

**STANDARD BIDDING  
DOCUMENT PROCUREMENT OF CIVIL  
WORKS**



<b>NAME OF WORK: -</b>	<b>ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).</b>
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**THE CHIEF OFFICER  
KHAMBHAT NAGARPALIKA  
KHAMBHAT**

## **KHAMBHAT NAGARPALIKA KHAMBHAT**

**NAME OF WORK: ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).**

### **VOLUME -I – TECHNICAL BID**

<b>MILESTONE DATES</b>		
<b>Bid Documents Downloading Start Date</b>	<b>:</b>	<b>Date: 19/06/2026</b>
<b>Last Date for Submission of Online Tender</b>	<b>:</b>	<b>On Date : 17/07/2026 up to 18:00 Hrs.</b>
<b>Dates of Submitting the Tender Fee / E.M.D and relevant Documents of the Tender By RPAD Only.</b>	<b>:</b>	<b>Up to Date 27/07/2026 18:00 Hours At the Khambhat Nagarpalika Dist. Anand, Gujarat-India.</b>
<b>Openings Dates for online Tender Technical Bid Price Bid</b>	<b>:</b>	<b>Technical Bid on Date 28/07/2026 at 12:00 Hrs. Price Bid date to be intimated later. (If Possible)</b>
<b>EMD</b>	<b>:</b>	<b>Rs. 2,00,000.00</b>
<b>Tender Fee</b>	<b>:</b>	<b>Rs. 4,248.00</b>
<b>Class Of Contract</b>	<b>:</b>	<b>“B” Class and Above</b>
<b>Duration Of Work</b>	<b>:</b>	<b>12 months.</b>

**-: OFFICER INVITING BIDS: -**

**THE CHIEF OFFICER  
KHAMBHAT NAGARPALIKA  
KHAMBHAT**

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**INVITATION FOR BID  
(IFB)**

**KHAMBHAT NAGARPALIKA KHAMBHAT**  
**INVITATION FOR BID**  
**NATIONAL COMPETITIVE BIDDING**

1. The **Chief Officer KHAMBHAT NAGARPALIKA KHAMBHAT** 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>	ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).
<b>Bid Security (EMD)</b>	Rs. 2,00,000.00
<b>Cost of document (Tender Fee)</b>	Rs. 4,248.00
<b>Period of Completion</b>	12 Months
<b>Class of Registration / Category of Contractor if required</b>	"B" Class and Above

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 Khambhat and in favor of **CHIEF OFFICER KHAMBHAT NAGARPALIKA**. 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 **27/07/2026** 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 than bidder and issued after the last date of submission of Bids, will not be considered or accepted.
  - d. The cost incurred by the contractor for this offer for clarification or attending discussion, conferences or site visits will not be reimbursed by the Employer or Engineer-in-Charge.
  - e. Conditional tender shall not be accepted.
  - f. Any changes, addition, alternation made in the prescribed form attached with tender are liable to be rejected.
  - g. Any change in format or conditional Bank Guarantee will not be accepted and the bidder will be considered non-responsive.
  - h. All the bidders are instructed to fill in information strictly in accordance with the format given in the checklist / qualification document / tender document.
  - i. It is mandatory for the bidders to supply each and every information as asked strictly in electronic format at appropriate places only.
  - j. Blank / insufficient information shall be treated as nil information and shall result in disqualification.
  - k. Even if the bidder has been qualified in a similar or larger size of project in the past, it shall not be deemed to be a ground / reason for not giving required information for this work / bid.
  - l. Information supplied for earlier projects shall not be considered while evaluation of this bid. The Government will not ask for any other information, unless it is found absolutely necessary by the competent authority.
  - m. If found necessary, the contractor will be intimated for negotiation,

## **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), Rs. 0.5 Crore (Electrical Works) kindly refer to GoG NWRWS & K Department's Circular No. Paracha/1097/1397(11)/pa.fa./MICELL (k-1), 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 **27/07/2026** 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 R.P.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 **"B "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 **(Asphalt / R.C.C. Road Work)** 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 **(Asphalt / R.C.C. Road Work)** costing not less than the amount equal to 80 % of the Estimated Cost. **i.e., Rs. 160.00 Lac.** (Only in Form 3-A Certificate from Government of Gujarat/ Semi Government Bodies only.)  
OR
- B. Two similar completed work of **(Asphalt / R.C.C. Road Work)** costing not less than the amount equal to 50 % of the Estimated cost. **i.e., Rs. 100.00 Lac.** (Only in Form 3-A Certificate from Government of Gujarat/ Semi Government Bodies only.)  
OR
- C. Three similar completed work of **(Asphalt / R.C.C. Road Work)** costing not less than the amount equal to 40% of the estimated cost. **i.e., Rs. 80.00 Lac.** (Only in Form 3-A Certificate from Government of Gujarat/ Semi Government Bodies only.)

The Khambhat Nagarpalika Khambhat 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. Khambhat Nagarpalika Khambhat

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

**Work Experience only for (Asphalt / R.C.C. Road Work) 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. 60.00 Lakhs)** 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.40.00 Lacs**, 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.194)
- 14. The Contractor Should submitted Documentary evidence of Ownership / MOU of hot mix plant should be preferably located within 50-70 km radius from Khambhat Nagarpalika Khambhat.**

**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 Khambhat Nagarpalika Khambhat 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 Khambhat Nagarpalika at Khambhat 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 Khambhat Nagarpalika Khambhat 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 Khambhat Nagarpalika Khambhat 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 Khambhat Nagarpalika, Khambhat 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(ગૅરી) 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 Khambhat Nagarpalika 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 Municipality, 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 Khambhat Nagarpalika Khambhat invites bids for the ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27)...** 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

#### 4.52 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)	2026-2027	1.00
-1	2025-2026	1.10
-2	2024-2025	1.21
-3	2023-2024	1.33
-4	2022-2023	1.46
-5	2021-2022	1.61
-6	2020-2021	1.77
-7	2019-2020	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:

- (a) 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. 60.00 Lakhs)** of the Estimated Cost. (The audited balance sheet/C.A. Certificate for turnover should be submitted in support of the same.)
- (b) Experience in successfully completing work As per Bid Evaluation Criteria on page no.7 or substantially completing at least one contract of **(Asphalt / R.C.C. Road Work)** of at least 80 percent/ Two contract of **(Asphalt / R.C.C. Road Work)** of at least 50 percent/ Three contract of **(Asphalt / R.C.C. Road Work)** 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-  
KHAMBHAT NAGARPALIKA-  
KHAMBHAT.

Dear Sir,

**~~SUB: ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).~~**

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 **Khambhat Nagarpalika** does not bind itself to accept the lowest tender.~~

\_\_\_\_\_

Signature of Engineer \_\_\_\_\_ Yours faithfully,  
\_\_\_\_\_ Khambhat Nagarpalika \_\_\_\_\_

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\_Khambhat@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.

18. The rates to be quoted by the contractor are inclusive of sales GST & all other taxes. No extra payment on this account will be made to the contractor.

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 Khambhat Nagarpalika** payable at **Khambhat** 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**

- 241 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**

- 261 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.
- 262 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.
- 263 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 or Fraudulent Practices**

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

## APPENDIX TO ITB

### Clause Reference

### With respect to

### Section –I

1.	The Name of the Employer is The Chief Officer Khambhat Nagar Palika Khambhat.	[ Cl.1.1]
2.	The last five financial years.	
	2025 – 26	
	2024 – 25	
	2023 – 24	
	2022 – 23	
	2021 – 22	
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 Khambhat Nagarpalika Khambhat	[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 28/07/2026 at 12.00 AM/PM</b>	
12.	Address of the Employer: The Chief Officer Khambhat Nagarpalika Khambhat Three Darwaja, Khambhat -388620 ( di-Anand) Phone (o) 02698-221300	
13.	Deleted	
14.	The bid should be submitted latest by 17/07/2026 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 28/07/2026 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 Khambhat Nagarpalika and Payable at Khambhat	
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]

<b>Year</b>	<b>Financial Year</b>	<b>Multiplying factor</b>
Base year of inviting tender	2026-27	1.00
-1	2025-26	1.10
-2	2024-25	1.21
-3	2023-24	1.33
-4	2022-23	1.46
-5	2021-22	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**

- 91 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.
- 92 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 including 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 not 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 = 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.

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

## 50 Bonus

- 50.1 If the contractor achieves completion of the whole of the works prior to the intended Completion Date prescribed in Contract Data the Employer shall pay to the contractor a sum stated in Contract Data as bonus for every completed month **but subjected to maximum amount as stated in Contract Data**; which shall elapse between the date of completion of all items of works as stipulated in the contract, including variations ordered by the Engineer and the time prescribed in Clause 17.
- 50.2 Bonus shall be paid only to works amounting to above INR 5 crore with time limit of the works is equal or more than 6 months. The bonus would be paid as under

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

## ~~51. Advance Payment.~~

- ~~51.1 The Employer shall make advance payment (not to be paid less than two installments except in special circumstances for which the reason to be Recorded in writing) to the Contractor of the amounts stated in the Contract Date by the date stated in the Contract Date, against provision by the 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**

601 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 maybe.
  2. Deposit linked insurance on the death in harness of the worker.
  3. Payment of P.F. accumulation on retirement/death etc.
- D) **Maternity Benefit Act 1951** :- The Act provides for leave and some other benefits to women employees in case of confinement or 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 one 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.

Every 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 vary 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 form 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 form 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 by supplied with at least one ladder each 20 meters in length or fraction there of 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 handing 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 part 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 KHAMBHAT NAGARPALIKA KHAMBHAT Address: Three Darwaja At. Khambhat Dist: Anand Khambhat-388620 Phone (o) 2698-221300	[CL.1.1]
2.	The Engineer is	
	Name of Authorized Representative: Deputy Executive Engineer/City Engineer/ PWD Engineer of KHAMBHAT NAGARPALIKA KHAMBHAT .	
3.	The Defects Liability Period is <b>36 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>12 Months</b> after start of work with the following milestones:	[CL. 1.1, 17 & 2]
	Milestone dates: <u>Physical works to be completed Period from the start date</u> Milestone 1 i.e. 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. 2.2 & 49.1]
6.	The Site is located at Khambhat City, Ta. Khambhat, Dist. Anand	[CL.1.1]
7.	The name and identification number of the Contract is:	[CL.1.1]
8.	The works consist of <b>(Asphalt / R.C.C. Road 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></p>	

	Any Other Items as required to fulfill all contractual obligations as per the Bid documents.	
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10. The following documents also form part of the Contract: [CL.2.3(9)]  
\_\_\_\_\_As per clause 2-3\_\_\_\_\_
11. The law which applies to the Contract is the law of Union of India [CL.3.1]
12. The language of the Contract documents is English [CL.3.1]
13. ~~Limit of subcontracting~~ \_\_\_\_\_ ~~25% of the Initial Contract Price~~ [CL.7.1]
14. The Schedule of Other Contractors [CL.8]
15. The Schedule of Key Personnel As per Annex – II to Section I [CL.9]
16. The minimum insurance cover for physical property, injury and death is Rs. 5 lakhs per occurrence with the number of occurrences limited to four. After each occurrence, the contractor will pay an additional premium necessary to make insurance valid for four occurrences always. [CL.13]
17. Site Investigation report [CL.14]
18. The Site Possession dates shall be ..... [CL.21]
19. The period for submission of programme for approval of the engineer shall be 21 days from the issue of Letter of Acceptance. [CL. 27.1]
20. The period between program updates will be.....days. [CL.27.3]
21. The amount to be withheld for late submission of an updated programme shall be Rs ..... lakhs [CL. 27.3]
22. The following events shall also be Compensation Events [CL. 44]  
Substantially adverse ground conditions encountered during the course of execution of work not provided for in the bidding document.
  - (i) Removal of underground utilities detected subsequently
  - (ii) Significant changes in classification of soil requiring additional mobilization by the contractor, e.g. ordinary soil to rock excavation,
  - (iii) Removal of unsuitable material like marsh, debris dumps, etc. not caused by the contractor.



- (iv) Artesian conditions
- (v) Seepage, erosion landslide
- (vi) River training requiring protection of permanent work
- (vii) Presence of historical, archeological or religious structures, monuments interfering with the works
- (viii) Restriction of access to ground imposed by civil, judicial, or military authority

23. The currency of the Contract is Indian Rupees

[CL. 46]

24. **The formula (e) for adjustment of prices are as under:**

[CL.47]

- ~~If any of the commodities like Cement, Steel or Bitumen are not found applicable in a work, the weight component of that commodities (i.e. 'Cement' (Pc), 'Steel' (Ps) or 'Bitumen' (Pb) as indicated in SBD for the purpose of Price Adjustment) shall be clubbed with the weight component of 'Other Material' (Pm), such that the gross % weight of the components shall remain as 100%.~~

~~R = value of work as defined in Clause 47.1 of Conditions of Contract~~

#### **Adjustment for labour component**

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

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

~~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>L</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~~

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

~~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.~~

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

$P_c$  = Percentage of cement component of the work

#### **Adjustment for steel component**

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

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

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

$S_0$  = ~~The all India wholesale price index for steel (Mild Steel - Long Products Rebars) on 28 days preceding the date of opening of Bids as published by the Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry.~~

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

$P_s$  = Percentage of steel component of the work

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

#### **Adjustments of bitumen component**

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

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

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

$B_0$  = ~~The official retail price of bitumen at the IOC depot at the nearest centre on the day 28 days prior to the scheduled date of opening of technical bid.~~

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

$P_b$  = Percentage of bitumen component of the work

### **Adjustment of POL (fuel and lubricant) component**

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

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

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

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

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

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

1. Labour	$P_l$	.....%
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	$P_m$	.....%
Total		100 %

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

### **ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).**

**S**

#### **ITEM NO.1:**

**Scarifying gravelled macadam or bitumen macadam surface 6 cm to 10 cm. depth including stacking useful materials on road side and disposing off remaining stuff.**

- 1.0 The layer of the existing layer metalling / bituminous layer shall excavated for all depth as directed by Engineer-in-charge and shall be screened on site of work. Stacking of 75% of metal obtained from screening shall be done by filling in the standard steel boxes of 2m x 1.5 m x 0.5 mt. size which shall be supplied by department if available on rent, otherwise contractor shall make his own arrangements. No deductions for voids shall be made from the gross measurements. Where any doubt exist as to whether the quantity of stacks of metal in any hectometer is not confirming with cubical content of the standard pharas (2m x 15 mt. x 0.5 mt.) shall be got corrected by the contractor if so ordered by the Engineer-in-charge for which no extra payment shall be claimed by the contractor. If the quantity of metal in -any stack in a particular hectometer is found to be less then the standard measurements viz. 1.5 cmt. the entire collection in the hectometre shall be paid on the basis of the quantity so found. Regular stacks shall be done by the contractor on a tairiy level ground. Stacking of the metal shall be done in a manner as directed by the Engineer-in-charge.
- 2.0 The remaining material except 75% of metal obtained from screening process shall be used in embankment with all lead and lift. It shall be directly deposited at the required location in specified layers. No handling or conveyance charges shall be paid if the materials is temporarily deposited else where and subsequently convey to site of deposition. The sequence of operations should be arranged properly. Material not required for any use whatsoever may be disposed off by the contractor at his own cost in manner approved by the Engineer-in-charge. The material utilised in the embankment will be deducted from the net quantity of earthwork in embankment arrived at within the chainage measured.
- 3.0 The payment shall be made on **Sq.Mt.** basis, the contractor shall maintain all stacks in regular and proper size till the whole materials shall not be measured and finally accepted by the department. The spreading of materials shall not be allowed till the materials are fully stacked and completed kilometer wise.
- 4.0 The rate includes the cost of scarifying macadam, screening, depositing. conveyance with all lead and lift, filling the boxes including all labour, tools, equipments and all other incidental expenses.

#### **ITEM NO.2:**

**Demolition including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift. (1)C.C WORK (2) RCC WORK**

##### **1.0. Workmanship**

**1.1.** The demolition shall consist of demolition of one or more parts of the building as specified or shown in the drawings. Demolition implies taking up or down or breaking up. This shall consist of demolishing whole or part of work including all relevant items as specified or shown in the drawings.

1.2. The demolition shall always be planned before hand shall be done in reverse order to the one in which the structure was constructed. This scheme shall be got approved from the Engineer-in-charge before starting the work. This however will not absolve the contractor from the responsibility of proper and safe demolition.

1.3. Necessary propping, shoring and under pinning shall be provided for the safety of the adjoining work or property, which is to be left intact, before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damage is caused to the adjoining property.

1.4. Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and where necessary.

1.5. Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by dropping from a height or demolishing roof, masonry etc. shall be carefully dismantled first. The dismantled articles shall be properly stacked as directed.

1.6. All materials obtained from demolition shall be the property of Government unless otherwise specified and shall be kept in safe custody until handed over to the Engineer-in-charge.

1.7. Any serviceable materials, obtained during dismantling or demolition shall be separated out and stacked properly as directed with all lead and lift. All unserviceable materials, rubbish etc., shall be stacked as directed' by the Engineer-in-charge.

