ashirvad flow guard,
49	Polycarbonate sheet	Makrolon, Lexan, Bayer, Dunpalon, Sabic, Coxwell
50	Anchor fastener and bolts	Hilti, Fischer
51	Gypsum board false ceiling	Saint gobain, USG Boral, Ecotone, Hilux
52	Grid ceiling	Aerolite, Saint gobain, Armstrong, Anutone
53	Accoustic Ceiling	Armstrong , Anutone , Aerolite, Saint gobain
54	Metal ceiling	Metalium , Supersill , USG Boral, Aerolite
55	ACP	Aludecor, Alucobond, Alston, Alstrong, Eurobond , VIVA
56	Acoustic paneling	Artois, Ecotone, Aerolite
57	Glass film	3M, Avery , Garvey,
58	Modular Glass Partition	Sonic, Kubik, Otic , Ozone
59	Carpet flooring	Welspun, Unitex, Ecosoft, Tarkett Flotex, Solarbrite Rosetta, Dubond Sorona
60	Wooden flooring	Vista, Pergo , Armstrong, Mikasa, Ecosoft, Quick step
61	Roller blinds	Vista, Hunterdouglas, Ferrari
62	Hardware & fittings	Hettich, Haffle, Enox, Ebco, kitch
63	Aluminium profile handles & frames	Olive, Hettich, Haffle, Enox, Ebco, kitch
64	Door hardware & accessories	Geze ,Haffle, Enox, Dorma, Kitch, Ozone, kitch
65	PVC edge beading	Rehau , Dolken
66	Furniture	Monarch, Amardeep , HOFF, Godrej , Wipro
67	Glass wool/ synthwool	Rockwool, Twiga , AcoSonic
68	Compactor	Kompress , Wipro , Godrej , HOFF
69	Artificial stone	Emcer , Kalinga, CMC, AGL , Johnson
70	Vinyl	Welspun , Solarbrite , Tarkett, Unitex, Responsive, LG
71	Window locks cum handle	Alualpha, Giessee or equivalent.
72	Filler rubber of glass panel	EPDM quality only
73	Wool felt/weather strip	Anand, red-diplex ltd or equivalent
74	Rust Remover	Feovert (Krishna Conchem), Roff Rust Clear (Pidilite Industries)
75	Polymer bonding agent	Monobond (Krishna Conchem), Roff Bond Repair (Pidilite Industries)
76	Non-shrink grout	Polygrout -HS (Krishna Conchem), Roff Grout GP (Pidilite Industries)
77	Super plasticizer for jacketing	Supercon-100 (Krishna Conchem), RoffPlast 330 /Concrete Master
78	Rebar and Anchor Fasteners	Hilti or Fischer OR Mungo.
79	Acrylic SBR base bonding agent	Mono-bond SBR (Krishna Conchem), CICO, BASF, Pidilite

80	Epoxy Bonding	EPI bond 21 LP (Krishna Conchem), Roff ConcreteBond (Pidilite)
81	Modular Kitchen	Timbor Home, Tiara furniture system, Godrej interio
82	PVC Sleeve	Supreme / Astral / Prince
83	Expansion Board	Capcell HD Board
84	Expansion Joint	Pidilite / Roof/Laticreteor mentioned in BOQ
85	Expansion Joint System	3R as per Item description
86	Water Proofing	BASf/ Fosroc / Sika or mentioned in BOQ
87	Overdeck Insulation	BASf/ Fosroc / Sika or mentioned in BOQ
88	PVC spacer	BAL Endura / Kerakoll / BASF
89	PVC Flooring	Armstrong, Gerflor, Tarkett
90	Self Levelling Chemicals	Ardex / BASF / Cico / Sika
91	Anti-bacterial Paint	Sikka / Liquid Plastic/SSK/Viessmann/artilin / BASF / Huntsman
92	Galvalume roofing sheet	Jindal,Mansha,Eashar
93	Pre coated Sheet	J.S.Eng., Fielders, Rama, Shree Precoated, S.Kumar
94	Floor stamping	Ultratech, Vyara, Flexstone or Equivalent
95	WPC door	Alstone , Flexibond or equivalent
96	Roofing shingles	Saint Gobain , Malarkey , Technonicol , Docke or equivalent
97	Fiber Cement sheet board	Ecopro, Everest , Shera , CK Birla Group
98	Roof Gutter	Saint Gobain , Malarkey , Technonicol or equivalent