1.8. On completion of work, the site shall be cleared of all debris rubbish and cleaned as directed.

## **2.0. Mode of measurements and payment**

2.1. Measurements of all work except hidden work shall be taken before demolition or dismantling and no allowance for increase in bulk shall be allowed. The demolition of lime concrete shall be measured under this item. Specification for deduction for voids, openings etc. shall be on same basis as that employed for construction of work,

2.2. All work shall be measured in decimal system as fixed in its place subject to the following limits; unless otherwise stated hereinafter : (a) Dimensions shall be measured to the nearest 0.01 mt. (b) Area shall be worked out to the nearest 0.01 sq. mt.(c) Cubical contents shall be worked out to the nearest 0.01 Cu.m.

2.3. The rate shall include cost of all labor involved and tools used in demolishing and dismantling including scaffolding. The rate shall also include the charges for separating out and stacking the serviceable materials properly and disposing the unserviceable materials with all lead and lift. The rate also includes for temporary shoring for the safety of the portion not required to be pulled down or of adjoining property and providing temporary enclosures or portions where considered necessary.

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

## **ITEM NO.3:**

### **Providing and Supplying Quarry Spell including Collection carting, staking & Spreading, Quarry Spell on road site including all Labour & Machinery (JCB Tractor Etc) taxes and etc complete.**

The quarry Spell shall be approved quarry as approved by the Ex. Engineer prior to collection, Filling of boxes, shall not be allowed till the metal is broken to the specified site.

The quarry spalls shall be as uniform in size as possible. The quarry Spell shall be hard, tough. solid. durable of black trap quarry of close texture, free from decay and weathering, The stone shall be angular and roughly Cubical in shape and round elongated or flaky materials shall be rejected. NO Sound or long rubble or angular chips smaller than specified size shall be, allowed.

All unsound, weathered or disintegrated stone obtained from the under surface layer of the quarry or other layers of boulders shall be rejected

Wherever any doubt as to whether above requirement are satisfied in whole or part of the collection it shall be got screened by the Contractor it so ordered by the Executive Engineer, and for which no extra payment shall be claimed by the contractor.

Any collection which does not fully satisfy the above requirements is liable to be rejected all together.

Stacking shall be made by the Contractor by steel pharas of 2 M x 1 5 M x 0.5 M and no deduction of

voids shall be made from the gross measurements.

Regular stacks shall be made by the contractor on a fairly level ground. All the stack shall be marked by white wash immediately on being measured and recorded by the Engineer-in-charge

The rate includes blasting the rock, if any, breaking the quarry spalls stacking measuring in pharas etc. complete.

Stacks shall as per actual requirement, and any materials in excess shall have to be transported contractor at the places directed by the Executive Engineer at the risk and cost of the contractor.

While stacking materials the depositing should commence at one end of the K.M. and carried continuously towards the other end unless the Executive Engineer shall direct otherwise and as a rule measurements shall

be taken after metal for half kilometer or Km. has been fully collected Any fraction of these distance shall not be measured up.

The Measurements shall be recorded in on Cum. basis & shall be paid accordingly.

#### **ITEM NO.4:**

**Providing and laying cement concrete 1:3:6 (1-Cement: 2-coarse sand: 6-handbroken stone aggregates 40mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth.**

##### **1.0. Materials**

**1.1.** Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Graded B.T. Stone aggregate 40 mm. nominal size shall conform to M-12.

##### **2.0. Workmanship**

###### **2.1. General**

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

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

**2.2.1.** The proportion of cement, sand and stone aggregate shall be one part of cement. 3 parts of coarse sand and 6 parts of graded B.T. stone aggregates and shall be measured by volume.

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

**2.3.1.** The concrete shall be mixed in a mechanical mixer at the site of work. Hand mixing may however be allowed for smaller quantity of work if approved by the Engineer-in-charge. When hand mixing is permitted by the Engineer-in-charge in case of break-down of machineries and in the interest of the work, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency, However in such case 10% more cement than otherwise period 1 1/2 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose.

###### **2.4. Transporting & Placing the Concrete:**

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

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

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

###### **2.6. Curing:**

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

##### **3.0. Mode of measurement and payment**

**3.1.** The concrete shall be measured for its length, breadth and depth, limiting dimensions to those specified on plans or as directed

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

**ITEM NO.5:**

**Providing and laying cement concrete work M200 and curing complete excluding the cost of form work and reinforcement of reinforced concrete work.**

**1.0. Materials**

- 1.1. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform to M-8. Coarse aggregate shall conform M-12.
- 1.2. The shuttering to be provided shall be of ordinary timber plank and shall conform to M-26.
- 1.3. The dimensions of scantlings and battens shall conform to the design. The strength of the wood shall not be less than that assumed in the design.

**2.0. General**

- 2.1. The concrete mix shall be designed from preliminary tests. The proportion of the concrete mix shall be 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) by volume concrete work shall have exposed concrete surface or as specified in the item.
- 2.2. The proportioning of cement and aggregates shall be done by weight and necessary precautions shall be taken in the production to ensure that the required work cube strength is attained and maintained. The controlled concrete shall be in grades of M-100, M-150, M-200, M-250, M-300, M-350 & M-400 with prefix controlled added to it. The letter M refers to mix and the numbers specify 28 days work cube compressive strength of 200 mm. cubes of the mix expressed in Kg./cm.
- 2.3. The proportion of cement, sand and coarse aggregate shall be determined of weight. The weigh batch machine shall be used for maintaining proper control over the proportion of aggregates as per mix design. The strength requirements of different grades of concrete shall be as under:

Grade of Concrete	Compressive strength of 15 cms. cubes in kg/cmt. at 28 days, conducted in accordance with I.S. 516-1959.	
	Preliminary test Min.	Work Test Min.
<b>M 150</b>	200	150
<b>M 200</b>	260	200
<b>M 250</b>	320	250
<b>M 300</b>	380	300
<b>M 350</b>	440	350
<b>M 400</b>	500	400

In all cases, the 28 days compressive strength specified in above be the criteria for acceptance or rejection of the concrete. Where the strength of a concrete mix as indicated by tests, lies in between the strength of any two grades specified in the above table, such concrete shall be classified in for purpose as concrete belonging to the lower of the grades between which its strength lies.

**3.0. Workmanship**

- 3.1. The proportions for ingredients chosen shall be such that concrete has adequate workability for conditions prevailing on the work question and can be properly compacted with means available except where it can be shown to the satisfaction of the Engineer-in-charge, that supply of properly graded aggregate of uniform quality can be maintained till the completion of work, grading of aggregate shall be controlled by obtaining the coarse aggregates in different sizes and bending them in the right proportions as required. Aggregates of different sizes shall be stocked in separate stock piles. The required quantity of material shall be stock piled several hours, preferably a day before use. The grading of coarse and fine aggregate shall be checked as frequently as possible, the frequency for a given job



- being determined by Engineer-in-charge to ensure that the suppliers are maintaining the uniform grading as approved for samples used in the preliminary tests.
- 3.2.** In proportioning concrete, the quantity of both cement and aggregate shall be determined by weight. Where the weight of cement is determined by accepting the maker's weight per bag, a reasonable number of bags shall be weighted separately to check the net weight. Where cement is weighted from bulk stocks at site and not by bags, it shall be weighed separately from the aggregate. Water, shall either be measured by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in clean and serviceable condition. Their accuracy shall be periodically checked.
- 3.3.** It is most important to keep the specified water cement ratio constant and at its correct value. To this end, moisture content in both fine and coarse aggregates shall be determined by the Engineer-in-charge according to the weather conditions. The amount of mixing water shall then be adjusted to compensate for variations in the moisture content. For the determination of moisture content in the aggregates I.S. 2386 (Part-III) shall be referred to. Suitable adjustments shall also be made in the weights of aggregates due to variation in their moisture content. Minimum quantity of cement to be used in controlled concrete shall not be less than 220 kg./m<sup>3</sup> in plain concrete and not less than 250 kg/m<sup>3</sup> in reinforced concrete.
- 3.4** The form work shall conform to the shape lines and dimensions as shown on the plans and be constructed as to remain sufficiently rigid during the placing and compacting of the concrete. Adequate arrangements shall be made by the contractor to safeguard against any settlement of the form-work during the course of concreting and after concreting. The form work of shuttering, centering, scaffolding, bracing etc. shall be as per design.
- 4.0. Clearing and Treatment of forms:**
- 4.1.** All rubbish, particularly chipping shaving and saw dust shall be removed from the interior of the form before the concrete work is placed and the form in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap solution for the purpose shall be prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil shall be applied after thoroughly cleaning the surface. Care shall be taken that the coating does not get on construction joint surface and reinforced bars..
- 5.0 Stripping time:**
- 5.1.** In normal circumstances and where ordinary cement is used forms may be struck after expiry of following periods.
- (a) Sides of walls columns and vertical faces of beams.....24 to 48 hours.
  - (b) Beam soffits, (props, left under) .....7 days.
  - (c) Removal of props slabs:
    - (i) Slabs spanning up to 4.5 m.....7 days.
    - (ii) Spanning over 4.5 m.....14 days.
  - (d) Removal of props from beams and Arches:
    - (i) Spanning up to 6 m.....14 days.
    - (ii) Spanning over 6 m.....21 days.
- 6.0 Procedure when removing the form work :**
- 6.1.** All form work shall be removed without such shock or vibrations as would damage the reinforced concrete surface. Before the soffits form work and struts are removed, the soffits and the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened.
- 7.0 Centering:**
- 7.1.** The centering to be provided shall be got approved. It shall be sufficiently strong to ensure absolute safety of the form work and concrete work before, during and after pouring concrete. Watch should be kept to see that behavior

or centering and form work is satisfactory during concreting. Erection should also be such that it would allow removal of forms in proper sequence without damaging either the concrete or the forms to be removed.

- 7.2. The props of centering shall be provided on firm foundation or base of sufficient strength to carry the loads without any settlement.
- 7.3. The centering and form work shall, be inspected and approved by the Engineer-in-charge before concreting. But this will not relieve the contractor of his responsibility for strength, adequacy and safety of form work and centering. If there is a failure of form work or centering, contractor shall be responsible for the damages to property.

#### **8.0 Scaffolding:**

- 8.1. All scaffolding, hoisting arrangements and ladders etc. required for the facilitating of concreting shall be provided and removed on completion of work by contractor at his own expense. The scaffolding, hoisting arrangements and ladders etc. shall be strong enough to withstand all live, dead and impact loads expected to act and shall be subject to the approval of the Engineer-in-charge. However contractor shall be solely responsible for the safety of the scaffolding, hoisting arrangement, ladders, work and workman etc.
- 8.2. The scaffolding, hoisting arrangements and ladder shall allow easy approach to the work spot and afford easy inspection.
- 8.3. The rate is applicable to all condition of working and height up to 4 mts. The rate shall include the cost of materials and labour for various operations involved such as :
- (a) Splayed edges, notching, allowance for overlaps and passing at angles, battens centering, shuttering propping, bolting, wedging easing, striking and removal.
  - (b) Filletting to form stop chamfered edges or splayed external angles not exceeding 20 mm: width to beams, columns and the like.
  - (c) Temporary openings in the forms for pouring concrete, if required removing rubbish etc.
  - (d) Dressing with oil to prevent adhesion of concrete with shuttering and.
  - (e) Raking or circular cutting.

#### **9.0 Re-Use:**

- 9.1. Before re-use, all form shall be inspected by Engineer-in-charge and their suitability ascertained. The forms shall be scarred, cleaned and joints are gone over, repaired where required. Inside surface shall be retreated to prevent adhesion of concrete.

#### **10.0. Mode of measurement & payment**

- 10.1. The consolidated cubical contents of concrete work as specified in item shall be measured. No deduction shall be made for
- (a) Ends of dissimilar materials such as joints, beams, posts, girders, girders, purling trusses, corbels and steps etc. up to 500 Sq. Cm. in section.
- 10.2. Form work shall be measured as the area in square meters to shuttering in contact with concrete except in the case of inclined member and portion of curved profile and upper side in which case on area of underside shall be measured for payment.
- 10.3. Form work to secondary beams shall be measured up to the sides of main beams but no deduction shall be made from the form work of the main beam at the intersection point. No deduction shall be made from the form work of a column at intersection of beams.
- 10.4. The rate includes cost of all materials labour, tools and plant required for mixing, placing in position, vibrating and compacting, finishing, as directed, curing and all other incidental expenses for producing concrete of specified strength. The rate includes the cost of form work.
- 10.5. The rate shall be for a unit of **one cubic meter**.



## **ITEM NO.6:**

**Providing Thermo Mechanically treated Bars TMT Bars FE500/500D reinforcement for R.C.C work including cutting, bending, binding and placing in position complete for all floor.**

### **1.0. GENERAL**

This work shall consist of furnishing and placing coated, or uncoated or high strength deformed reinforcement, bars (intentioned) of the shape and dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

### **2.0. MATERIAL**

#### **2.1. TMT Bars**

Reinforcements may be either T.M.T. tensile steel, confirms to IS 1786-2008 bars. They may be uncoated or coated with epoxy or with approved protective coatings.

2.2. T.M.T. bars reinforcement for R.C.C. work shall conform IS 432 (Part II) 1982 (Reaffirmed 1995) and shall be of tested quality. It shall also comply with relevant part of IS 456-2000.

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

2.4. All steel shall be procured from original producers no re-rolled steel shall be incorporated in the work.

2.5. Only new steel shall be delivered to the site every bar shall be inspected before placing to its position and defective brittle or burnt bar shall be discarded cracked ends of bars shall be discarded.

### **3.0. Pitch**

3.1. Distance between bars shall be as specified in drawings and as directed by the Engineer in charge all bars shall be placed at an accurate distance from each other and shall be bind tightly to maintain the desired pitch Suitable means shall be provided for holding bars securely in position.

### **4.0. Binding wire**

4.1. Mild steel binding wire shall be of 1.63 mm or 1.22 mm (16 to 18 gauge diameter and shall conform IS 280-2006.

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

4.3. Only new binding wire shall be delivered to the site all binding wire shall be inspected before binding to its position and defective brittle, rusted, used wire, shall be discarded.

### **5.0. PROTECTION OF REINFORCEMENT**

5.1. Uncoated reinforcing steel shall be protected from rusting or chloride contamination. Reinforcements shall be free from rust, mortar, loose mill scale, grease, oil or paints. This may be ensured either by using reinforcement fresh from the factory or thoroughly cleaning all reinforcement to remove rust using any suitable method such as sand blasting, mechanical wire brushing, etc. as directed by the Engineer. Reinforcements shall be stored on bricks, racks or platforms and above the ground in a clean and dry condition and shall be suitably marked to facilitate inspection and identification.

5.2. Portions of uncoated reinforcing steel and dowels projecting from concrete shall be protected within one week after initial placing of concrete with a brush coat of neat cement mixed with water to a

consistency, of thick paint. This coating shall be removed by lightly tapping with a hammer or other tool not more than one week before placing of the adjacent pour of concrete. Coated reinforcing steel shall be protected against damage to the coating. If the coating on the bars is damaged during transportation or handling and cannot be repaired, the same shall be rejected.

## **6.0. Workmanship**

- 6.1.** The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed by The Engineer in charge.
- 6.2.** Reinforcing steel shall conform accurate to the dimensions given in the bar bending schedules shown on relevant drawing

## **7.0. BENDING OF REINFORCEMENT**

- 7.1.** Bar bend g schedule shall be furnished by the Contractor and got approved by the Engineer before start of work.
- 7.2.** Reinforcing steel shall conform to the dimensions and shapes given in the approved bar bending Schedules.
- 7.3.** Bars shall be bent cold to the specified shape and dimensions or directed by the Engineer using a proper bar bender operated by hand power to obtain the correct radius of bends and shape.

Bars shall not be bent or straightened in a manner that will damage parent material or the coating bars bent during transport or handling shall, be straightened before being used on work and shall not be heated to facilitate straightening.

## **8.0. PLACING OF REINFORCEMENT**

**8.1.** The reinforcement cage should generally be fabricated in the yard at ground level, and then shifted and placed in position. The reinforcement shall be placed strictly, in accordance with the drawings and shall be assembled in position, only when structure is otherwise ready for placing of concrete. Prolonged time gap, between assembling of reinforcements and casting of concrete, which may result in rust formation on the surface, shall not be permitted.

**8.2.** Reinforcement bars shall be placed accurately in position as shown on the drawings. The bars, crossing one another shall be tied together at every intersection with binding wire (annealed), conforming to IS:280 to make the skeleton of the reinforcement rigid such that the reinforcement does not get displaced during placing of concrete, or any other operation. The diameter of binding wire shall not be less than 1 mm.

**8.3.** Bars shall be kept in position usually by the following methods:

In case of beam and slab construction, industrially produced polymer cover blocks of thickness equal to the specified cover shall be placed between the bars and formwork subject to Satisfactory evidence that the polymer composition is not harmful to concrete and reinforcement. Cover blocks made of concrete may be permitted by the Engineer, provided they have the same strength and specification as those of the member.

**8.4.** In case of dowels for Columns and walls the vertical reinforcement shall be kept in position by means of timber templates with slots in them accurately, or with cover blocks tied to the reinforcement timber templates shall be removed after the concreting has progressed up to a level just below their location.

**8.5.** Layers of reinforcements shall be separated by spacer bars at approximately One meter intervals. The minimum diameter of spacer bars shall be 12 mm or: equal to maximum size of main reinforcement or maximum size of coarse aggregate, whichever is greater. Horizontal reinforcement shall not be, allowed to sag between supports.

**8.6.** Necessary stays, blocks, metal chairs, spacers, metal hangers supporting wires etc, or other subsidiary, reinforcement shall be provided to fix the reinforcements firmly in its correct position.

**8.7.** Use of pebbles, broken stone, metal pipe, brick, mortar or wooden blocks etc as devices for positioning reinforcement shall not be permitted.

**8.8.** Bars coated with epoxy or any other approved protective coating shall be placed on supports that do not damage the coating. Supports shall be installed in a manner such that planes of weakness are not created in hardened concrete. The coated reinforcing steel shall be held in place by use of plastic or plastic coated binding wires especially manufactured for the purpose.

**8.9.** Placing and fixing of reinforcement shall be inspected and approved by the Engineer before concrete is deposited.

#### **10.0. Welding**

**10.1** Splicing by welding of reinforcement will be permitted only if detailed on the drawing or approved by the Engineer. Weld shall develop an ultimate strength equal to or greater than that of the bars connected.

**10.2.** While welding may be permitted for T.M.T. reinforcing bars conforming to IS:432, welding of deformed bars conforming to IS: 1786 shall in general be prohibited. Welding may be permitted in case of bars of other than S 240 grade including special. Welding grade of S 500D grade bars conforming to IS:1786, for which necessary chemical analysis has been secured and the carbon equivalent (CE) calculated from the chemical composition using the formula:

$$CE = C + \frac{Mn}{6} + \frac{Cr + Mg + V}{5} + \frac{Ni + Cu}{15}$$

is 0.4 or less.

**10.3.** The method of welding shall conform to IS:2751 and IS:9417 and to any supplemental specifications to the satisfaction of the Engineer.

**10.4.** Bars shall be bent cold to the specified shape and dimensions or as directed by Engineer in charge using the proper bender tool, operated by hand or power to attain proper radius of bends. Bars shall not be bend or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used in the work. Bars shall not be heated to facilitate bending.

**10.5.** Unless otherwise specified a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bane shall not be less then twice the diameter of the round bar and the length of the straight part of the bar beyond the end of the curve shall be at least four times of the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area. The hooks shall be suitably encased to prevent any spiting of the concrete.

**10.6.** All reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and by using say blocks or metal chairs spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals, Bars shall not be allowed to sag between supports not displaced during concreting or any other operations of the work All devices used for positioning shall be of not corrodible material wooden and metal supports shall not extended to the surface of the concrete, except where shown in drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and wooden blocs shall not be used Layers of bars shall be separated by spacer bars pre-cast mortar blocks or other approved devices. Reinforcement after bending placed in position shall be maintained in a clean condition until completely embedded in concrete, Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement form corrosion, concrete cover shall be provided as indicated on drawings. All bars protruding from concrete and to which other bars are to be sliced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout.

**10.7.** Bars crossing each other where required shall be secured by binding wire (annealed) of size not less than 1 mm in such a manner that they do not slip over at the time of fixing and concreting.

As far possible bars of full length shall be used in case this is not possible, overlapping of bars shall be done as directed by the Engineer in charge When practicable overlapping bars shall not touch each other, but be kept apart by 25 mm Where no feasible overlapping bars shall be bound with annealed wires not less than 1 mm thick twisted tight The overlaps shall be staggered for different bars and located at points along the span where neither sheer not bending moments is maximum.

**10.8.** Whenever indicated on drawing or desired the Engineer in charge bars shall be jointed by coupling which shall have a cross section sufficient to transmit the full stresses of bars The end of the bars that are jointed by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than the normal cross section of the bar. Threads shall be standards threads Steel for coupling shall conform to IS 226.

**10.9.** When permitted or specified on the drawings joints of reinforcement bars shall butt-welded so as to transmit their full stresses Welded joints shall preferably be located at points when steel will not be subject to more than 75 percent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded Only electric are welding using a process which excludes air form the molten metal and conforms to any or other special provisions for the work shall be accepted Suitable means shall be provided for holding bars securely in position during welding It shall be ensured that no voids are left in welding and when welding is done in two or three stages previous surface shall be cleaned properly Ends of bars shall be cleaned of all loose scale rust stages paint and other foreign matter before welding Only competent welders shall be employed on the work. The M S electrodes used for welding shall conform IS 814 Welded pieces of reinforcement shall be tested. Specimen shall be taken form the actual site and their number shall frequency to test shall be as directed by the Engineer in charge.

#### **11.0 MODE OF MEASUREMENTS & PAYMENT**

**11.1.** For the purpose of payment the bar shall be measured correct up to 10 mm length and weight payable works out at the rate specified below :

Sr. No	Diameter of steel	weight of steel per running meter	Sr. No	Diameter of steel	weight of steel per running meter
1	6 mm	0.22 Kg / Rmt	8	20 mm	2.47 Kg / Rmt
2	8 mm	0.39 Kg / Rmt	9	22 mm	2.98 Kg / Rmt
3	10 mm	0.62 Kg / Rmt	10	25 mm	3.85 Kg / Rmt
4	12 mm	0.89 Kg / Rmt	11	28 mm	4.83 Kg / Rmt
5	14 mm	1.21 Kg / Rmt	12	32 mm	6.31 Kg / Rmt
6	16 mm	1.58 Kg / Rmt	13	36 mm	7.99 Kg / Rmt
7	18 mm	2.00 Kg / Rmt	14	40mm	9.86 Kg / Rmt

**11.1.** Reinforcement shall be measured in length including hooks, if any, separately for different diameters as actually used in work, excluding overlaps. From the length so measured, the weight of reinforcement shall be calculated in tonnes on the basis of IS: 1732. Wastage, overlaps, couplings, welded joints, spacer bars, chairs, stays, hangers and annealed steel wire or other methods for binding and placing shall not be measured and cost of these items shall be deemed to be included in the rates for reinforcement.

**11.2.** The contract unit rate for coated/uncoated reinforcement shall cover the cost of material, fabricating, transporting, storing, bending, placing, binding and fixing in position as shown on the drawings as per these specifications and as directed by the Engineer, including all labour, equipment, supplies, incidentals, sampling, testing and supervision.

The unit Rate for coated reinforcement shall be deemed to also include cost of all material, labour, tools and plant, royalty, transportation and expertise required to carry out the work. The rate shall also cover sampling, testing and supervision required for the work.

**11.3.** The rate shall be for a unit of **One Kg**.

#### **ITEM NO.7:**

**Providing & Laying M.S. Side rail of road thickness with necessary nut bolt plates, fixing as per width, applying plates vibrator, electric or diesel on channel comp. with V.D. system (Trimix) by using the necessary equipments 7 material & Machinery, such as running screed vibrator on prelaid M.S. channel for leveling vacuum pumps, floating & power trowling etc. compl. also including grove cutting and filling joint with bituminous every 5 mtr.(incl. hardener)**

#### **Workmanship**

Trimix area shall be identified and shall be provided as per design drawings. the channel shall be grouted for construction and expansion joints at least 24 hrs before the actual work.

Pouring of concrete and transportation shall be done as per specification of concrete works.

Compaction of concrete layer shall be done with the help of surface vibrator mounted to top of channels.

The excess water shall be removed with the help of vacuum dewatering pump.

After pouring of concrete and achieving initial setting time but before final setting time textured surface shall be done with fanning machine.

The joints shall be cut as per design drawing and standard specification and shall be filled with approved filler.

The rate is including of all the labour material and machinery required to carry out the work satisfactory.

#### **Mode of Measurement and Payments :-**

The Payment Shall be made in Smt of Actual work done.

#### **ITEM NO.8:**

**Providing and laying Compacted WBM (Grade II) with BT crushed metal of size (40mm to 63mm) including using 20% stone screening grit 0.16 cum and stone dust 0.08 cum as filler including for Spreading, watering & consolidation by vibrator power road roller & 8 tone to 12 tone etc complete as per morth clause 404.**

#### **404.1 SCOPE**

This work shall consist of clean, machine crushed B.T. stone aggregates mechanically interlocked by rolling and bonding together with screening, binding material where necessary and water laid on a properly prepared sub grade/ sub bases base or existing pavement, as the case may be and finished in accordance with the requirements of these specifications and in close conformity with the lines, grades, cross-sections and thickness as per approved plans or as directed by the Engineer.

#### **404-2. Materials**

#### **404.2.1 Coarse aggregates**

Coarse aggregates shall be either crushed or broken stone, crushed slag, overburnt (Jhama) brick aggregates or any other naturally occurring aggregates such as kankar and laterite of suitable quality. Materials other than crushed gravel / shingle is used, not less than 90 percent by weight of the gravel / shingle pieces retained on 4.75mm sieve shall have at least two fractured faces. The aggregates shall conform to the physical requirements set forth in Table 400-8. The type and size range of the aggregate shall be specified in the contract or shall be as specified by the Engineer. If the water absorption value of the coarse aggregate is greater than 2 percent, the soundness test shall be carried out on the material delivered to site as per IS:2386 (Part-5).

**TABLE 400-8. PHYSICAL REQUIREMENTS OF COARSE AGGREGATES FOR  
WATER BOUND MACADAM FOR SUB-BASE / BASE COURSES**

<b>S.No. Test</b>	<b>Test Method</b>	<b>Requirement</b>
1. *** Los Angeles Abrasion value or Aggregate Impact value	IS:2386 (Part-4)  IS: 2386 (Part-4) or <i>IS:5640*</i>	40 percent (Max)  30 percent (Max)
2. Combined Flakiness and Elongation - Indices (Total)**	IS:2386 (Part- 1)	30 percent (Max)

\* Aggregate which get softened in presence of water shall be tested for impact value under wet conditions in accordance with IS:5640.

\*\* The requirement of flakiness index and elongation index shall be enforced only in the case of Crushed broken stone and crushed slag.

\*\*\* In case water bound macadam is used for sub-base, the requirements in respect of Los Angeles Value and Aggregate impact value shall be relaxed to 50 percent and 40 percent maximum respectively.

#### **404.2.2 Crushed or broken stone**

The crushed or broken stone shall be hard, durable and free from excess flat, elongated, soft and disintegrated particles, dirt and other deleterious material.

#### **404.2.3. Crushed slag :**

Crushed slag shall be made from air-cooled blast furnace slag. It shall be of angular shape, reasonably uniform in quality and density and generally free from thin, elongated and soft pieces, dirt or other deleterious materials. The weight of crushed slag shall not be less than 11.2 kN per m<sup>3</sup> and the percentage of glossy material shall not be more than 20. It should also comply with the following requirements:

- |       |                    |   |   |
|-------|--------------------|---|---|
| (i)   | Chemical stability | : | To comply with requirement of appendix of BS : 1047 |
| (ii)  | Sulphur content    | : | Maximum 2 per cent                                  |
| (iii) | Water absorption   | : | Maximum 10 per cent                                 |

#### **404.2.4. Overburnt (Jhama) Brick aggregates :**

Jhama brick aggregates shall be made from overburnt bricks or brick bats and be free from dust and other objectionable and deleterious materials. This shall be used only for road stretch when traffic is low.

#### **404.2.5. Grading requirement of Coarse aggregates :**

The coarse aggregates shall conform to one of the Gradings given in Table 400-9 as specified.

#### **404.2.6. Screenings:**

Screenings to fill voids in the coarse aggregate shall generally consist of the same material as the coarse aggregate. However, where permitted, predominantly non-plastic material such as murrum or gravel (other than rounded river borne material) may be used for this purpose

provided liquid limit and plasticity index of such material are below 20 and 6 respectively and fraction passing 75 micron sieve does not exceed 10 per cent.

**TABLE 400-9 : GRADING REQUIREMENTS OF COARSE AGGREGATES**

Grading No.	Size Range	IS Sieve Designation		Per cent by weight passing
1.	63 mm to 45 mm	75	mm	100
		63	mm	90-100
		53	mm	25-75
		45	mm	0-15
		22.4	mm	0-5
2.	53 mm to 22.4 mm	63	mm	100
		53	mm	95-100
		45	mm	65-90
		22.4	mm	0-10
		11.2	mm	0-5

**Note : The compacted thickness for a layer shall be 75mm.**

Screenings shall conform to the grading set forth in Table 400-10. The quantity of screenings required for various grades of stone aggregates are given in Table 400-11. The table also gives the quantities of materials (loose) required for 10 m<sup>2</sup> for sub-base / base compacted thickness of 75 mm.

The use of screenings shall be omitted in the case of soft aggregates such as brick metal, kankar, laterites etc. as they are likely to get crushed to a certain extent under rollers.

#### **404.2.7 Binding Material :**

Binding material to be used for water bound macadam as a filler material meant for preventing ravelling, shall comprise of a suitable material approved by the Engineer having a Plasticity Index (PI) value of less than 6 as determined in accordance with IS:2720 (Part 5).

The quantity of binding material where it is to be used will depend on the type of screening. Generally, the quantity required for 75 mm compacted thickness of water bound macadam will be 0.06 – 0.09 m<sup>3</sup> / 10 m<sup>2</sup>.



**TABLE 400 – 10. GRADING FOR SCREENINGS**

Grading Classification	Size of Screenings	IS Sieve Designation	Per cent by weight passing the IS sieve
A	13.2 mm	13.2 mm	100
		11.2 mm	95-100
		5.6 mm	15-35
		180 micron	0-10
B	11.2 mm	11.2 mm	100
		9.5 mm	80-100
		5.6 mm	50-70
		180 micron	5-25

**TABLE 400 – 11. APPROXIMATE QUANTITIES OF COARSE AGGREGATES AND SCREENINGS REQUIRED FOR 75 MM COMPACTED THICKNESS OF WATER BOUND MACADAM (WBM) SUB-BASE / BASE COURSE FOR 10 M<sup>2</sup> AREA**

Classification	Size Range	Compact thickness	Loose Qty.	Screenings			
				Stone screening		Crushable type such as murrum or gravel	
				Grading classification and size	For WBM sub-base / base course (loose Qty)	Grading classification and size	Loose Qty.
Grading 1	63mm to 45 mm	75 mm	0.91 to 1.07m <sup>3</sup>	Type A 13.2 mm	0.12 to 0.15 m <sup>3</sup>	No uniform	0.22 to 0.24 m <sup>3</sup>
- do -	- do -	- do -	- do -	Type B 11.2 mm	0.20 to 0.22 m <sup>3</sup>	- do -	- do -
Grading 2	53mm to 22.4 mm	75 mm	- do -	- do -	0.18 to 0.21 m <sup>3</sup>	- do -	- do -

The above mentioned quantities should be taken as a guide only, for estimation of quantities for construction etc.

Application of binding materials may not be necessary when the screenings used are of crushable type such as murrum or gravel.

#### **404.3 Construction Operations**

##### **404.3.1 Preparation of base :**

The surface of the sub grade sub-base/base to receive the water bound macadam course shall be prepared to the specified grade and camber and cleaned of dust, dirt and other extraneous material. Any ruts or soft yielding places shall be corrected in an approved manner and rolled until firm surface is obtained.

Where the WBM is to be laid on an existing metalled road, damaged area including depressions and potholes shall be repaired and made good with the suitable material. The existing surface shall be scarified and re-shaped to the required grade and camber before spreading the coarse aggregate for WBM.



As far as possible, laying water bound macadam course over an existing bituminous layer may be avoided since it will cause problems of internal drainage of the pavement at the interface of two courses. It is desirable to completely pick out the existing thin bituminous wearing course where water bound macadam is proposed to be laid over it.

#### **404.3.2      Inverted Choke / Sub surface Drainage layer**

If water bound macadam is to be laid directly over the subgrade, without any other intervening pavement course, a 25 mm course of screenings (Grading B) or coarse sand shall be spread on the prepared subgrade before application of the aggregates is taken up. In case of a fine sand or silty or clayey subgrade, it is advisable to lay 100 mm insulating layer of screening or coarse sand on top of Fine grained soil, the gradation of which will depend upon whether it is intended to act as a drainage layer as well. As a preferred alternative to inverted choke, appropriate geosynthetics performing functions of separation and drainage may be used over the prepared subgrade as directed by the Engineer. Section 700 shall be applicable for use of geosynthetics.

#### **404.3.3      Lateral Confinement of Aggregates**

For construction of WBM, arrangement shall be made for the lateral confinement of aggregates. This shall be done by building adjoining shoulders along with WBM layers. The practice of constructing WBM in a trench section excavated in the finished formation must be completely avoided.