## PLUMBING MAKE LIST

Sr.No	Item	Approved Make
1.	SWR PVC PIPE & FITTINGS 6 KG CM <sup>2</sup> ; FITTINGS : 6 KG CM <sup>2</sup>	ASTRAL / SUPREME/PRINCE/FINOLEX
2.	ECO. DRAIN PIPE & FITTINGS	SUPREME/ ASTRAL
3.	GULLY TRAP	GIRCO / TIRUMALA / SONIA/ SUPREME/ASTRAL
4.	STONE WARE PIPES FOR INTERNAL UNDER GROUND DRAIN PIPE	GIRCO / TIRUMALA / SONIA
5.	RCC HUME PIPES EXTERNAL MAIN UNDER GROUND PIPE	INDIAN HUME PIPE / PRANALI
6.	M.S/G.I. PIPES FOR WATER SUPPLY	TATA / JINDAL/ SWASTIK
7.	ASTM/CPVC PIPE & FITTINGS FOR WATER SUPPLY	ASTRAL / SUPREME/ASHIRWAD / FINOLEX
8.	COMPOSITE PLUMBING PIPE & COMPOSITE FITTINGS	KITEC OR EQ
9.	G.I. PIPES FITTINGS WATER SUPPLY	DRP-M / R-BRAND / ZOLOTO
10.	GI TO GI JOINTS	CHAMPION / EQUIVALENT
11.	SOLVENT CEMENT	SUPREME / KISSAN / FINOLEX
12.	BALL VALVES	LEADER / ZOLOTO / AUDCO
13.	WHEEL VALVES	LEADER / ZOLOTO/AUDCO
14.	DCV / NRV	ZOLOTO/SPIREX/AUDCO
15.	TAR	SHALIBIND / TIKIBOND-BS
16.	SELF PRIMING SEWAGE PUMPS	HBD / GRUNDFOS

17.	VALVES	AUDCO/ZOLOTO / R.B. / KBL / KSB
18.	PUMPS	KIRLOSKAR / GRUNDFOSS/XYLEM
19.	STARTER	SIEMENS / L&T
20.	PRESSURE GAUGE	BELLS / H GURU
21.	BOTTLE TRAP & WASTE COUPLING	JAQUAR / HINDWARE/KOHLER
22.	DEWATERING PUMPS	GRUNDFOSS/KIRLOSKAR/ KSB
23.	HYDROPNEUMATIC SYSTEM	GRUNDFOSS OR EQUIVALENT
24.	EOT CRANE WITH HOIST	INDEF / ELECTROMECH / SAFEX / WH-BRADY / EQUIVALENT
25.	METALLIC BELLOWS	BELLOW FLEX / PRICISION / DHRUV / B.D.ENGR.
26.	ELECTRIC GEYSER	A-O SMITH/ RACOLD/SPHERHOT
27.	HOT WATER GENERATOR	THERMAX/A.O.SMITH / KEPL OR EQUIVALNET

<b>N o</b>	<b>Item</b>	<b>Approved Make</b>
<b>LT PANELS,LT CABLES SWITCHGEAR &amp; ACCESSORIES</b>		
1	ENCLOSURE MANUFACTURER	ACTIVE ENGINEERS, ELMEX, AD ENTERPRISE, ACCESS CONTROL PANELS.
2	MCB/ELCB/RCCB/ELMCB	LEGRAND, ABB,HAGER,SCHNEIDER,C&S, L&T,SEIMENS
3	MCCB/ACB	LEGRAND, ABB, SCHNEIDER,SIEMENS,L&T
4	DISTRIBUTION BOX	LEGRAND, ABB,HAGER,SCHNEIDER,C&S, L&T,SEIMENS
5	CHANGEOVER SWITCH	HH ELECON,L&T, ABB, HPL,C&S
6	CAPACITOR	L&T, EPCOS,CONZERV,DATAR,POWERMATRIX,ABB
7	PUSH BUTTON	SIEMENS,ABB,L&T,SCHNEIDER
8	INDICATING LIGHT	SIEMENS,ABB,L&T
9	TIMERS	L&T,SIEMENS,ABB,CONZERV
10	SELECTOR SWITCH	L&T,SEIMENS,KAYCEE
11	AUTOMATIC TRANSFER SWITCH	L&T,HPL,CUMMINS,HAVELLS
12	CTs	KAPPA,L&T,AREVA,MAXWELL
13	PTs	KAPPA,L&T,AREVA,MAXWELL
14	CONNECTORS	L&T, SCHINDER,SEIMENS,ABB
15	PROTECTION RELAY	AREVA,L&T,ABB,SEIMENS
16	ANALOG/DIGITAL METER/LOAD MANAGER/MFM	CONSERV,L&T,SCHNEIDER/ABB/HPL
17	IRON CLAD SWITCH WITH REWIREABLE FUSE/SFU	KEW, TRISHUL,SUPER,C&S
18	METALCLAD SWITCH WITH REWIREABLEFUSE/ SFU	HAVELLS, KEW,C&S, INDOASIAN
19	MAIN LT CABLE	AVOCAB,FINOLEX,PRIMECAB,POLYCAB, DIAMOND



		POWER,RRCABLE,HAVELLS
20	CABLE GLANDS	COMET, HMI, DOWELLS, SIEMENS,CROMPTON,HEX
21	CABLE LUGS	DOWELLS,JOHNSON,HEX
22	BUSDUCT	L&T,SCHNEIDER,C&S,SEIMENS,LEGRAND
<b>INTERNAL WIRING, FIXTURES &amp; ACCESSORIES</b>		
1	RIGID FR PVC CONDUIT	NIHIR,PRECISION,POLYCAB,BEC, Power Flow
2	ACCESSORIES OF CONDUIT	NIHIR,PRECISION,POLYCAB,BEC
3	COPPER FLEXIBLE WIRES	AVOCAB,FINOLEX,POLYCAB,RRCABLE,HAVELLS ,Caliplast
4	TISSINO TYPE SWITCHES & SOCKETS	POINTER-TRUMP, SSK-TOPLINE PC, ANCHOR-PENTA CHEERY
5	MODULAR TYPE SWITCHES & SOCKETS	LEGRAND-MYRIUS, MK-WRAP ROUND, ANCHOR-WOODS,HAVELLS-CRABTREE-ATHENA
6	PVC TAPE	STEEL GRIP,ANCHOR
7	M.S. CONDUIT	BEC,AKG,STEEL CRAFT
8	LIGHT FIXTURES & LAMPS	OSRAM, XAL WIPRO, PHILIPHS, NIRVANA, GE, CG, , JAQUAR ,ENDO , TISVA ,LT
9	CEILING FAN & EXHAUST FAN	USHA,CG,ORIENT,HAVELLS
10	CALL BELL	ANCHOR/ORPAT/MAX
11	WATER COOLER	VOLTAS,USHA,BLUESTAR
12	GEYSER	RECOLD,HAVELLS,BAJAJ,SPHEREHOT
13	MOTOR PUMP SET	CROMPTON,AMRUT,KSB,UNEEL,KIRLOSKAR
<b>CABLE TRAY, RACEWAY &amp; ACCESSORIES</b>		
1	CABLE TRAY	INDIANA,RUSHABH,PROFAB
2	ALUMINIUM FLOOR RACEWAY	MK OR APPROVED BY CONSULTANTS
3	GI FLOOR RACEWAY	MK OR APPROVED BY CONSULTANTS
4	PVC WALL RACEWAY	MK, PROFAB,LEGRAND
<b>UPS &amp; INVERTER</b>		
1	UPS	NUMERIC,EATON,APC, BPE
2	INVERTER	SUVIK,SUKAM,MEGATECH

3	SMF BATTERY	PANASONIC,EXIDE,GLOBAL (YUASA)
4	RACK	FABRICATED
<b>STREETLIGHT POLES, FIXTURES &amp; ACCESSORIES</b>		
1	GI POLES	FABRICATED
2	MS POLES	FABRICATED
3	SMC PRESS MOULDED JUNCTION BOX	SYNTEX OR AS APPROVED BY CONSULTANTS
<b>LIGHTNING PROTECTION &amp; EARTHING SYSTEM</b>		
1	AIR TERMINAL	MAP, LPI, INDESCO
2	SUPPORTING GAYED MAST	MAP, LPI, INDESCO

3	LIGHTNING STROKE RECORDER	MAP, LPI, INDESCO
4	COPPER BONDED ROD & CHEMICAL COMPOUND	MAP, LPI, INDESCO
5	ELECTROLYTIC/CHEMICAL EARTHING KIT	GRESLO, GALAXY EARTHING
<b>ELV SYSTEM &amp; ACCESSORIES</b>		
1	FIRE ALARM PANEL & DISPLAY PANEL	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
2	REPEATER PANEL	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
3	ADDRESSABLE & CONVENTIONAL SMOKE DETECTORS	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
4	INTELLIGENT SMOKE & HEAT DETECTORS	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
5	ADDRESSABLE & CONVENTIONAL HEAT DETECTORS	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
6	ADDRESSABLE & CONVENTIONAL BEAM DETECTORS	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
7	FAULT ISOLATOR	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
8	RESPONSE INDICATOR	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
9	MANUAL CALL POINT	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
10	ADDRESSABLE HOOTER	ESSER, EDWARD, NOTIFIER, SIEMENS, GST
11	FIRE CABLE	RRCABLE, FINOLEX, DELTON, POLYCAB, AVOCAB, Caliplast
12	RJ-45 SOCKET OUTLET (COMPUTER & TELEPHONE)	LEGRAND-MYRIUS, MK-WRAP ROUND, ANCHOR-WOODS, HAVELLS-CRABTREE-ATHENA, PLEXONICS, AECONNECT

13	RJ-11 TELEPHONE SOCKET	LEGRAND-MYRIUS, MK-WRAP ROUND, ANCHOR-WOODS, HAVELLS-CRABTREE-ATHENA, PLEXONICS
14	CAT-6 CABLE	TYCO ELE(AMP), SCHINDER ELE.(DIGILINK), R&M, SYSTIMAX, MOLEX, PLEXONICS, AECONNECT
15	CAT-6E CABLE	TYCO ELE(AMP), SCHINDER ELE.(DIGILINK), R&M, SYSTIMAX, MOLEX, PLEXONICS, AECONNECT
16	TELEPHONE TAG BOX	KRONE
17	TELEPHONE PAIR WIRE	RRCABLE, FINOLEX, DELTON, POLYCAB
18	NETWORK SWITCH	CISCO, HP, PLEXONICS, , D LINK, AECONNECT, NETGEAR
19	ETHERNET SWITCH	CISCO, HP, PLEXONICS , D LINK, , AECONNECT, NETGEAR
20	PATCH CORDS	CISCO, HP, PLEXONICS , D LINK , , AECONNECT, NETGEAR
21	U RACKS	VERO  PRESIDENT, VALRACK, S PIDER OR APPROVED BY CONSULTANTS, AECONNECT
22	PUSH BUTTON PHONE	PANASONIC, BEETEL, SONY OR APPROVED BY CONSULTANTS, PRAMODA
23	PROGRAM PHONE	PANASONIC, BEETEL, SONY OR APPROVED BY CONSULTANTS, MA TRIX
24	AMPLIFIER (POWER & BOOSTER)	JBL, AUDIOQUEST, BOSCH, AVTRON
25	AUDIO MIXER	JBL, AUDIOQUEST, BOSCH, AVTRON
26	CD/DVD/FM PLAYER	JBL, AUDIOQUEST, BOSCH, SONY, AVTRON