Where the WBM course is to be constructed in narrow widths for widening of an existing pavement, the existing shoulders should be excavated to their full depth and width upto the sub grade level except where widening specifications envisages laying of a stabilised sub base using in situ operations in which case the same should be removed only upto the sub base level.

#### **404.3.4      Spreading coarse aggregates:**

The coarse aggregates shall be spread uniformly and evenly upon the prepared sub grade/sub-base/ in the required quantities from the stock piles to proper profile by using templates placed across the road about. 6 m apart, in such quantities that the thickness of each compacted layer is not more than 75 mm. In no case shall these be dumped in heaps directly on the area where there are to be laid nor shall their hauling over a partly completed base be permitted. Wherever possible approved mechanical devices such as aggregate spreader shall be used to spread the aggregates uniformly so as to minimize the need for manual rectification afterwards.

No segregation of coarse aggregate shall be allowed and the coarse aggregates, as spread shall be of uniform gradation with no pockets of fine material.

The surface of the aggregate spread shall be carefully checked with templates and all high or low spots remedied by removing or adding aggregates as may be required. The surface shall be checked frequently with a straight edge while spreading and rolling so as to ensure a finished surface as per approved drawings.

The coarse aggregate shall not normally be spread more than 3 days in advance of the subsequent construction operations.

#### **404.3.5            Rolling:**

Immediately following the spreading of the coarse aggregate, rolling shall be started with three wheeled power rollers of 80 to 100 kN capacity or tandem or vibratory rollers of 80 to 100 kN static weight. The type of roller to be used shall be approved by the Engineer based on trial run.

Except on super elevated portions and carriageway with unidirectional cross-fall, where the rolling shall proceed from inner edge to the outer, rolling shall begin from the edges gradually progressing towards the centre. First the edge/edges shall be compacted with roller running forward and backward. The roller shall then move inward parallel to the centre line of the road, in successive passes uniformly overlapping preceding tracks by at least one half width.

Rolling shall be carried out on courses where coarse aggregates of crushed / broken stone are used, till the road metal is partially compacted. This will be followed by application of screening and binding material where required in Clauses 404.3.6 and 404.3.7.

However, where screenings are not to be applied as in the case of aggregates like brick metal laterite and kankar for the sub base construction, the compaction shall be continued until the aggregates are thoroughly keyed. Rolling shall be continued and light sprinkling of water shall be done till the surface is well compacted. Rolling shall not be done when the sub grade is soft or yielding or when it causes a wave-like motion in the sub grade or sub base course.

The rolled surface shall be checked transversely with templates and longitudinally with 3 m. straight edge. Any irregularities exceeding 12mm shall be corrected by loosening the surface, adding or removing necessary amount of aggregates and re-rolling until the entire surface conforms to desired camber and grade. In no case shall the use of screenings be permitted to make up depressions.

Material which gets crushed excessively during compaction or becomes segregated shall be removed and replaced with suitable aggregates.

#### **404.3.6            Application of screenings:**

After the coarse aggregate have been rolled to Clause 404.3.5, screenings to completely fill the interstices shall be applied gradually over the surface. These shall not be damp or wet at the time of application. Dry rolling shall be done while the screenings are being spread so that vibrations of the roller cause them to settle into the voids of the coarse Aggregate. The screenings shall not be dumped in piles but be spread uniformly in successive thin layers either by the spreading motion & of hand shovels or by mechanical spreaders or directly from tipper with suitable grit spreading arrangement Tipper operating for spreading the screenings shall be equipped with pneumatic tyres and operated so as not to disturb to coarse aggregates.

The screenings shall be applied at a slow and uniform rate (in three or more applications) so as to ensure filling of all voids. This shall be accompanied by dry rolling and brooming with mechanical brooms, hand brooms or both. In no case shall the screenings be applied so fast and thick as to form cakes or ridges on the surface in such a manner as would prevent filling of voids or prevent the direct bearing of the roller on the coarse aggregate. These operations shall continue until no more screenings can be forced into the voids of the coarse aggregate.

The spreading, rolling and booming of screenings shall be carried out in only such lengths of the road which could be completed within one day's operation.

#### **404.3.7        Sprinkling of water and grouting :**

After application of screenings, the surface shall be copiously sprinkled with water, swept and rolled. Hand brooms shall be used to sweep the wet screenings into voids and to distribute them evenly. The sprinkling, sweeping and rolling operation shall be continued, with additional screenings applied as necessary until the coarse aggregate have been thoroughly keyed, well-bonded and firmly set in its full depth and a grout has been formed of screenings. Care shall be taken to see that the sub base or sub grade does not get damaged due to the addition of excessive quantities of water during construction.

In case of lime treated soil sub-base, construction of water bound macadam on top of it shall be taken up after curing as per Clause 402.3.9 and as directed by the Engineer.

**Application of binding material :** After the application of screenings in accordance with Clauses 404.3.6 and 404.3.7, the binding material where it is required to be used (Clause 404.2.7) shall be applied successively in two or more thin layers at a slow and uniform rate. After each application, the surface shall be copiously sprinkled with water, the resulting slurry swept in with hand brooms or mechanical brooms to fill the voids properly and rolled during which water shall be applied to the wheels of the rollers if necessary to wash down the binding material sticking to them. These operations shall continue until the resulting slurry after filling of voids, form a wave ahead of the wheels of the moving roller.

#### **404.3.8        Setting and drying :**

After the final compaction of water bound macadam course, the pavement shall be allowed to dry overnight. Next morning hungry spots shall be filled with screenings or binding material as directed, lightly sprinkled with water if necessary and rolled. No Traffic shall be allowed on the road until the macadam has set. The Engineer shall have the discretion to stop hauling traffic from using the completed water bound macadam course, if in his opinion it would cause excessive damage to the surface.

The compacted water bound macadam course should be allowed to completely dry and set before the next pavement course is laid over it.

#### **404.4        Surface Finish and Quality Control of Work**

**404.4.1**        The surface finish of construction shall conform to the requirements of Clause 902.

**404.4.2**        Control on the quality of materials and works shall be exercised by the Engineer in accordance with Section 900.

**404.4.3**        The water bound macadam work shall not be carried out when the atmospheric temperature is less than 10° C in the shade.

#### **404.4.4        Reconstruction of defective macadam :**

The finished surface of water bound macadam shall conform to the tolerance of surface regularity as prescribed in Clause 902. However, where the surface irregularity of the course exceeds the tolerances or where the course is otherwise defective due to sub grade soil mixing, with the aggregates, the course to its full thickness shall be scarified over the affected area, reshaped with added material or removed and

replaced with fresh material as applicable and re-compacted. The area treated shall not be less than 10 sq.m. In no case shall depressions be filled up with screenings or binding material.

#### **404.5 Arrangement for Traffic**

During the period of construction, the arrangement for traffic shall be done as per Clause 112.

#### **404.6 Mode of Measurement & payment**

Water bound macadam shall be measured as finished work in position in **cubic meters**.

#### **404.7 RATE**

The Contract unit rate for water bound macadam sub-base/base course shall be payable in full for carrying out the required operations including full compensation for all components listed below including arrangement of water used in the work as approved by the Engineer.

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

### **ITEM NO.9:**

**Providing and Laying W.M.M. mm thick with M.C BT chips as per required gradation mixing with required optimum quantity of water including spreading watering consolidation using power and roller etc. complete.**

#### **406. WET MIX MACADAM SUB-BASE/BASE**

##### **406.1. Scope**

This work shall consist of laying and compacting clean, machine crushed chips and granular material, premixed with water, to a dense mass on a prepared sub grade/sub-base/base or existing pavement as the case may be in accordance with the requirements of these specifications. The material shall be laid in single layer as necessary to lines, grades and cross-sections shown on the approved drawings or as directed by the Engineer.

The thickness of a single compacted Wet Mix Macadam layer shall not be less than 125mm. When vibrating or other approved types of compacting equipment are used, the compacted depth of a single layer of the sub-base course may be up to 125 mm with the approval of the Engineer.

##### **406.2. Materials**

##### **406.2.1. Aggregates**

##### **406.2.1.1. Physical requirements :**

Coarse aggregates shall be crushed stone. If crushed gravel / single is used, not less than 90 percent by weight of the gravel / single pieces retained on 4.75 mm sieve shall have at least two fractured faces. The aggregates shall conform to the physical requirements set forth in Table 400-12 below.

If the water absorption value of the coarse aggregate is greater than 2 per cent, the soundness test shall be carried out on the material delivered to site as per IS: 2386 (Part-5).

**TABLE - 400-12. PHYSICAL REQUIREMENTS OF COARSE AGGREGATES FOR  
WET MIX MACADAM FOR SUB-BASE/BASE COURSES**

Test	Test Method	Requirements
1. * Los Angeles Abrasion value or *Aggregate impact value.	IS: 2386 (PART-4) IS: 2386 (PART-4) or IS: 5640	40 percent (Max) **30 percent (Max)
2. Combined Flakiness and Elongation indices (Total)	IS: 2386 (PART-I)	35 percent (Max)**

\* Aggregate may satisfy requirements of either of the two tests.

\* To determine this combined proportion, the flaky stone from a representative sample should first be separated out. Flakiness index is weight of flaky stone metal divided by weight of stone sample. Only the elongated particles are separated out from the remaining (non-flaky) stone metal. Elongation index is weight of elongated particles divided by total non-flaky particles. The value of flakiness index and elongation index so found are added up.

#### **406.2.1.2. Grading requirements:**

The aggregates shall conform to the grading given in Table 400.13.

**TABLE 400.13**

#### **GRADING REQUIREMENTS OF AGGREGATES FOR WET MIX MACADAM**

IS Sieve Designation	Percent by weight passing the IS sieve
53.00 mm	100
45.00 mm	95-100
26.50 mm	-
22.40 mm	60-80
11.20 mm	40-60
4.75 mm	25-40
2.36 mm	15-30
600.00 Micron	8-22
75.00 Micron	0-8

Materials finer than 425 micron shall have Plasticity Index (PI) not exceeding 6.

The final gradation approved within these limits shall be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice versa.

#### **406.3. Construction Operations**

**406.3.1. Preparation of base:** The surface of the subgrade/sub-base/base to receive the wet mix macadam course shall be prepared to the specified lines and crossfall (camber) and made free of dust and other extraneous material. Any ruts or soft yielding places shall be corrected in an approved manner and rolled until firm surface is obtained if necessary by sprinkling water. Any sub-base/base/surface irregularities, where predominant, shall be made good by providing appropriate type of profile corrective course (levelling course) to Clause 501 of these Specifications.

As far as possible, laying wet mix macadam course over an existing thick bituminous layer may be avoided since it will cause problems of internal drainage to the pavement at the interface of two courses. It is desirable to completely pick out the existing bituminous course where wet mix macadam is proposed to be laid over it.

**406.3.2. Provision of lateral confinement of aggregates:** While constructing wet mix macadam, arrangement shall be made for the lateral confinement of wet mix. This shall be done by laying materials in adjoining shoulders along with that of wet mix macadam layer and following the sequence of operations described in Clause 404.3.3.

**406.3.3. Preparation of mix:** Wet Mix Macadam shall be prepared in an approved mixing plant of suitable capacity having provision for controlled addition of water and forced/positive mixing arrangement like pug mill or pan type mixer of concrete batching plant. The plant shall have following features:

- i. For feeding aggregates- three/ four bin feeders with variable speed motor
- ii. Vibrating screen for removal of oversize aggregates
- iii. Conveyor Belt
- iv. Controlled system for addition of water
- v. Forced/positive mixing arrangement like pug-mill or pan type mixer
- vi. Centralized control panel for sequential operation of various devices and precise process control
- vii. Safety devices

Optimum moisture for mixing shall be determined in accordance with IS: 2720 (Part-8) after replacing the aggregate fraction retained on 22.4 mm sieve with material of 4.75 mm to 22.4 mm size. While adding water, dew allowance should be made for evaporation losses. However, at the time of compaction, water in the wet mix should not vary from the optimum value by more than agreed limits. The mixed material should be uniformly wet and no segregation should be permitted.

**406.3.4. Spreading of mix:** Immediately after mixing, the aggregates shall be spread uniformly and evenly upon the prepared sub grade/sub- base/base in required quantities. In no case should these be dumped in heaps directly on the area where these are to be laid nor shall their hauling over a partly completed stretch be permitted.

The mix may be spread either by a paver finisher or motor grader. For portions where mechanical means cannot be used, manual means as approved by the Engineer shall be used. The motor grader shall be capable of spreading the material uniformly all over the surface. Its blade shall have hydraulic control suitable for initial adjustments and maintaining the same so as to achieve the specified slope and grade.

**The mix may be spread by a paver finisher. The paver finisher shall be self-propelled of adequate capacity with following features:**

- i. Loading hoppers and suitable distribution system, to provide a smooth uninterrupted material flow for different layer thicknesses from the tipper to the screed.
- ii. Hydraulically operated telescopic screed for paving width up to 8.5 m and fixed screed beyond this. The screed shall have tamping and vibrating arrangement for initial compaction of the layer.
- iii. Automatic levelling control system with electronic sensing device to maintain mat thickness and cross slope of mat during laying procedure.

In exceptional cases where it is not possible for the paver to be utilized, mechanical means like motor grader may be used with the prior approval of the Engineer. The motor grader shall be capable of spreading the material uniformly all over the surface.

The surface of the aggregate shall be carefully checked with templates and all high or low spots remedied by removing or adding aggregate as may be required. The layer may be tested by depth blocks during construction. No segregation of larger and fine particles should be allowed. The aggregates as spread should be of uniform gradation with no pockets of fine materials.

The Engineer may permit manual mixing and /or laying of wet mix macadam where small quantity of wet mix macadam is to be executed. Manual mixing/laying in inaccessible / remote locations and in situations where use of machinery is not feasible can also be permitted. Where manual mixing/laying is intended to be used, the same shall be done with the approval of the Engineer.



#### **406.3.5. Compaction:**

After the mix has been laid to the required thickness, grade and cross fall / camber the same shall be uniformly compacted, to the full depth with suitable roller. If the thickness of single compacted layer does not exceed 100 mm, a smooth wheel roller of 80 to 100 KN weight may be used. For a compacted single layer up to 200 mm, the compaction shall be done with the help of vibratory roller of minimum static weight of 80 to 100 KN or equivalent capacity roller. The speed of the roller shall not exceed 5 km/h.

In portions having unidirectional cross fall / super elevation, rolling shall commence from the lower edge and progress gradually towards the upper edge. Thereafter, roller should progress parallel to the centre line of the road, uniformly over-lapping each preceding track by at least one third width until the entire surface has been rolled. Alternate trips of the roller shall be terminated in stops at least 1 m away from any preceding stop.

In portions in camber, rolling should begin at the edge with the roller running forward and backward until the edges have been firmly compacted. The roller shall then progress gradually towards the centre parallel to the centre line of the road uniformly overlapping each of the preceding tracks by at least one-third width until the entire surface has been rolled.

Any displacement occurring as a result of reversing of the direction of a roller or from any other cause shall be corrected at once as specified and/or removed and made good.

Along forms, kerb, walls or other places not accessible to the roller, the mixture shall be thoroughly compacted with mechanical tampers or a plate compactor. Skin patching of an area without scarifying the surface to permit proper bonding of the added material shall not be permitted.

Rolling should not be done when the sub grade is soft or yielding or when it causes a wave-like motion in the sub-base / base course or sub grade. If irregularities develop during rolling which exceed 12 mm when tested with a 3 metre straight edge, the surface should be loosened and premixed material added or removed as required before rolling again so as to achieve a uniform surface conforming to the desired grade and cross fall. In no case should the use of unmixed material be permitted to make up the depressions.

Rolling shall be continued till the density achieved is at least 98 per cent of the maximum dry density for the material as determined by the method outlined in IS: 2720 (Part-8).

After completion, the surface of any finished layer shall be well closed, free from movement under compaction equipment or any compaction planes, ridges, cracks and loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of the layer and recomputed.

#### **406.3.6. Setting and drying :**

After final compaction of wet mix macadam course, the road shall be allowed to dry for 24 hours.

#### **406.4. Opening to Traffic**

Preferably no vehicular traffic of any kind should be allowed on the finished wet mix macadam surface till it has dried and the wearing course lay.

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

**406.5.1. Surface evenness :** The surface finish of construction shall conform to the requirements of Clause 902.

**406.5.2. Quality control:** Control on the quality of materials and works shall be exercised by the Engineer in accordance with Section 900.

#### **406.6. Rectification of Surface Irregularity**

Where the surface irregularity of the wet mix macadam course exceeds the permissible tolerances or where the course is otherwise defective due to sub grade soil getting mixed with the aggregates, the full thickness of the layer shall be scarified over the affected area, reshaped with added premixed material or removed and replaced with fresh premixed material as applicable and recomputed in accordance with Clause 406.3. The area treated in the aforesaid manner shall not be less than 5 m in long and 2 m in wide. In no case shall depressions be filled up with unmixed and ungraded material or fines.

#### **406.7. Arrangement for Traffic**

During the period of construction, arrangement of traffic shall be done as per Clause 112.