27	MICROPHONE	JBL, AUDIOQUEST,BOSCH, AVTRON
28	MULTIPLEXER	JBL, AUDIOQUEST,BOSCH, AVTRON
29	CEILING AND WALL SPEAKER	JBL, AUDIOQUEST,BOSCH, AVTRON
30	GOOSENECK MIC	JBL, AUDIOQUEST,BOSCH, AVTRON
31	WIRELESS MIC	JBL, AUDIOQUEST,BOSCH, BEYERDYNAMIC
32	STAND MIC	JBL, AUDIOQUEST,BOSCH
33	SPEAKER CABLE	RRCABLE, FINOLEX,DELTON,POLYCAB,CALIPLAST
34	2 MP HD IR VERIFOCAI CAMERA	AVTRON,HONEYWELL,SONY, SCHNEIDER (PELCO), HIKVISION,CPPLUS
35	2 MP FIX DOME CAMERA	AVTRON,HONEYWELL,SONY, SCHNEIDER (PELCO), HIKVISION, CPPLUS
36	DOME CAMERA	AVTRON,HONEYWELL,SONY, SCHNEIDER (PELCO), HIKVISION, CPPLUS
37	DIGITAL VIDEO RECORDER	AVTRON,HONEYWELL,SONY, SCHNEIDER (PELCO), HIKVISION, CPPLUS
38	NETWORK VIDEO RECORDER	AVTRON,HONEYWELL,SONY, SCHNEIDER (PELCO), HIKVISION, CPPLUS
39	LED/LCD DISPLAY UNIT	SONY, SAMSUNG,PANASONIC,LG

Sr. No.	Description	Make
1	VRF	DAIKIN, O GENERAL, HITACHI, MITSUBISHI, BLUESTAR / TOSHIBA
2	Treated Fresh Air Unit	Zeco / Citizen / Ethos
3	Dx Type Condensing Unit	DAIKIN, O GENERAL, HITACHI, MITSUBISHI, BLUESTAR /TOSHIBA
4	Ventilation Fan	Kruger/Nicotra/System Air
5	Grills/ Jet Nozzel	Caryaire /System Air /Ruskin Titus
6	Nitrile Insulation	K Flex/ Armacell /Areoflex
7	Copper pipes	Maxflow / Mandev
8	Drain Pipe	Prince/Finolex/ Astral
9	GI Sheet	Jindal/Tata
10	Electrical Cables	Polycab/Finolex Eq Approve

Only above said material is to be used as per Schedule “B”

Notes:

The consultant / Nagarpalika reserves the right to select the manufacturers or approved make from the above list and also to make changes (add or delete names of other makes) in this list during the execution of the contract,

Tenderers should quote rates of various items considering supply/ use of first preference make of material selected by him. Second preference make material would be accepted by the consultant if they are satisfied that first preference make material cannot be supplied/ used by Tenderers due to any specific reasons. However, the final decision for accepting second preference makes or accepting only first preference would be that of the consultant.

Note:

All the material/ makes listed above and other than as specified above shall be used after obtaining prior approval from the architect/ Eng. in charge equivalent material listed in complete tender document should only be used in case the specified material or not available the equivalent material should be used after obtaining prior approval from the architect/Eng-in-charge. Any extra item has to be approved in advance and then execute the same else university will not be liable for payment of such item. If any items are not included in the tender and need to do on site then contractor has to give RA (rate analysis) for the same.

TENDERER'S SEAL AND SIGNATURE.

# **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

---

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

# **INDEX**

## **BILL OF QUANTITIES**

SR. NO.	PARTICULARS
1	PREAMBLE TO PRICE SCHEDULE
2	BID FORM
3	SUMMARY OF PRICE SCHEDULE - Grand Summary of Schedules (Covering Schedule)
4	PRICE SCHEDULES -B

**NAME OF PROJECT: BID DOCUMENTS FOR CONSTRUCTION OF RAIN WATER HARVESTING SYSTEMS AT VARIOUS LOCATIONS UNDER UMARGAM NAGARPALIKA FOR GROUNDWATER RECHARGE AND SUSTAINABLE WATER MANAGEMENT.** Conditions of Contract, Technical Specifications and Drawings.

1. 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.
2. 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.
3. The rates and prices shall be quoted entirely in Indian Currency.
4. 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).
5. 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.
6. 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.
7. 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.
8. Errors will be corrected by the Employer for any arithmetic errors pursuant to Clause 29 of the Instructions to Bidder.
9. 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.
10. Break Up Of Schedule Of Payment As per Schedule-B
11. The rates and prices shall be submitted in the electronic formats given by n-procure which is called Schedule B, rates and prices received in any other formats will be rejected and the Bids will be disqualified.
12. It will be entirely at the discretion of the Employer to accept or reject the bidder's proposal, without giving any reasons whatsoever and the bidder shall not be permitted to withdraw his bid on this account.
13. Price Schedule-A gives the Schedule showing approximately the materials to be free supplied from the

by client.