#### **406.8. Measurements for Payment**

**Wet mix macadam** shall be measured as finished work in position in cubic metres,

#### **ITEM NO.10:**

**Preparing surface by Brushing with wire brushes for removing caked mud etc. Air compressor / sweeping with brooms and finally fanning the cleaned surface with gunney bags to remove all loose dirt etc.(2) Black top/ CC surface.**

##### **13.4.2 Preparation of Surface**

Projecting burrs of mortar formed due to the gaps at joints in shuttering shall be removed. The surface shall be scrubbed clean with wire brushes. In addition concrete surfaces to be plastered shall be pock marked with a pointed tool, at spacing's of not more than 5 cm. Centers, the pock being made not less than 3 mm deep. This is to ensure a proper key for the plaster. The mortar shall be washed off and surface, cleaned off all oil, grease etc. and well wetted before the plaster is applied.

##### **13.4.3 Mortars**

Mortar of the specified mix using the types of sand described in the item shall be used. It shall be as specified in 3.2.

##### **13.4.4 Application**

To ensure even thickness and a true surface, gauges of plaster 15 x 15 cm. shall be first applied at not more than 1.5 m intervals in both directions to serve as guides for the plastering. Surface of these gauged areas shall be truly in the plane of the finished plaster surface. The plaster shall be then applied in a uniform surface to a thickness slightly more than the specified thickness and shall then be brought to true and even surface by working a wooden straight edge reaching across the gauges. Finally the

Surface shall be finished true with a trowel or with wooden float to give a smooth or sandy granular texture as required. Excess troweling or over working of the floats shall be avoided. The plastering and finishing shall be completed within half an hour of adding water to the dry mortar.

Plastering of ceiling shall not be commenced until the slab above has been finished and centering has been removed. In the case of ceiling of roof slabs, plaster shall not be commenced until the terrace work has been completed. These precautions are necessary in order that the ceiling plaster is not disturbed by the vibrations set up in the above operations.

##### **13.4.5 Finish**

The plaster shall be finished to a true and plumb surface and to the proper degree of smoothness as required. The work shall be tested frequently as the work precedes with a true straight edge not less than 2.5 m long and with plumb bobs. All horizontal lines and surfaces shall be tested with a level and all jambs and corners with a plumb bob as the work proceeds.

##### **13.4.6 Thickness**

The average thickness of plaster shall not be less than 6 mm. The minimum thickness over any portion of the surface shall not be less than 5 mm.

##### **13.4.7 Curing**

The specifications shall be as detailed in 13.1.6.

##### **13.4.8 Precautions**

The specifications shall be as detailed in 13.1.8.

##### **13.4.9 Measurements**

**13.4.9.1** Length and breadth shall be measured correct a cm. and its area shall be calculated in sqm. correct to two places of decimal. Dimensions before plastering shall be taken.

**13.4.9.2** Thickness of plaster shall be exclusive of the thickness of the key i.e. depth or rock marks and hacking.



**13.4.9.3** Plastering on ceiling at height greater than 5 m above the corresponding floor level shall be so described and shall be measured separately stating the height in stages of 1 m or part thereof.

**13.4.9.4** Plastering on the sides and soffits of the projected beams of ceiling at a height greater than 5 m above the corresponding floor level shall be measured and added to the quantity measured under 13.4.9.3.

**13.4.9.5** Plastering on spherical and groined ceiling and circular work not exceeding 6 m in radius, shall be measured and paid for separately.

**13.4.9.6** Flowing soffits (*viz.* portion under spiral stair case etc.) shall be measured and paid for separately.

**13.4.9.7** Ribs and moldings on ceiling shall be measured as for cornices; deductions being made from the plastering on ceiling in case the width of the molding exceed 15 cm.

**13.4.9.8** The mode of measurement of exterior plastering and patch plastering (in repairs) shall be as laid down in 13.1.9.8

**13.4.9.9** Deduction shall not be made for openings or for ends of columns, or columns caps of 0.5 sqm each in area and under. No additions will be made either for the plastering of the sides of such openings. For openings etc. of areas exceeding 0.5 sqm deduction will be made for the full opening but the sides of such openings shall be measured for payment.

#### **13.4.10 Rate**

The rate shall include the cost of all labor and materials involved in all the operations described above.

### **ITEM NO.11:**

**Providing and Laying Bituminous grout compacted with (VG 30) asphalt 60/70 grade at tare of 1.99% by weight of total mix for mixing and tack coat at 2.5k/10 sq.m. emulsion on BT Surface using B.T chips of required gradation including cleaning and heating the aggregate and asphalt by continuous batching of Drum mix plant and spreading the same by paver finisher one layer and consolidation with vibratory roller and power roller including providing all materials, equipment, tools and plants, oil, kerosene, firewood, labor charges etc. complete using contractor own machineries Drum mix plant and paver finisher etc. complete.**

**Scope:** The work shall consist of construction, in a single course, of compacted crushed aggregates premixed with a bituminous binder, to serve as base/binder course, laid immediately after mixing, on a base prepared previously in accordance with the requirement of these Specifications and in conformity with the lines, grades and cross-sections shown on the drawing or as directed by the Engineer. Thickness of the course shall be **75 mm thick** materials.

#### **Materials:**

**Bitumen:** The bitumen shall be paving bitumen of suitable penetration Grade: 80/100 (VG-10) as per IS: 73. The actual grade of bitumen to be used shall be decided by the Engineer appropriate to the region, traffic, rainfall and other environmental conditions. Guidelines on selection of the grade of bitumen are given in Appendix-4.

**Aggregates:** The aggregates shall consist of crushed stone, crushed gravel/shingle or other stones. They shall be clean, strong, durable, of fairly cubical shape and free from disintegrated pieces, organic or other deleterious matter and adherent coating. The aggregates shall preferably be hydrophobic and of low porosity. If hydrophilic aggregates are to be used, the bitumen shall preferably be treated with anti-stripping agents of approved quality in suitable dose as per *Appendix-5*. The aggregates shall satisfy the physical requirements set forth in Table 500-3.

**TABLE 500-3. PHYSICAL REQUIREMENTS OF AGGREGATES FOR BITUMINOUS GROUT**

Sr. No.	Test	Test Method	Requirement
1.	Los Angeles Abrasion value	IS: 2386 (Part-4)	40 Percent Maximum
2.	Aggregate Impact Value	IS: 2386 (Part-4)	30 Percent Maximum
3.	Flakiness and Elongation Indices (Total)***	IS: 2386 (Part-1)	30 Percent Maximum
4.	Coating and Stripping of Bitumen aggregate Mixtures	AASHTO T 182	Minimum retained coating 95 %
5.	Soundness	IS: 2386 (Part-5)	12 Percent Maximum
	(i) Loss with sodium Sulphate 5 cycles (ii) Loss with magnesium sulphate 5 cycles		18 Percent Maximum
6.	Water absorption	IS: 2386 (Part-3)	2 Percent Maximum

\*Aggregates may satisfy requirements for either of the two tests.

\*\* To determine this combined proportion, the flaky stone from representative sample should first be separated out. Flakiness index is weight of flaky stone metal divided by weight of stone sample. Only the elongated particle is separated out from the remaining (non-flaky) stone metal. Elongation index is weight of elongated particles divided by total non-flaky particles. The value of flakiness index and elongation index so found are added up.

#### **Proportioning of materials:**

The bitumen content for premixing shall be 1.99 % (percent) by weight of the total mix except when otherwise directed by the Engineer.

The maximum compacted thickness of a layer shall be 100mm.

The quantities of aggregates to be used shall be sufficient to yield the specified thickness after compaction.

#### **AGGREGATE GRADING FOR BITUMINOUS GROUT**

IS Sieve Designation	Per cent by weight passing the IS sieve
53.00 mm	100
26.50 mm	75-100
22.40 mm	50-85
13.20 mm	20-40
05.60 mm	5-20
02.80 mm	0-5

**Variation in proportioning of materials:** The Contractor shall have the responsibility for ensuring proper proportioning of materials and producing a uniform mix. A variation in binder content +0.3 per cent by weight of total mix shall however be permissible for individual specimens taken for quality control tests vide Section 900.

Construction Operations:

**Weather and seasonal limitations:** The work of laying shall not be taken up during rainy or foggy weather or when the base course is damp or wet, or during dust storm or when atmospheric temperature in shade is 10 degree C or less.

**Preparation of base:** This work shall consist of preparing an existing granular or black topped surface bituminous course. The work shall be performed on such widths and lengths as shown in application drawing or as directed by the Engineer. The existing surface shall be firm and clean and treated with prime or tack coat as shown on the drawings as otherwise stated in the contract.

**Materials: For scarifying and re-laying the granular surface:** The materials used shall be coarse aggregates salvaged from scarification of the existing granular base course supplemented by fresh coarse aggregates and screenings so that aggregates and screening thus supplemented correspond to Clause 404. Water Bound Macadam or Clause 406 wet Mix Macadam, as the case may be.

**For patching potholes and sealing cracks:** Where the existing surface to be overlaid is bituminous, any existing potholes and cracks shall be repaired and sealed in accordance with Clauses 3004.2 and 3004.3 or as directed by the Engineer.

**For Profile Corrective Course:** A profile corrective course for correcting the existing pavement profile shall be laid to varying thickness as shown on the Drawings, or as indicated in the Contract Documents. The profile corrective course shall be laid to tolerances and densities as specified for wearing course if a single layer, or base course, if it is to be covered with a wearing course layer.

**Profile corrective course and its application:** The type of material for use as a profile corrective course shall be as shown on the drawing. If it is to be laid as part of the overlay/strengthening course, the profile corrective course material shall be of the same specification as that of the overlay/strengthening course. However, if provided as a separate layer, it may be of the same specification as the layer over which it is to be laid or intermediate between underlying layers, as shown on the Drawing.

**Surface Levels:** The levels of the sub grade and different pavement courses as constructed shall not vary from those calculated with reference to the longitudinal and cross-profile of the road shown on the drawings or as directed by the engineer beyond the tolerances mentioned in Table 900-1.

Bituminous material shall not be applied to a wet surface or during a dust storm or when the weather is foggy, rainy or windy or when the temperature in the shade is less than 10DC. Where the tack coat consists of emulsion the surface shall be slightly damp, but not wet. Where the tack coat is of cut back bitumen the surface shall be dry.

**Construction Equipment:** The tack coat distributor shall be self-propelled or towed bitumen pressure sprayer, quipped for spraying the material uniformly at a specified rate. Hand spraying of small areas inaccessible to the distributor or in narrow strips shall be sprayed with a pressure and sprayer or as directed by the Engineer 503.4.2 of MORTH specification. Preparation of base : The surface on which the tack coat is to be applied shall be clean and free from dust, dirt and any extraneous material, and be otherwise prepared in accordance with the requirements of Clauses 501.8 and 902 as appropriate. Immediately before the application of the tack coat, the surface shall be swept clean with a mechanical broom, and high pressure air jet, or by other means as directed by the Engineer.

**Application of tack coat:** The application of tack coat shall be at the rate specified in the Contract, and shall be applied uniformly. If rate of application of Tack Coat is not specified in the contract then it shall be at the rate specified in TABLE 500-2 of MORTH specification. The normal range of spraying.

**TABLE 500-2 RATE OF APPLICATION OF TACK COAT:**

The asphalt at the rate of 2.5 Kg / 10 Sq. m. shall be used for tack coat of MORTH specification shall apply. The method of application of the tack coat will depend on the type of equipment to be used, size of nozzles, pressure at the spray ban and speed of forward movement. The Contractor shall demonstrate at a spraying trial, that the equipment and method to be used is capable of producing a uniform spray, within the tolerances specified. Where the material to receive an overlay is a freshly laid bituminous layer that has not been subjected to traffic, or contaminated by dust, a tack coat is not mandatory where the overlay is completed within two days.

**Curing of tack coat:** The tack coat shall be left to cure until all the volatiles have evaporated before any subsequent construction is started. No pant or vehicles shall be allowed on the tack coat other than those essential for the construction.

**Quality Control of Work:****TOLERANCES IN SURFACE LEVELS**

1.	Sub Grade	+	20 mm 25 mm
2.	Sub-base 4 – 10 mm		
	(a) Flexible pavement	-	20 mm
	(b) Concrete pavement	+	6 mm
	[Dry Clean concrete or Rolled concrete]	-	10 mm
3.	Base – Course for flexible pavement		
	(a) Bituminous course	-	6 mm
	(b) Other than bituminous	+	10 mm
	(i) Machine laid	-	10 mm
	(ii) Manually laid	+	15 mm
4.	Wearing course for flexible pavement		
	(a) Machine laid	+	6 mm 6mm
	(b) Manually laid	+	10 mm 10 mm
5.	Cement concrete pavement	+	5 mm 6 mm

**TACK COAT:**

**Scope:** This work shall consist of the application of a single coat of high viscosity liquid bituminous material to an existing bituminous road surface preparatory to the superimposition of a bituminous mix, when specified in the Contract or instructed by the Engineer.

**Materials:** The binder used for tack coat shall be bitumen emulsion complying with IS: 8887 of a type and grade as specified in the Section 500 of MORTH specification Contract or as directed by the Engineer. The use of cut back bitumen as per IS: 217 shall be restricted only for sites at sub-zero temperatures or for emergency applications as directed by the Engineer.

**Weather and Seasonal Limitations:**

For control of the quality of materials supplied and the works carried out for relevant provisions of Section 900 shall apply.

**Specification:** The rate shall cover the provision of tack coat at 0.25 kg per square meter with provision that the variation in actual quantity of bitumen used will be assessed and the payment adjusted accordingly.

**Preparation and transport of mix:** Bituminous grout mix shall be prepared in a hot mix plant of adequate capacity and capable of yielding a mix of proper and uniform quality with thoroughly coated aggregates.

The plant shall be drum mix type. The plant shall have coordinated set of essential units capable of producing uniform mix within the job mix formula such as laid down in Appendix 'A'.

(a) In case of drum mix plant, the cold feed system shall have variable speed conveyors/ or other suitable devices for regulating the accurate proportion of aggregate in to an even flood flow automatically from a control operation/Control Cabin.

(b) **Bitumen Control Unit:** Capable of measuring/metering and spraying required quantity of bitumen at specified temperature with automatic synchronization of bitumen and aggregate feed.

(c) **Filler System:** A fines feeder system suitable to receive bagged or bulk supply of filler materials and its incorporation to the mix in the correct quantity shall be necessary auxiliary.

(d) **Dust Control:** A suitable built in Dust Control Equipment for the dryer to contain the exhaust of fine dust in the atmosphere for environmental control wherever so specified by the Engineer.

(e) Suitable auxiliary Bitumen Boiler of Adequate capacity with self-heating arrangement and temperature control device. The boiler should be fitted with temperature indicating instruments.

The temperature of binder at the time of mixing shall be in range of 150 Degree C to 163 degree and that of the aggregate in the range of 155 degree C - 163 degree C provided that the difference in temperature between the binder and aggregate at no time exceeds 14 Degree C.

Mixing shall be thorough to ensure that a homogeneous mixture is obtained in which all particles of the aggregates are coated uniformly and the discharge temperature of mix shall be between 130 Degree C to 160 degree C.

The mixture shall be transported from the mixing place to the point of use in suitable tipper vehicles. The vehicles employed for transport shall be clean and be covered in transit if so directed by the Engineer. Any tipper causing excessive segregation of materials by its spring suspension or other contributing factors or that which shows undue delay shall be removed from the work unit such conditions are corrected.

**Spreading:** The mix transferred from the tipper at site to the paver shall be spread immediately by means of self-propelled mechanical paver with suitable screeds capable of spreading, tamping and finishing the mix true to the specified lines, grades and cross sections. The paver finisher shall have the following essential features:

- (a) Loading hoppers and suitable distributing mechanism.
- (b) All drives having hydrostatic drive/control.
- (c) The machine shall have a hydraulically extendable screed the appropriate width requirement.
- (d) The screed shall have tamping and vibrating arrangement for initial compaction to the layer as it is spread without rutting of otherwise marring the surface. It shall have adjustable amplitude and variable frequency.
- (e) The paver shall be equipment with necessary control mechanism so as to ensure that the finished surface is free from surface blemishes.
- (f) The paver shall be fitted with an electronic sensing device for automatic leveling and profile control within the specified tolerances.
- (g) The screed shall have the internal heating arrangement.
- (h) The paver shall be capable of laying either 2.5 to 4.0 m width or 4.0 to 7.0 m width as stipulated in the Contract.
- (i) The paver shall be so designed as to eliminate skidding/slippage of the tires during operation.

However, in restricted locations and in narrow widths where the available plant cannot be operated in the opinion of the Engineer, he may permit manual laying of the mix.

The temperature of the mix at the time of laying shall be in the range of 120°C to 160°C. In multi-layer construction, the longitudinal joint in one layer shall offset that in the layer below by about 150 mm. However, the joint in the top-most layer shall be at the lane line of the pavement.

Longitudinal joints and edges shall be constructed true to the delineating line parallel to the centre line of the road. All joints shall be cut vertical to the full thickness of the previously laid mix and the surface painted with hot bitumen before placing fresh material. Longitudinal and transverse joints shall be offset by at least 250 mm from those in the lower courses and the joint on the top-most layer shall not be allowed to fall within the wheel path. All transverse joints shall be cut vertically to the full thickness of the previously laid mix with asphalt cutter/pavement breaker and surface painted with hot bitumen before placing fresh material. Longitudinal joints shall be preferably hot joints. Cold longitudinal joints shall be properly heated with joint heater to attain a suitable temperature of about 80°C before laying of adjacent material.

**Compaction:** After the spreading of mix, rolling shall be done by 80 to 100 kN vibratory roller. Rolling shall start as soon as possible after the material has been spread deploying a set of rollers as the rolling is to be

completed in limited time frame. The roller shall move at a speed not more than 5 km/h. Rolling shall be done with care to avoid unduly roughening of the pavement surface.

Rolling of the longitudinal joints shall be done immediately behind the paving operation. After this, the rolling shall commence at the edges and progress towards the centre longitudinally except that on super elevated and unit-directional cambered portions, it shall progress from the lower to the upper edge parallel to the centre line of the pavement.

The initial or break-down rolling shall be done with 80-100 kN static weight smooth wheel roller (3 wheels or tandem) as soon as it is possible to roll the mix without cracking the surface or having the mix pick up on the roller wheels. The second or intermediate rolling shall follow the break-down rolling with vibratory roller of 80 to 100 kN static weight or pneumatic tired roller of 150 to 250 kN weight, with minimum 7 wheels and minimum tire pressure of 0.7 MPa as closely as possible to the paver and be done while the paving mix is still at a temperature that will result in maximum density. The final rolling shall be done while material is still workable enough for removal of roller marks with 60 - 80 kN tandem roller. During the final rolling, vibratory system shall be switched off. The joints and edges shall be rolled with an 80 to 100 kN static roller.

When the roller has passed over the whole area once, any high spots or depressions which become apparent shall be corrected by removing or adding mix material. The rolling shall then be continued till the entire surface has been rolled to 95 per cent of the average laboratory density (obtained from Marshall Specimens compacted as defined in Table 500-10), there is no crushing of aggregates and all roller marks have been eliminated. Each pass of the roller shall uniformly overlap not less than one-third of the track made in the preceding pass. The roller wheel shall be kept damp if necessary to avoid bituminous material from sticking to the wheels and being picked up. In no case shall fuel, lubricating oil shall be used for this purpose, nor did excessive water pour on the wheels.

Rolling operations shall be completed in every respect before the temperature of the mix falls below 100°C.

Roller(s) shall not stand on newly laid material while there is a risk that surface will be deformed thereby. The edges along and transverse of the bituminous grout laid and compacted earlier shall be cut to their full depth so as to expose fresh surface which shall be painted with a thin surface coat of approximate binder before the new mix is placed against it.

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

The built-up spray grout shall be provided with next surfacing without any delay. If there is to be any delay, the course shall be covered by a seal coat to the requirement of Clause 513 before allowing any traffic over it. The seal coat in such cases shall be considered incidental to the work and shall not be paid for separately.

**Arrangement for Traffic:** During the period of construction, arrangement of traffic shall be done to Clause 112 of MORTH Specification.

**Passage of Traffic along a part of the Existing Carriageway under Improvement:** For widening/strengthening existing carriageway where part width of the existing carriageway is proposed to be used for passage of traffic, treated shoulders shall be provided on the side on which work is not in progress. The treatment to the shoulder shall consist of providing at least 150 mm thick granular base course covered with bituminous surface dressing in a width of at least 1.5 m and the surface shall be maintained throughout the period during which traffic uses the same to the satisfaction of the Engineer. The continuous length, in which such work shall be carried out, would be limited normally to 500 m at a place. However, where work is allowed by the Engineer in longer stretches passing places at least 20 m long with additional paved width of 2.5 m shall be provided at every 0.5 km interval.

In case of widening existing two-lane to four-lane the additional two lanes would be constructed first and the traffic diverted to it and only thereafter the required treatment to the existing carriageway would be carried out. However, in case where on the request of the Contractor work on existing two lane carriageways is allowed by the Engineer with traffic using part of the existing carriageway, stipulations as in para above shall apply.



After obtaining permission of the Engineer, the treated shoulder shall be dismantled the debris disposed of and the area cleared as per the direction of the Engineer.

**MEASUREMENTS FOR PAYMENT:** The payment shall be made on the tonnage basis of the weight of mix of aggregates and bitumen. For this purpose, the contractor shall have to install a weight bridge of suitable capacity for the purpose of weighing of dumpers at suitable place at his cost as directed. Weight of empty and weight of loaded dumper will be recorded in bound and numbered register on plant site. Department will be free to get some loaded dumpers test checked at other weight bridge. Weight bridge will be periodically got calibrated and verified from weight and measure authorities.

For the purpose of application of tack coat, if the theoretical area as per sanctioned estimate for basis of tone differs with the actual area of work done in the field, the reduction in or addition to payment shall have to be exceeding respectively.

Weight of mix materials will be done in presence of responsible person, not less than the rank of supervisor of department and the measurement shall be recorded by the Deputy Engineer or Assistant Engineer or Add. Asst. Engineer. If so authorized, Record of each dumper will be maintained separately in bound and numbered register, which will be maintained by the departmental representative and signed by the contractor. Proper gate pass system shall be established for the vehicles coming to the plant site and out going from the plant site. The location of the kilometer, hectometer and meter in which individual dumper are unloaded shall be recorded carefully.

**RATE:** The contract unit rate for the work shall be payment in full for carrying out the required operations including full compensation for

- (i) Making arrangements for traffic to Clause 112 of MORTH specification except or initial treatment to verge, shoulders and construction of diversion.
- (ii) Preparation of base except for laying of profile corrective course but including filling of potholes.
- (iii) Providing all materials to be incorporated in the work including arrangement for stock yards, all royalties, fees, rents where necessary and all leads and lift.
- (iv) All labour, tools, equipment, plant including installation of hot mix plant, power supply units and all machineries, incidental to complete the work to the specifications.
- (v) Carrying out the work in part widths of the road where directed.
- (vi) Carrying out all tests for control of quality.

**The Contract rate shall be for a unit of one M.T. basis of complete item.**

#### **ITEM NO.12:**

**Providing & Laying 37.5mm thick B.M. with B.T Aggregate as per M.O.R.T & H. specification and (VG 30) asphalt Grade 60/70 for tack coat 2.5 kg/10 st and mixing 34.00kg/ M.T. i.e. 3.40% by weight of total mix including heating the aggregate and asphalt in continuous batching drum mix plant and spreading the same by paver finisher & consolidation with vibratory roller including providing all materials equipment's, tools and plants, fire wood, oil, kerosene, labor charges etc. complete using contractor own machinery drum mix plant and paver finisher etc.**

The work shall consist of construction in a single course of 20/25 mm. thick premixed carpet as course, on a previously prepared base. Single course shall also include additional thickness if any to remove unevenness of the existing surface.

The coarse aggregates shall consist of crushed stone only. These shall be clean, strong durable of fairly Cubical shape, free of disintegrated pieces, organic or other deleterious matter and adherent coatings. The aggregates shall preferably be hydrophobic and of low porosity and shall satisfy the physical requirements set forth as under.

### Physical Requirements of Aggregates for Bituminous Macadam.

Sr. No.	Test	Test Method	Requirements
1.	Los Angles Abrasion Value	IS : 2386 (Part IV)*	35% Maximum
2.	Aggregate Impact Value	-do-*	30% Maximum
3.	Flakiness Index	IS : 2386 (Part I)	30% Maximum
4.	Stripping Value	IS : 6241	25% Maximum
5.	Water Absorption	IS : 2386 (Part III)	2% Maximum

\* Aggregates may satisfy requirements of either of the two tests.

The fine aggregates shall consist of crusher run screening, natural sand or mixture of both. These shall be clean, hard durable, uncoated, dry and free from injurious, soft or flaky pieces and organic or deleterious substance.

The filler, where required, shall be an inert material, the whole of which passes 600 micron sieve at least 90 percent passing 150 micron sieve and not less than 70 percent passing 75 micron sieve. The filler shall be cement, stone dust, hydrated lime or fly ash approved by the Engineer-in-charge

The mineral aggregates, including mineral filler, shall be so graded or combined as to conform to the grading as under.

**Table Aggregate gradation for Asphalt carpet.**

Sieve Size	% by weight passing the Sieve for 20/50 mm thickness
20 mm	100
12.5 mm	70-100
10.0 mm	20-40
4.75 mm	0-5
2.36 mm	

The samples of aggregate of requires gradings for the work shall be got approved from the Engineering-charge prior to transportation and collection on plant site. Unapproved materials shall have to be removed from the plant site by the contractor at his own cost. If contractor fails to remove the inferior type of materials from the plant site, the same will be removed by the Department at the cost of the Contractor. Collection of aggregate shall be in different stacks according to various sizes of aggregates.

For the purpose of collection of materials, plant site shall be established at suitable place, where hot mix plant shall be installed. Department will extend all necessary co-operation in helping Contractor to get nearby Government land of establishing plant site. However, department is not responsible if no such land is made available to the Contractor and in that case, the Contractor will have to make his own arrangement for the same. Incoming material shall be recorded in a register for the purpose of record.

The binder shall be straight run bitumen of a suitable grade satisfying the requirements of IS:73. Bitumen shall be 60/80/100 grade and shall be supplied by the department at the rate and place as mentioned in Schedule "A" of the tender and it shall have to be carted, by the Contractor to the site of work at his own cost. Empty asphalt drums shall have to be returned free of cost to P.W.D. Store from where they are issued or as directed, if so provided in Schedule 'A' Any damage caused to the asphalt drums or loss of asphalt after issue from store shall be the responsibility of the Contractor. Drums of asphalt shall be so stored so as to allow easy inspection and in such place as will not damage the drums and cause the leakage of allow water and other foreign matter to enter. For the purpose of calculating consumption, wastage will not be allowed beyond 2.5 percent. Excess consumption over 2.5 percent will be charged at a panel rate.



In case bitumen is to be issued by department. in bulk, the same shall be issued to the Contractor at plant site by tankers at the same rate as shown in Schedule W. Contractor shall have to make adequate arrangement for stacking bulk asphalt at plant site according to the requirement. No deduction in rate will be made for supplying heated bulk asphalt.

The asphalt should not be used as a fuel. If however, Contractor is found to be using asphalt as fuel, the quantity of asphalt utilized shall be assessed. by the Executive Engineer whose decision will be final and binding to the Contractor who will be charged at double the rate provided in Schedule 'A' of the agreement even though the total consumption of asphalt may be within the theoretical consumption.

Department shall keep a day to day account of the supply and notion of bitumen in a separate bound

register having numbered pages and the preform prescribed by the Department. Day to day signature of the Contractor's representative shall be obtained in thus register. Issue rate of bitumen includes (i) Obtaining asphalt from Department's store, (ii) Transporting to site, (iii) Storing and sticking, (iv) records of supply and consumption and (v) returning the empty drums in good condition to the Department.

Semi dense carpet shall not be laid during rainy weather or when the base course is damp or wet.

The base on which semi dense carpet is to be laid shall be thoroughly swept and scraped clean and free of dust and foreign matter.

The work shall consist of application of a single coat of bituminous to an existing road surface preparatory to another bituminous construction. The temperature of bitumen at the time of application shall be in the range of 160 degree centigrade to 175 degree centigrade.

Binder shall be heated to the temperature appropriate to the grade of bitumen used and approved by the Engineer-in-charge and sprayed on the base at the rate specified hereafter. The rate of spread of straight run bitumen for tack coat shall be 5 kg per 10 square meter area for an existing bitumen treated surface. The binder shall be applied uniformly. The tack coat shall be applied just ahead of the on coming bituminous construction. In case carpet is to be laid on W. B. M. surface, rate of spread of Bitumen for tack cost will be 10 kg./10smt.

The binder content for premixing shall be 3.28 percent by weight of the total mix unless otherwise specified. The quantities of aggregates shall be sufficient to yield the specified thickness after compaction.

The contractor shall get the job-mix formula for the mix approved by the Engineer-in-charge before starting the work. In order to obtain the required type of mix, the department may change the proportion of bitumen and gradings of aggregate and contractor shall have to collect the materials accordingly case of increase in proportion of bitumen the increased or decreased quantity will be adjusted at the, rate provided in Schedule 'A' The contractor shall have the responsibility of ensuring proper proportioning of materials in accordance with the approved job-mix formula and producing a uniform mix.

Hot mix plant of adequate capacity and capable of producing a proper and uniform quality shall be used for preparing the mix. The plant may be either a batch type or a continuous one, having coordinated set of essential unit such as dryer for heating the aggregates, a binder heating and control unit for metering out the correct quantity of heated binder together with a paddle mixer for intimate mixing of the binder and aggregate.

The temperature of binder at the time of mixing shall be the range of 150-177 degree centigrade and of aggregates in the range of 155 - 163 degree centigrade. Provided also that at no time shall the difference in temperature between the aggregates and the binder exceed 14 degree centigrade.

Mixing shall be thorough to ensure that a homogeneous mixture is obtained in which all the particles to the mineral aggregates are coated uniformly.

The mix shall be transported from the mixing plant to the point of use in suitable vehicles. The vehicles employed for transport shall be clean and be covered over during transit if so directed by the Engineer-in-charge.

The mix, transported from the hot mix plant to the site, shall be spread means of a self propelled mechanical paver with Suitable screeds capable of spreading, tamping and finishing the mix, to specified grade, lines and. cross sections. The temperature of mix at the time of laying shall be in range 121- 163 degree centigrade.

23. Longitudinal joints and edges shall be constructed true to the delineating lines parallel to the centreline of the road. Longitudinal joints shall be offset by at least 150 mm. from those in the binder course. All joints shall be cut vertical to the full thickness of the previously laid mix and the surface painted with hotbitumen men before placing fresh material.

24. Immediately after the spreading of mix, it shall be thoroughly compacted by 8-10 3 Wheel roller moving at a speed not exceeding 5 km per hour.

The roller wheels shall be kept damp to prevent the mix from adhering to them but in no case shall fuel lubricating oil be used for this purpose. Rolling shall commence longitudinally from the edge and progress towards the centre except on super elevated portions. When it shall progress from the lower to upper edge parallel to the centre line of the pavement. The roller should proceed on the fresh material with rear or mixed wheel leading or as to minimized the pushing of the mix and each pass of the roller shall uniformly overlap not less than one third of the track made in the preceding pass. Rolling shall continue until the entire surface been rolled to compaction and all the roller marks eliminated.

Sand or stone dust flushing at the rate of 0.03 cmt. / 10 smt. shall -be done on asphalt surface for which no separate payment will be made.

Traffic may be allowed immediately after completion of the final rolling when the mix has cooled down to the surrounding temperature.

**Surface finish and quality control of work:** Control on the quality of materials and works shall be exercised by the Engineer-in-charge] by carrying out the following test at the frequencies shown against each:-

Sr. No.	Type of Construction	Test	Frequency
1.	Tack Coat	(i) Binder temperature for application (ii) Rate of spread of binder	At regular close intervals. Two test per day
2.	Semi Dense Carpet	(i) Aggregate Impact Value (ii) Flakiness Index of Aggre. (iii) Stripping Value (iv) Mix Grading  (v) Temperature of binder in the boiler, aggregate in the dryer and mix at the time of laying and rolling (vi) Control of binder content and gradation in the mix (Binder Content test vide) (ASTM D- 2172) (vii) Rate of spread mix material	One test per 100 cu. M. of aggre. -do- -do- One set of test on individual constituents and mixed aggregates of mix subject to a minimum of two test per day At regular close intervals.  One test for each 100 tonnes of mix subject to max. of two test per day per plant  Regular control through checks on layer thickness

**29.** The contractor shall at all times carry out work on the highway in a manner creating least interference, to the flow of traffic while consistent with the satisfactory execution of the same. For all work involving improvements to the existing highway, the contractor shall in accordance with the directives if the Engineer-in-charge provide and maintain, during the execution of the work, a passage for traffic along a part of the existing carriage way under improvement or on diversion

In case of the improvement works, namely widening strengthening of the existing pavement or reconstruction repairs to cross-drainage works. Where such works could be carried out on part widths at a time and the traffic could simultaneously be passed without undue delay and difficulty on the other part; the road shoulder shall be dressed and brought in line with the pavement and maintained throughout the duration of the work to the satisfaction of the Engineer-in-charge. Where work is continued on long stretches, passing places, at least 20 metre long and 6 metre wide inclusive of the width of the existing carriage way shall be provided at half or one kilometer intervals as directed by the Engineer-in-charge. Extra treatment to shoulders where necessary, shall be given as ordered by the Engineer-in-charge.

The contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades including signs, marking lights and flagmen as may be required, by the Engineer-in-charge for the information and protection of traffic approaching or through the section. the highway under improvement. Before taking up any construction an agreed phased programme 'or the control of traffic on the highway shall be drawn up in consultation with the Engineer-in-charge.