14. In Schedule-B the Bidder shall quote prices for the items on lump sum / unit rate as called for against the BOQ item.
15. In Price Schedule-B, bidder shall quote his price for entire work. Prices quoted in Schedule-B only will be considered for price evaluation & shall form a part of the Contract Agreement.
16. In the Price Schedule-B bidder shall furnish breakup of his prices quoted in Price Schedule-B and shall be carried forward to Schedule-B for comparison and evaluation.
17. The total shall be carried forward to Schedule-B for comparison and evaluation.
18. Wherever for a particular item the quantities have been specified payment shall be on unit rate basis and unit variation in quantity will be paid with pro rata basis.
19. Each item is to be individually priced online and the amounts shall be added up to arrive at the "Total of each Price Schedule". No column in the Schedules of prices shall be left blank except where the item description requires the item to be priced on "as applicable" basis. The item shall not be priced if it is "not applicable" to the bidder's design, in which case the bidder shall add the words "NOT APPLICABLE". The wording in the item description is for subject matter guidance only; clause references are indicative only and all other relevant clauses shall also be referred to. The prices shall allow for all the works covered under the bid and all liabilities and contractual obligations whether separately specified or not. Items against which no prices are quoted shall not be separately paid for and the bidder shall be deemed to have covered the cost of execution of such items (according to the requirements of the bid document) in the prices quoted for other items.
20. Items not specifically listed in his Price Schedules, but required to be executed for satisfactory working/safety of the system as specified, will not be separately paid for by the Employer when executed and shall be deemed to be already covered by other items And rates listed in the price sheets No extra payment shall be given for any item which is required to complete and perform the project.
21. The total of the item prices in Price Schedule-B shall be equal to the price quoted by the bidder in Price Schedule B and shall be firm and fixed, during the pendency of the Contract. In case of any discrepancy noted in the various price schedules, those in Schedule B will be considered and binding on the Contractor. The prices in Price Schedule B of the successful bidder shall be corrected accordingly. Only Price Schedule-B after carried over and arithmetic corrections if any will be considered for financial evaluation of the bid.
22. Schedule 'D gives the basis of interim payment for construction of civil works.
23. The bidder shall be deemed to have allowed in his price for provision, maintenance and final removal of all temporary works of whatsoever nature required for construction including temporary bunds, diverting water, pumping, de-watering etc. for the proper execution of works. The rates shall also be deemed to include any works and setting out that may be required to be carried out for laying out of all the works involved.
24. Prices shall be filled online only.
25. The Price Schedules are to be read in conjunction with the Conditions of Contract, the Specifications and other sections of these bid documents and these documents are to be taken as mutually explanatory of

one another.

26. The bidder shall interpret the data furnished and carry out any additional survey work, or investigation work required at his own cost.
27. The prices quoted shall also include the cost of materials utilized for testing.
28. The bidder should acquaint himself with the site conditions including the access to Work site. The successful bidder shall have to make suitable access to work sites at his own cost. These accesses will be used by the other contractors working for Valsad Nagarpalika.
29. The item descriptions in price schedule are for subject matter guidance only and the prices shall include all the equipment's / materials / accessories and services required as per the specifications. The bidder shall fill in the price schedule furnished.
30. General Conditions of Contract, Clause No. 1, and Security Deposit.
31. 1% of the value of work will be deducted from the Running bill against labour cess which is nonrefundable.
32. Third Party Inspection/CSC agency will be deployed by Valsad Nagarpalika and charges of the same will be borne by Bidder.
33. Any expenditure incurred by inspection/ CSC agency for the work misinformed by the contractor and charges of inspection/ CSC agency without any work due to misinformation shall be recovered from the contractor.
34. The prices shall be quoted inclusive all taxes, royalties and duties prevailing at the time of submission of the bids. Statutory variation if any during the currency of contract shall have to borne by the agency which shall be not be reimbursed.
35. 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)
35. The rates quoted shall be Inclusive of GST, and inclusive of all other taxes, duties which shall not be paid extra. While GST will be Payable for admissible part of actual work done at the approved tender rates and tender conditions of price variations. GST shall be paid as per prevailing rates at the time of payment. The TDS shall be deducted at source as per provision of IT rules and policy.
36. Goods and Service Tax (GST TDS) Amount as per Government Rules and Regulation will be Deducted from Contractors / Bidder Running Bill / Final Bill by Nagarpalika Stage / Bill Wise.(as per resolution GST/1017/1097/GST Cell dated 15/09/2018)
37. The Ministry of Finance and Company Affairs, Department of Revenue, Government of India has issued a notification No. 6/2007-Central Excise Circular No. 6/2007, dated 1th March 2007 regarding the Central Excise Duty Exemption. By this notification, the notification 659/50/2002 dated 6th September, 2002 has been amended and the earlier notification 26/2009 dated 4th December, 2009 has been amended and the Items of materials, instruments, apparatus and appliance, ancillary equipment's and their components/parts, etc. for setting up of Water Treatment Plants and the Pipes needed for delivery of water from its source to the Plant and from there to the Storage facility (as mentioned in notification

No.6/2007) are exempted from Central Excise Duty subject to the Certification by the Collector/ District Magistrate/ Deputy Commissioner of the District, regarding its use on such Projects. Necessary Project Authority Certificate shall be made available to the Contractor, as per the prevailing rules, to facilitate him to avail the benefit in terms of Exemption of Central Excise. ( Circulars attached herewith )