The barricades erected on either side of the carriage way/portion of the carriage way closed to traffic shall be strong to resist violation, and painted with alternate black and white stripes. Red lanterns or warning lights of similar type shall be mounted on the barricades at night and kept lit throughout from sunset to sunrise. At the points where traffic is to deviate from its normal path the channel for traffic shall be clearly marked with the aid of pavement marking, painted drums or a similar device to the direction of the Engineer-in-charge. At night the passages shall be delineated with lanterns or other suitable light source.

One way traffic operation shall be established whenever the traffic is to be passed over part of the carriage way inadequate for two lane traffic. This shall be done with the help of flagmen kept positioned on opposite side during all hours. For regulation of traffic, the flagmen shall be equipped with red and green flags and lanterns. On both sides, suitable regulatory/warning signs shall be installed for the guidance of, carriage way begins and the other 120 metres away. The signs shall be of approved design and the refractory type if so directed.

**34.** The payment shall be made on the tonnage basis of the weight of mix of aggregate and bitumen. For this purpose the contractor shall have to install a weigh bridge of suitable capacity for the purpose of weighing of dumpers at suitable place at his cost as directed. Weight of empty dumper and weight of loaded dumper be recorded in bound and numbered register on plant site.

Department will be free to get some loaded dumpers test checked at other bridges. Weigh bridge will be periodically got calibrated and verified from weight and measure authorities.

Weight of mix materials will be done in presence of responsible person, not less than the rank of supervisor of Department and the measurements shall be recorded by the Deputy Engineer, Junior Engineer or Supervisor, if so authorized. Record of each dumper will be maintained separately in bound and numbered register which will be maintained by the department representatives and signed by the contractor. Proper gate pass system shall be established, for the vehicles coming to the plants, site and out going from the plant site. The location of hectometer in which individual dumpers are unloaded shall be recorded carefully.

The contract unit rate for semi-dense carpet shall be in full for carrying out the required operation including full compensation for:

Making arrangements of control and safety of traffic.

Preparation of base.

Providing all materials to be incorporated in the works with all lead and lifts.

All labour, tools, equipment and incidentals to complete the work to the specification.

#### **ITEM NO.13:**

**Providing and Laying 25mm thick S.D.B.C. with B.T Aggregate as per M.O.R.T and H. specification and (VG 30) asphalt grade 60/70 mixing at 50 kg/M.T. i.e. 5.0% by weight of total mix including heating the aggregate and asphalt in continuous batching drum mix plant and spreading the same by paver finisher and consolidation with vibratory roller including providing all materials equipments, tools and plants, fire wood, oil, kerosene, labour charges etc. complete using contractor own machinery drum mix plant and paver finisher etc. complete.**

#### **508. SEMI-DENSE BITUMINOUS CONCRETE**

**508.1. Scope:** This clause specifies the construction of Semi Dense Bituminous Concrete, for use in wearing/binder and profile corrective courses. This work shall consist of construction in a single or multiple layers of semi dense bituminous concrete on a previously prepared bituminous bound surface. A single layer shall be 25mm to 100mm in thickness.

##### **508.2. Materials**

**508.2.1. Bitumen:** The bitumen shall be paving bitumen of Penetration grade complying with Indian Standard Specification for Paving Bitumen, IS: 73 and of the penetration indicated in Table 500-15, for semi dense bituminous concrete, or this bitumen as modified by one of the methods specified in Clause 52.1, or as otherwise specified in the Contract. Guidance on the selection of an appropriate grade of bitumen is given in The Manual for Construction and Supervision of Bituminous Works.

**508.2.2. Coarse aggregates:** The coarse aggregates shall be generally as specified in Clause 507.2.2, except that the aggregates shall satisfy the physical requirements of Table 500-14.

**508.2.3. Fine aggregates:** The fine aggregates shall be all as specified in Clause 507.2.3.

**508.2.4. Filler:** Filler shall be generally as specified in Clause 507.2.4. Where the aggregates fail to meet the requirements of the water sensitivity test in Table 500-14 then 2 per cent by total weight of aggregate, of hydrated lime shall be added without additional cost.

**508.2.5. Aggregate grading and binder content:** When tested in accordance with IS 2386 Part I (Wet sieving method), the combined grading of the coarse and fine aggregates and added filler shall fall within the limits shown in Table 500-15 for gradings 1 or 2 as specified in the Contract.

### 508.3. Mixture Design

**508.3.1. Requirements for the mixture:** Apart from conformity with the grading and quality requirements for individual ingredients the mixture shall meet the requirements set out in Table 500-16.

**TABLE 500-14. PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR SEMI DENSE BITUMINOUS CONCRETE PAVEMENT LAYERS**

Property	Test	Specification
Cleanliness (Dust)	Grain size analysis <sup>1</sup>	Max. 5 % passing 0.075 mm sieve
Particle shape	Flakiness and Elongation Index (Combined) <sup>2</sup>	Max. 30 %
Strength*	Los Angeles Abrasion Value <sup>3</sup>	Max. 35 %
	Aggregate Impact Value <sup>4</sup>	Max. 27 %
Polishing	Polishing Stone Value <sup>5</sup>	Min. 55
Durability	Soundness <sup>6</sup>	
	Sodium Sulfate Magnesium Sulfate	Max. 12 % Max. 18 %
Water Absorption	Water Absorption <sup>7</sup>	Max. 2%
Stripping	Coating and Stripping of Bitumen aggregate Mixtures <sup>9</sup>	Min. retained coating 95 %
Water Sensitivity **	Retained Tensile Strength <sup>8</sup>	Min. 80 %

Notes: 1. IS: 2386 Part 1 6. IS: 2386 Part 5

2. IS: 2386 Part 1 7. IS: 2386 Part 3

(The elongation test to be done only on non- flaky aggregates in the sample)

3. IS: 2386 Part 4\* 8. AASHTOT: 283\*\*

4. IS: 2386 Part 4\* 9. IS: 6241

5. BS: 812 Part 114

\* Aggregate may satisfy requirements of either of these two tests.

\*\* The water sensitivity test is only required if the minimum retained coating in the stripping test is less than 95%.

The requirements for minimum per cent voids in mineral aggregate (VMA) are set out in Table 500-12.

**508.3.2. Binder content:** The binder content shall be optimized to achieve the requirements of the mixture set out in Table 500-16 and the traffic volume as specified in the Contract. The Marshall method for determining the optimum binder content shall be adopted as described in the Asphalt Institute Manual MS-2, replacing the aggregates retained on the 26.5mm sieve and retained on the 22.4mm sieve, where approved by the Engineer – in – charge.

**TABLE 500-15. COMPOSITION OF SEMI DENSE BITUMINOUS CONCRETE**

<b>PAVEMENT LAYERS</b>		
<b>Mix designation nominal aggregate size layer thickness</b>	<b>Grading 1 13 mm 35 – 40 mm</b>	<b>Grading 2 10 mm 25 – 30 mm</b>
<b>IS Sieve (mm)</b>	<b>Cumulative % weight of total aggregate passing</b>	
45	-	-
37.5	-	-
26.5	-	-
19	100	-
13.20	90 – 100	100
9.50	70 – 90	90 – 100
4.75	35 – 51	35 – 51
2.36	24 – 39	24 – 39
1.18	15 – 30	15 – 30
0.60	-	-
0.30	9 – 19	9 – 19
0.15	-	-
0.075	3 – 8	3 – 8
Bitumen content % by weight of total mixture <sup>1</sup>	Min. 4.5	Min. 5.0
Bitumen grade	65*	65*

- Notes:**
1. The combined aggregate grading shall not vary from the low limit on one sieve to the high limit on the adjacent sieve.
  2. Determined by the Marshall method.
- \* Only in exceptional circumstances, 80/100 penetration grade may be used, as approved by the Engineer.

**TABLE 500 – 16. REQUIREMENTS FOR SEMI DENSE  
BITUMINOUS PAVEMENT LAYERS**

Minimum stability (KN at 60°C)	8.2	8.2
Minimum flow (mm)	2	2
Maximum flow (mm)	4	4
Compaction level (Number of blows)	75 below on each of the two faces of the specimen	
Per cent air voids	3 – 5	
Per cent voids in mineral aggregate (VMA)	See Table 500 – 12	
Per cent voids filled with bitumen (VFB)	65 – 78	

**508.3.3. Job mix formula:** The procedure for formulating the job mix formula shall be generally as specified in Clause 507.3.3 and the results of tests enumerated in Table 500-16 as obtained by the Contractors.

**508.3.4. Plant trials - permissible variation in job mix formula:** The requirements for plant trials shall be all as specified in Clause 507.3.4, and permissible limits for variation as shown in Table 500-13.

**508.3.5. Laying trials:** The requirements for laying trials shall be all as specified in Clause 507.3.5.

#### **508.4. Construction Operations**

**508.4.1. Weather and seasonal limitations:** The provisions of Clause 501.5.1 shall apply.

**508.4.2. Preparation of base:** The surface on which the Semi Dense Bituminous material is to be laid shall be prepared in accordance with Clauses 501 and 902 as appropriate, or as directed by the Engineer. The surface shall be thoroughly swept clean by mechanical broom and dust removed by compressed air. In locations where a mechanical broom cannot access, other approved methods shall be used as directed by the Engineer.

**508.4.3. Geosynthetics:** Where Geosynthetics are specified in the Contract this shall be in accordance with the requirements stated in Clause 703.

**508 4.4. Stress absorbing layer:** Where a stress absorbing layer is specified in the Contract, this shall be applied in accordance with the requirements of Clause 522.

**508.4.6. Mixing and transportation of the mixture:** The provisions as specified in Clauses 501.3.and 501.4 shall apply.

**508.4.5. Tack coat:** Where specified in the Contract, or otherwise required by the Engineer, a tack coat shall be applied in accordance with the requirements of Clause 503.

**508.4.7. Spreading:** The general provisions of Clauses 501.5.3 and 501.5.4 shall apply.

**508.4.8. Rolling:** The general provisions of Clauses 501.6 and 501.7 shall apply, as modified by the approved laying trials. The compaction process shall be carried out by the same plant, and using the same method, as approved in the laying trials, which may be varied only with the express approval of the Engineer in writing.

#### **508.5. Opening to Traffic**

The newly laid surface shall not be open to traffic for at least 24 hours after laying and the completion of compaction, without the express approval of the Engineer in writing.

#### **508.6. Surface Finish and Quality Control**

The surface finish of the completed construction shall conform to the requirements of Clause 902. All materials and workmanship shall comply with the provisions set out in Section 900 of this Specification.

#### **508.7. Arrangements for Traffic**

During the period of construction, arrangements for traffic shall be made in accordance with the provisions of Clause 112.

#### **508.8. Measurement for Payment**

The measurement shall be all as specified in Clause 507.8. The contract rate shall be for a unit of one M.T.

**508.9. Rate:** The contract unit rate shall be all as specified in Clause 507.9, except that the rate shall include the provision of bitumen at 5.00 percent, by weight of total mixture. The variance in actual percentage of bitumen used will be assessed and the payment adjusted up or down, accordingly.

**The contract rate shall be for a unit of one M.T. basis of complete item.**

**(All The Table and Clauses Are As Under)**

**Base and Surface Courses (Bituminous)**

**TABLE 500-15. COMPOSITION OF SEMI DENSE BITUMINOUS CONCRETE  
PAVEMENT LAYERS**

Grading	1	2
Nominal aggregate size	13mm	10mm
Layer Thickness	35-40 mm	25-30 mm
IS Sieve1(mm)Cumulative % by weight of total aggregate passing		



45		
37.5		
26.5		
19		
13.2	100	
9.5	90-100	
4.75	70-90	100
2.36	35-51	90-100
1.18	24-39	35-51
0.6	15-30	24-39
0.3	-	15-30
0.15	9-19	-
0.075	-	9-19
Bitumen content % by mass of total mix 2	3-8	-
Bitumen grade (pen)	Min 4.5 65*	3-8 Min 5.0 65*

Notes: 1. The combined aggregate grading shall not vary from the low limit on one sieve to the high limit on the adjacent sieve.

2. Determined by the Marshall method.

\* Only in exceptional circumstances, 80/100 penetration grade may be used, as approved by the Engineer.

### 521.1. Scope

Modified binders comprise a base binder, to which is added either natural rubber, crumb rubber or a polymer such as Styrene- Butadiene-

**Base and Surface Courses (Bituminous)** Styrene (SBS), Ethylene-Vinyl-Acetate (EVA) or Low Density Polyethylene (LDPE). The purpose is to achieve a high performance binder with improved properties, particularly at extremes of temperature.

### 521.2. Materials

**521.2.1. Base Binder :** The base binder into which the modifier is incorporated shall conform to IS:73. The choice of grade shall be such that it is compatible with the modifier and, when mixed shall have the properties described in Clause 521.3.

**521.2.2. Modifier :** The modifier shall be a natural rubber, crumb rubber or any other polymer which is compatible with the base binder and which allows the properties given in Clause 521.3 to be achieved. For further details, IRC:SP:53-1999 may be referred to. The modifier, in the required quantity shall be blended at the refinery or at the site plant: capable of producing modified binder.

### 521.3. Modifier Proportions

The quantity of modifier to be added shall be determined by tests on the base binder and the modified binder and the properties desired. A reference may be made to the Manual for Construction and Supervision of Bituminous Works for indicative dosage of different types of modifiers. The properties of the modified binder shall be as given in Table 500-44, 500-45 or 500-46 according to the requirements of the Contract.

### 521.4. Mixing

The modifier shall be blended with the base binder so that it disperses thoroughly prior to use. The type of mixing equipment used shall be suited to the modifier type. Further guidance is given in the Manual for Construction and Supervision of Bituminous Works.

### 521.5. Quality Control of Materials

**521.5.1. Binder Properties :** For control of the quality of the base binder, the relevant provisions of Section 900 shall apply. Additionally.



the modified binder shall be tested for all the properties listed in Table 500-44, 500-45 or 500-46 as appropriate and certificates produced prior to use. During use, the requirements for softening point, penetration and elastic recovery shall be tested regularly. If the modified binder is producer

**TABLE 500-44. REQUIREMENTS OF POLYMER MODIFIED BINDERS  
(ELASTOMERIC THERMOPLASTICS AND RUBBER LATEX)**

Designation	Grade and Requirements				Method of Test
	PMB 120	PMB 70	PMB40		

Penetration at 25°C, 0.1 mm, 100g, 5 sec.	90 to 150	50 to 100	30 to 49	IS:1203-1978
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Penetration at 4°C, 0.1mm, 200°, 60 sec.. Minimum*	35	22	18	IS:1205-1978
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Softening Point, (R&B), °C, Minimum	38	48	59	IS:1205-1978
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Fraass Breaking Point, °C, Maximum	*-24	-16	-12	IS:9381-1978
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Ductility at 27°C, cm. Minimum	75	50	50	IS:1208-1978
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Flash Point, COC, °C, Minimum	220	220	220	IS:1209-1978
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Elastic Recovery of Half Thread in	70	60	50	ASTM
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Ductile meter at 15°C, %, Minimum	(50)**	(40)**	(30)**	D5976-1996
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Separation, Difference in Softening Point, R&B, °C, Maximum	4	4	4	ASTM D5976-1996
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Viscosity at 150°C, Poise	1-3	2-6	4-8	IS:1206-1978
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**Test on Thin Film Oven Test Residue, TFOT (IS:9382-1979)**

Designation	Grade and Requirements				Method of Test
	PMB 120	PMB 70	PMB40		

Penetration at 4°C, 0.1 mm, 200g, 60 sec, Minimum*	18	15	12	IS:1203-1978
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Loss in Weight, %, Maximum	1.0	1.0	1.0	IS:9382-1979
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Increase in Softening Point, °C, Maximum	7	6	5	IS:1205-1978
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Reduction in Penetration at 25°C, %, Maximum	35	35	35	IS:1203-1978
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Elastic Recovery of Half Thread in	60	40	35	ASTM
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Ductilometer at 15°C, %, Minimum	(35)**	(30)**	(25)**	D5976-1996
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\* Relevant to snow bound cold climate areas

\*\* Natural Rubber Modified Bitumen

on site then tests shall be carried out daily. If pre-blended modified binder is used tests shall be carried out weekly.