38. Royalties: The contractor shall be liable to pay the royalty of the quarried materials/ minerals used in the construction of works at the rates specified in the Narmada Water Resources, Water Supply & Kalpsar Dept. Resolution No. GEN-2010-595-(6)-M.I.Cell ( K-1) Dt. 29-4-2011 ( Gujarati Version Copy enclosed) and shall be recovered from the running bills of the work from time to time and remaining amount if any shall be recovered from the final bill before releasing the security deposit of the work. The contractor shall furnish the statement showing the quantity of quarried materials / minerals from whom purchased ( with full address of the seller) and copies of the bills for purchase to the Executive Engineer of the in charge of the work. The contractor shall also furnished such additional information as regards royalty payment to the competent authority.
39. Agency shall have to take Insurance policy and intimate to Valsad Nagarpalika along with the evidence within time limit. In case of noncompliance entire responsibility shall be rest with the agency and required amount shall be recovered from any due amount of the agency.
40. Valsad Nagarpalika can recover penalty amount from the agency for not taking the insurance. Though the penalty amount is recovered, responsibility of the agency for taking insurance shall be continued and will not be escaped from the responsibility.
41. The contractor shall apply fair means of stock maintenance and shall adopt accounting standard as may be prescribed under GST Act as applicable in the state of Gujarat. For arriving at the difference in procurement prices due to introduction of GST it will be open for the Board to ask for original invoices, lorry receipt, weigh bridge slips, payment details and such other documents as may be required for the purpose.
- The claim of contractor regarding GST shall have to be backed by documentary evidence substantiating the actual payment of tax duly certified by the competent tax authority. The final decision regarding the quantum of claim amount to be recovered or reimbursed shall be of the competent authority and shall be binding on the contractor.
42. To facilitate bidder during the bidding stage, department has provided the indicative quantities in the minimum BOQ, which are meant to appraise the bidder about magnitude of the work and these are likely to vary on the basis of detailed survey and geotechnical investigation depending upon land/ ROU availability during execution and the contractor shall have no objection to such minor or major changes or deletion or addition of the item/ items. The sizing indicated in the drawing and minimum BOQ is binding to contractor and size smaller/ lower than this may not be permitted. However, in case higher/ larger size is required as per detailed survey and geotechnical investigation based detailed Design for execution, quantity variation beyond 10% on upward side will be adjusted on pro rata basis. Quantity variation on lower side will be adjusted, irrespective of the variation. This being turnkey tender, any item specifically not mentioned in the BOQ, but required for approval of the competent authority is deemed to be covered in the project. Payment towards various items indicated in minimum BOQ for shall be made on the prorata basis i.e. in case estimate is X and approved contract rate is Y, then ratio of X/Y would be applicable for making the payment towards the item executed. For the item indicated in the minimum BOQ is not executed by the contractor, payment shall not be made towards that particular item.

Signature of Contractor

CHIEF OFFICER  
UMARGAM NAGARPALIKA, UMARGAM

## **2. BID FORM**

**Bidders are required to fill up all the blank spaces in this Bid Form.**

**To,  
CHIEF OFFICER  
UMARGAM NAGARPALIKA  
UMARGAM**  
Dear Sir,

**SUB: BID DOCUMENTS FOR CONSTRUCTION OF RAIN WATER HARVESTING SYSTEMS AT VARIOUS LOCATIONS UNDER UMARGAM NAGARPALIKA FOR GROUNDWATER RECHARGE AND SUSTAINABLE WATER MANAGEMENT.**

1. Having visited the site and examined the Bid Documents, Drawings, Conditions of Contract, Specifications, Schedules, Annexure, Preamble to Price Schedules, Price Schedules etc. including Addenda / Amendments to the above, for the execution of the above Contract, we the undersigned offer to Design, Engineer, Procure, Construct, Complete, Commission, operate, maintain and Run the whole of the said works for 04 Months from the date of commissioning including defects liability period as given in Conditions of Contract and in conformity with the drawings, conditions of Contract, specifications, Preamble to Price Schedules, Price Schedules, Annexure, Bidding Documents, including Addenda Nos. \_\_\_\_\_ (insert numbers) for Lump sum fixed price of Rs. \_\_\_\_\_.

(Rupees \_\_\_\_\_) for Construction including free trial run for three months or such other sum as may be ascertained in accordance with the conditions.

2. I / We agree that

(a) If we fail to provide required facilities to the Employer's representative or any other person / Agency by the Employer to perform on his behalf for carrying out the inspection and testing of materials and workmanship.

Or

(b) If we incorporate into the Works, materials before they are tested and approved by the Engineer's representative

Or

(c) If we fail to deliver pure water of required quantity according to the conditions / stipulations of the Contract, the Engineer will be at liberty to take any action including termination of Contract and impose at his absolute discretion any penalties, and / or reject the work.

3. We undertake, if our Bid is accepted, to complete and deliver the works in accordance with the Contract within 04 Months, inclusive of monsoons, from the date or receipt of Letter of Acceptance issued to us by you.

4. We agree to abide by this Bid for a period of  $120+45=165$  days from the last date of submission of bid and it shall remain binding upon us and may be accepted at any time before the



expiry of that period.

5. In the event of our Bid being accepted, we agree to enter into a formal Contract Agreement with you incorporating the conditions of Contract thereto annexed but until such agreement is prepared this Bid together with your written acceptance thereof shall constitute a binding Contract between us.

6. We agree, if our Bid is accepted, to furnish performance Security in the forms and of value specified in the General Conditions of Contract.

7. We have independently considered the amounts of liquidated damages shown in Appendix to Bid and agree that they represent a fair estimate of the damages likely to be suffered by you in the event of the work not being completed by us in time.

8. We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_

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

(Name of the person) \_\_\_\_\_

(In the capacity of)

Company Seal \_\_\_\_\_(Name of firm)

Duly authorized to sign Bid for and on behalf of  
(Fill in block capitals)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witness:

Signature \_\_\_\_\_

Name \_\_\_\_\_

**SECTION - 8**

**SECURITIES AND OTHER FORMS**

## BID SECURITY (BANK GUARANTEE)

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

KNOW ALL PEOPLE by these presents that We -----  
(name of Bank) of ----- (name of country) having our  
Registered office at ----- (hereinafter called  
"the bank") are bound unto ----- (name of Employer)  
(hereinafter called "The Employer") in the sum of ----- \*  
for which payment well and truly to be made to the said Employer the Bank itself, his  
successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this ----- day of ----- 20

THE CONDITIONS of these obligations are:

(1) If after Bid opening the Bidder withdraws his bid during the period of Bid validity specified in the Form of Bid;

**Or**

(2) If the Bidder has been notified of the acceptance of his bid by the Employer during the period of Bid Validity:

A Fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

B. Fails or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders; or

C. does not accept the correction of the Bid Price pursuant to Clause 27 (Correction of Errors)

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or any of the three conditions, specifying the occurred conditions or conditions.

This Guarantee will remain in force up to and including the date ----- \*\*  
days after the deadline for submission of Bids as such the deadline is stated in the  
Instructions to Bidders or as it may be extended by the Employer, notice of which  
extension (s) to the Bank is hereby waived. Any demand in respect of this  
guarantee should reach the Bank not later than the above date

DATE -----

SIGNATURE-----

WITNESS -----

SEAL-----

---

(Signature, name and address)

\* The Bidder should insert the amount of the guarantee in words and figures  
denominated in Indian Rupees. This figure should be the same as shown in  
Clause 16.1(Bid Security) of the Instructions to Bidders.

**\*\*45 days** after the **end of the validity period** of the Bid. Date should be inserted  
by the Employer before the Bidding documents are issued.

## PERFORMANCE SECURITY

TO,

----- (Name of Employer)  
----- (Address of Employer)  
-----

WHEREAS ----- (name and address of Contractor) (hereafter called "the Contractor") has undertaken, in pursuance of Contracts No. ----- dates ----- to execute ----- (name of Contract and brief description of Works) (hereinafter called "The Contract")

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractors such a bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of ----- (Amount of guarantee)\* ----- (in words), such sum being payable in types and proportions of currencies in which the Contract prices is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of ----- (amount of guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting is with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract to of the Works to be performed thereunder or of any of the Contract documents which may be made between your and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such charge, addition or modifications.

This guarantee shall be valid until 60 days from the date of expiring of the Defect Liabilities period.

Signature and Seal of the guarantor -----

Name of Bank -----

Address -----

Date -----

---

\*An amount shall be inserted by the Guarantor, representing the percentage the Contract price specified in the Contract denominated in Indian Rupees.

## ADDITIONAL PERFORMANCE SECURITY

[Clause 34.1. (A)]

TO,

----- (Name of Employer)  
----- (Address of Employer)  
-----

WHEREAS ----- (Name and address of Contractor) (hereafter called "The Contractor") has undertaken, in pursuance of Contracts No. ----- Dates ----- to execute ----- (Name of Contract and brief description of Works) (hereinafter called "The Contract")

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractors such a bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of ----- (Amount of guarantee) ----- (in words), such sum being payable in Types and proportions of currencies in which the Contract prices is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of ----- (Amount of guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting is with the demand

We further agree that no change or addition to or other modification of the terms of the Contract to of the Works to be performed thereunder or of any of the Contract documents which may be made between your and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such charge, addition or modifications.

This guarantee shall be valid until **28 days** from the project completion date.

Signature and Seal of the guarantor -----

Name of Bank -----

Address -----

Date -----

## BANK GUARANTEE FOR ADVANCE PAYMENT

TO,

----- (Name of Employer)

----- (Address of Employer)

----- (Name of Contractor)

Gentlemen:

In accordance with the provisions of the Conditions of Contract, sub-clause 51.1 ("Advance Payment") of the above mentioned Contract, ----- (name and address of Contractor) (hereinafter called "the Contractor") shall deposit with (name of Employer) a bank guarantee his proper and faithful performance under the said Clause of the Contract in an amount of ----- (amount of Guarantee)\* - ----- in words).

We, the ----- (bank of financial institution), as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to ----- (Name of Employer) on his first demand without whatsoever right of obligation on our part and without his first claim to the Contractor, in the amount not exceeding --- ----- (amount of guarantee)\* ----- (in words)

We further agree that no change or addition to or other modifications of the terms of the Contractor or Works to be performed thereunder or of any of the Contract documents which may be made between ----- (name of Employer) and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modifications.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until ----- (name of employer) receives full repayment of the same amount from the contractor.

YOUR'S TRULY

Signature and Seal \_\_\_\_\_  
Name of Bank/ Financial Institution \_\_\_\_\_  
Address \_\_\_\_\_  
Date \_\_\_\_\_

\* An amount shall be inserted by that Bank or Financial Institution representing the amount of the Advance Payment, and denominated in Indian Rupees.

## Letter of Acceptance

(Letter head paper of the Employer)

\_\_\_\_\_, (date)  
To, \_\_\_\_\_ (Name and address of the Contractor)  
\_\_\_\_\_  
\_\_\_\_\_

Dear Sirs,

This is to notify you that your Bid dated \_\_\_\_\_ for execution of the \_\_\_\_\_ (Name of the contract and identification number, as given in the Instructions to Bidders) for the Contract Price of Rupees \_\_\_\_\_ (\_\_\_\_\_) (amount in words and figures) as corrected and modified in accordance with the Instructions to Bidders\* is hereby accepted by our agency.

You are requested to furnish performance security, in the form detailed in para 34.1 of ITB for an amount equivalent to Rs. \_\_\_\_\_. Within **10 days** of the receipt of this letter of acceptance up to beyond **60 days** from the date of expiry of defects Liability period i.e. up to \_\_\_\_\_ and the Additional Performance Security for an amount equivalent to Rs. \_\_\_\_\_ shall be valid beyond 28 (twenty-eight) days of Project Completion Date i.e. up to \_\_\_\_\_ and sign the contract, failing which action as stated in Para 34.3 of ITB will be taken.

Yours Faithfully

Authorized Signature  
Name and title of Signatory  
Name of Employer

---

\* Delete "Corrected and" or and modified if only one of these actions applies. Delete as corrected and modified in accordance with the Instructions to Bidders, if corrections or modifications have not been affected.



**Issue of Notice to proceed with the work**

(Letterhead of the Employer)

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

**(ON COMPANY'S LETTER HEAD)**  
**LETTER OF SUBMISSION OF BID, ASSURANCE LETTER.**

**To,  
CHIEF OFFICER  
UMARGAM NAGARPALIKA  
UMARGAM.**

**Respected Sir,**

**SUB. : - BID DOCUMENTS FOR CONSTRUCTION OF RAIN WATER HARVESTING SYSTEMS  
AT VARIOUS LOCATIONS UNDER UMARGAM NAGARPALIKA FOR GROUNDWATER  
RECHARGE AND SUSTAINABLE WATER MANAGEMENT.**

1. With reference to the tender invited by you for the above mentioned work/s, I/We do hereby offer to perform, provide execute complete and maintain the work/s in conformity with the drawings, conditions of tender articles of agreement and conditions of contract, specifications, and bill of quantities for the sum of Total Quoted Amount at the rate quoted in the bill of quantities.
2. I / We have satisfied ourselves as to the location of site, examined the drawings and read of Articles of Agreement, conditions of tender, conditions of contract and specifications etc. and I/We understand that the works are to be completed within\_\_\_\_\_calendar months. I/We agree to finish the whole of the works within\_\_\_\_\_calendar months from the date of commencement of the work fully understanding that the time is the essence of the contract.
3. I/We will carry out various types of Pre and Post total station survey work in Connection with stipulated quantities in Schedule-B for smooth running of project and site layout management.
4. I/We will obtain at various locations for Deciding the Depth of Foundation and other criteria.
5. The Bidder/Contractor will have to Prepare Detailed Structure Design and Drawing on the Basis of Own Design for Component at his own Expanse According to Stages of Payment Given in Schedule-B, The Chief Officer Valsad Nagarpalika, Valsad , will not bare any Additional Expanse regarding the same.
6. We have independently considered the amount of liquidity damages as stated in the appendix and the general conditions of the contract and agree that it represents fair estimate of the loss likely to be suffered by THE CHIEF OFFICER VALSAD NAGARPALIKA VALSAD in the event of the works not being completed by us in time.
7. If our tender is accepted, we will, when required, furnish the security deposit for the sum named in the appendix to the general conditions of the contract for the due performance of the contract.

8. We agree to abide by this tender for the period of Bid Validity from the Last date of Submission of tender, which may be extended further by mutual agreement. It shall remain binding upon us. If the tender is withdrawn by us, our earnest money will be forfeited.
9. Unless and until a formal agreement is prepared and executed this tender together with your written acceptance thereof shall constitute a binding contract between us.
10. We agree that at your sole discretion and without assigning any reason whatsoever, you reserve the right to accept and/or reject any or all tenders. The Chief Officer Valsad Nagarpalika, does not bind itself to accept the lowest tender.

**Date:**  
**of the firm) Witness:**

**Yours faithfully,**  
**(Signature of the Tenderer with the seal**

1. **Signature :**  
**Name:**  
**Address:**

2. **Signature :**  
**Name:**  
**Address:**

# SBD SECTION-9

## DRAWING



## **SECTION - 10**

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

**NOTE: ALL SUPPORTING DOCUMENTS MUST BE FURNISHED BY BIDDER AS PER BID EVALUATION CRITERIA FOR THE PURPOSE OF REALIZATION OF DRAFT TENDER PAPER.**