**521.5.2. Storage Stability :** Pre-blended modified binders which are to be stored without circulation or agitation facility shall be tested for storage stability prior to use, in accordance with Appendix 1 of IRC:SP:53-1999. The mean of the differences in softening point, top to bottom, of

**Base and Surface Courses (Bituminous)****TABLE 500-45. REQUIREMENTS OF POLYMER MODIFIED BINDERS  
(PLASTOMERIC THERMOPLASTICS)****Designation Grade and Requirements Method of Test****PMB 120 PMB 70 PMB40**Penetration at 25°C, 0.1mm, 100g, 90 to 1 50 50 to 89 30 to 49 IS:1203-1978  
5 sec.Penetration at 4°C, 0.1mm, 200g, 35 22 18 IS:1205-1978  
60 sec., Minimum\*

Softening Point, (R&amp;B), °C, Minimum 38 48 59 IS:1205-1978

Fraass Breaking Point, °C, Maximum\* -20 -15 -10 IS:9381-1978

Ductility at 27°C, cm, Minimum 50 40 30 IS:1208-1978

Flash Point, COC, °C, Minimum 220 220 220 IS:1209-1978

Elastic Recovery of Half Thread in 60 50 40 ASTM

Ductilometer at 15°C, %, Minimum D5976-1996

Separation, Difference in Softening 3 3 3 ASTM

Point, R&amp;B, °C, Maximum D5976-1996

Viscosity at 150°C, Poise 1-2 2-4 4-8 IS:1206-1978

*Test on Thin Film Oven Test Residue, TFOT (9382-1979)***Designation Grade and Requirements Method of Test****PMB 120 PMB 70 PMB40**Penetration at 4°C, 0.1mm, 200g, 18 15 12 IS:1203-1978  
60 sec., Minimum\*

Loss in Weight, %, Maximum 1.0 1.0 1.0 IS:9382-1979

Increase in Softening Point, °C, 7 6 5 IS:1205-1978  
MaximumReduction in Penetration at 25°C, 35 35 35 IS:1203-1978  
%, Maximum

Elastic Recovery of Half Thread in 45 35 30 ASTM

Ductilometer at 15°C, %, Minimum D5976-1996

\* Relevant to snow bound cold climate areas  
not less than three pairs of samples shall not exceed 5°C.

Other pre-blended modified binders shall be stored with appropriate circulation or agitation facility, according to the manufacturer's instructions.

**521.6. Measurement for Payment**

Modified binder supplied for the Contract shall be paid for in Tonnes.

**Base and Surface Courses (Bituminous)****TABLE 500-46. REQUIREMENTS OF POLYMER MODIFIED BINDERS  
(TREATED WITH MODIFIED CRUMB RUBBER)****Designation CRMB Grade CRMB Method of Test****60 CRMB 50  
55**

Penetration at 25°C, 0.1mm, 100 g, 5 sec 50-70 50-60 40-60 IS:1203-1978

Softening Point, (R&amp;B), °C, Minimum 50 55 60 IS:1205-1978

Elastic Recovery of Half Thread in Ductilometer at 15°C. % Minimum	10	35	30	ASTM D5976-1996
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**Test on Thin Film Oven Test Residue (IS:9382-1979)**

Reduction in Penetration at 25°C, 60 % Maximum	60	60	IS:1203-1978
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Increase in Softening Point (R&B) ,5 °C, Maximum	5	5	IS:1205-1978
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Elastic Recovery of Residue of Half Thread in Ductilometer at 15°C, %, Minimum	25	20	15	ASTM D 5976-1996
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**CRMB - Crumb Rubber Modified Bitumen**

**521.7 Rate**

The contract rate for modified binder shall be as per contract agreement.

**508.2.2. Coarse aggregates:**

The coarse aggregates shall consist of crushed rock, crushed gravel or other hard material retained on the 2.36 mm sieve. They shall be clean, hard, durable, of cubical shape, free from dust and soft or friable matter, organic or other deleterious substances. Where the Contractor's selected source of aggregates have poor affinity for bitumen, as a condition for the approval of that source, the bitumen shall be treated with an approved anti-stripping agent, as per the manufacturer's recommendations, without additional payment. Before approval of the source, the aggregates shall be tested for stripping. The aggregates shall satisfy the physical requirements specified in Table 500-8, for dense bituminous macadam. Where crushed gravel is proposed for use as aggregate, not less than 90% by weight of the crushed material retained on the 4.75 mm sieve shall have at least two fractured faces.

**TABLE 500-14. PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR SEMI DENSE BITUMINOUS CONCRETE PAVEMENT LAYERS**

Property	Test	Specification
Cleanliness (dust)	Gra in size analysis'	Max 5% passing 0.075mm sieve
Panicle shape	Flakiness and Elongation Index (Combined)2	Max 30%
Strength*	Los Angeles Abrasion Value3	Max 35%
	Aggregate Impact Value4	Max 27%
Polishing	Polished Stone Value5	Min55
Durability	Soundness:6	
	Sodium Sulphate	
	Max 12%	
	Magnesium Sulphate	Max 18%
Water Absorption	Water absorption7	Max 2%
Stripping	Coating and Stripping of Bitumen Aggregate Mixtures 9	Minimum Retained Coating
	95%	
Water Sensitivity**	Retained Tensile Strength8	Min 80%

Notes: 1.

IS: 2386 Part 1

6. IS: 2386 Part 5

2. IS: 2386 Part 1 7. IS: 2386 Part 3  
(the elongation test may be done only on non-flaky aggregates in the sample)

3. IS: 2386 Part 4\* 8. AASHTOT283\*\*  
4. IS: 2386 Part 4\* 9. IS: 6241  
5. BS: 812 Part 114

\* Aggregate may satisfy requirements of either of these two tests.

\*\* The water sensitivity test is only required if the minimum retained coating in the stripping test is less than 95%.

The requirements for minimum per cent voids in mineral aggregate (VMA) are set out in Table 500-12.

**TABLE 500-12. MINIMUM PER CENT VOIDS IN MINERAL AGGREGATE (VMA)**

Nominal Maximum Practice Size <sup>1</sup> (mm)	Minimum VMA, Per cent Related to Design Air Voids, Per cent <sup>2</sup>		
	3.0	4.0	5.0
	14.0	15.0	16.0
9.5	13.0	14.0	15.0
12.5	12.0	13.0	14.0
19.0	11.0	12.0	13.0
25.0'	10.0	11.0	
37.5			

12.0

Notes: 1. The nominal maximum particle size is one size larger than the first sieve to retain more than: 10'per cent.

2. Interpolate minimum voids in the mineral aggregate (VMA) for design air voids values between those listed.

**507.2.3. Fine aggregates:** Fine aggregates shall consist of crushed or naturally occurring internal material, or a combination of the two, passing the 2.36mm sieve and retained on the 75 micron sieve. They shall be clean, hard, durable, dry and free from dust, and soft or friable matter, organic or other deleterious matter.

### Base and Surface Courses (Bituminous)

The plasticity index of the fraction passing the 0.425 mm sieve shall not exceed 4. when tested in accordance with IS: 2720 (Part 5)

**TABLE 500-8. PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR DENSE GRADED BITUMINOUS MACADAM**

Property	Text	Specification
Cleanliness (dust) sieve	Grain size analysis 1	Max 5% passing 0.075mm
Particle shape (Combined) <sup>2</sup>	Flakiness and Elongation Index	Max 30%
Strength* 35%	Los Angeles Abrasion Value <sup>3</sup>	Max
	Aggregate Impact Value <sup>4</sup> Max 27%	
Durability	Soundness: <sup>5</sup> Sodium Sulphate Magnesium Sulphate	Max 12% Max 18%
Water Absorption	Water absorption <sup>6</sup>	Max 2%
Stripping	Coating and Stripping of Bitumen Aggregate Mixtures <sup>7</sup>	Minimum retained coating 95%

Water Sensitivity	Retained Tensile Strength	Min80%
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Notes: 1. IS:2386Part I  
2. IS: 2386 Part I  
(the elongation test to be done only on non-flaky aggregates in the sample)  
3. IS: 2386 Part 4\*  
4. IS: 2386Part4\*

5. IS:2386Part5  
6. IS: 2386 Part 3  
7. IS: 6241  
8. AASHTOT283\*\*

\* Aggregate may satisfy requirements of either of these two tests.

\*\* The water sensitivity test is only required if the minimum retained coating in the stripping test is less than 95%

**507.2.4. Filler:** Filler shall consist of finely divided mineral matter such as rock dust, hydrated lime or cement approved by the Engineer. The filler shall be graded within the limits indicated in Table 500-9.

**TABLE 500-9. GRADING REQUIREMENTS FOR MINERAL FILLER**

IS Sieve (mm)	Cumulative per cent passing by weight of total aggregate
0.6	100
0.3	95- 100
0.075	85-100

The filler shall be free from organic impurities and have a Plasticity Index not greater than 4. The Plasticity Index requirement shall not apply if filler is cement or lime. When the coarse aggregate is gravel, 2 per cent by weight of total aggregate, shall be Portland cement or hydrated lime and the percentage of fine aggregate reduced accordingly. Cement or hydrated lime is not required when the limestone aggregate is used. Where the aggregates fail to meet the requirements of the water sensitivity test in Table 500-8, then 2 per cent by total weight of aggregate, of hydrated lime shall be added without additional cost..

**TABLE 500-8. PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR DENSE GRADED BITUMINOUS MACADAM**

Property	Text	Specification
Cleanliness (dust) sieve	Grain size analysis 1	Max 5% passing 0.075mm
Particle shape (Combined)2 Strength*	Flakiness and Elongation Index	Max 30%
	Los Angeles Abrasion Value3	Max 35%
	Aggregate Impact Value4	Max 27%
Durability	Soundness:5	
	Sodium Sulphate	Max 12%
	Magnesium Sulphate	Max 18%
Water Absorption	Water absorption6	Max 2%
Stripping	Coating and Stripping of Bitumen	Minimum retained
	Aggregate Mixtures7	coating 95%
Water Sensitivity	Retained Tensile Strength	Min80%

Notes: 1. IS:2386Part I  
2. IS: 2386 Part I  
(the elongation test to be done only on non-flaky aggregates in the sample)  
3. IS: 2386 Part 4\*  
4. IS: 2386Part4\*

5. IS:2386Part5  
6. IS: 2386 Part 3  
7. IS: 6241  
8. AASHTOT283\*\*

\* Aggregate may satisfy requirements of either of these two tests.

\*\* The water sensitivity test is only required if the minimum retained coating in the stripping test is less than 95%

**TABLE 500-16. REQUIREMENTS FOR SEMI DENSE BITUMINOUS PAVEMENT LAYERS**

Minimum stability (km at 60°C)	8.2
Minimum flow (mm)	2
Maximum flow (mm)	4
Compaction level (Number of blows) the specimen	75 blows on each of the two faces of
Per cent air voids 3-5	
Per cent voids in mineral aggregate (VMA)	See Table 500-12
Per cent voids filled with bitumen (VFB)	65-78

#### **ITEM NO.14:**

**Providing and Laying asphalt painting on BT surface with bitumen VG-30 @ rate 5 kg per 10smt by mechanical sprayer and spreading the stone dust on prepared surface at the rate of 0.03 cmt/10smt and rolling with smooth wheeled and pneumatic roller and brushing etc. completed.**

#### **1. Scope**

This work shall consist of the application of a single coat of bitumen **VG-30** grade to an existing bituminous road surface in accordance with the following specifications.

#### **2. Materials**

##### **2.1 Bitumen**

The bitumen used for asphalt painting shall be **VG-30** grade complying with IS:73 or as directed by Engineer.

##### **2.2 Sand**

- 2.2.1 This shall be obtained from crushing hard black trap or equivalent. It shall not contain more than 8% of silt as determined by field test will measuring cylinder. The method of determining silt contents by fields test is give as under.
- 2.2.2 A sample of sand to be tested shall be placed without drying in 200mm measuring cylinder. The quantity of the sample shall be such that in fills the cylinder upto 1200mm mark. The can water shall be added upto 150mm mark. The mixture shall be silted vigorously and the content allowed to settle for 3 hours.
- 2.2.3. The height of silt visible as settled paver above the sand shall be expressed as percentage of the height of the sand below the sand containing more than 8% silt shall be washed so as to bring the content within the allowable limit.
- 2.2.4. The fineness modules of stone cast silt not be less than 1.80.

#### **3. Weather and Seasonable Limitations**

Bituminous material shall not be applied to a wet surface or during a dust storm or when the weather so rainy or windy or when the temperature in the shade is less than 10°C.

#### **4. Construction**

##### **4.1 Equipment**

The asphalt painting shall be applied through a distributor and it shall be a self propelled or towed bitumen pressure sprayer equipped for spraying the material uniformly at a specified rate. The spraying of small areas inaccessible to the distributor in narrow strips shall be sprayed with a pressure hand sprayer or as directed by the Engineer in charge.

#### **4.2 Preparation of base**

The surface on which the asphalt painting is to be applied shall be clean and free from dust, dirt and any extraneous material and otherwise prepared in accordance with the requirement of Clause 501.8 & 513 of MORTH & if as appropriate. Immediately before the application of the asphalt painting the surface shall be swept clean with a mechanical broom and high pressure air jet or by other means as directed by the Engineer in charge.

#### **4.3 Application of Asphalt painting**

The application of asphalt for painting shall be at 5.00 Kg/10 Sq.mt. as specified in the contract and shall be applied uniformly. The asphalt shall be added in the tanker and the temperature of the asphalt at the time of spraying shall be in the range of 150°C - 177°C.

The method of application of the tack coat will depend on the type of equipment to be used, size of nozzles, pressure at the spray bar and speed of forward movement. The contractor shall demonstrate a spraying trial that the equipment and method to be used is capable of producing a uniform spray within the tolerances specified.

#### **5.0 Spreading of Sand**

Soon after the spraying asphalt the sand shall be sprayed evenly with a twisting motion of baskets at the rate of 0.03 Cum/10 Sq.m. The entire surface shall be boomed to ensure uniform application of the sand. While the traffic is allowed on the painting surface and at later stage if additional sand is required, it shall be carried out by the contractor without any extra payment.

#### **6.0 Opening to Traffic**

Traffic may be allowed immediately after completion of flushing of sand on asphalt painting surface.

#### **7.0 Arrangement of Traffic**

The provision of MORTH specification Clause 112 shall apply as regards the flow of traffic during construction.

#### **8.0 Mode of Measurement & Payment**

The item shall be measured and paid as finished work in Square meters. The rates shall include the cost of all materials, labour, equipments etc. involved in all the operations described above. The rate shall be for a unit of one Sq.meter.

### **ITEM NO.15:**

**Providing and fixing pre-cast Rubber Dye / steel Dye inter locking concrete block 60mm thick with grade of concrete M300 pneumatic compressed / vibrated mechanically and as per approved design Confirming to IS 15658 : 2006 including 35 mm Sand layer for levelling and filling the joint with sand in proper line and level as per guidelines of IRC : SP 63-2018 etc. Complete.**

#### **1504. INTERLOCKING CONCRETE BLOCK PAVEMENT**

##### **1504.1. Scope**

Interlocking Concrete Block Pavement (ICBP) shall consist of a surface layer of appropriate sized concrete paving blocks paved and compacted over a thin bedding sand layer of specified grading, which is spread over a properly constructed and profiled base course and is bounded by properly installed edge restraints. The joint shall be filled by fine sand of specified grading. The work shall include supplying laying and paving of blocks including all materials, labour and equipment and performing operations in connection with the laying of ICBP as per these Specifications.

##### **1504.2. Materials**

1504.2.1. The Concrete Paving Block shall conform to the relevant IS standard. 1504.2.2. Bedding sand: Bedding sand shall conform to the grading given in Table 1500.6.

1504.2.3. Joint filling sand Joint filling sand shall conform to grading given in Table 1500.6.

**TABLE 1500.6: GRADINGS FOR BEDDING AND JOINT FILLING SAND**

IS Sieve Size (mm)	Percent Passing	
	For Bedding Sand	For Joint Filling Sand
10.00	100	100
4.75	90-100	90-100
2.36	60-95	75-100
1.18	15-34	55-90
0.60	25-60	35-59
0.30	5-20	8-30
0.15	0-10	0-10
0.075	0-5	0-5

##### **1504.-3. Buffer**

Buffer of specified quantity of paving blocks (of the same shape, size and thickness) required for normal maintenance of paved area as specified by the Engineer, shall be supplied and stored for replacement as and when needed. Normally this will be 5 per cent of the blocks used in the paved area.



#### 1504.4. Block Thickness

For rural roads catering to heavy vehicles, the minimum thickness of paving blocks shall be 60 mm for traffic up to 100 vehicles per day, and 80 mm for projected traffic from 100 to 200 vehicles per day.

#### 1504.5. Dimensions and Tolerances

The dimensions and tolerances of paving blocks shall conform to the Specifications given in Table 1500.7. Aspect ratio is the ratio of length to thickness of blocks. Chamfer the bevelled edge, provided on the top surface of a block. Plan area is the horizontal area bounded by the vertical faces. Wearing surface area is the horizontal area bounded by the vertical faces, minus the area reduced due to the presence of chamfer,

**TABLE 1500.7: DIMENSIONS AND TOLERANCES FOR PAVING BLOCKS**

S. No.	Dimension	Recommended Values	Tolerance Limit
(1)	Width W	To be specified by Manufacturer	+2 mm
(2)	Length L	To be specified by Manufacturer	+2 mm
(3)	Thickness T	60 to 80 mm	+3 mm
(4)	Aspect Ratio L/T	Maximum : 4.0	+0.2 mm
(5)	Chamfer (Arris)	Maximum : 4 mm Maximum : 7 mm	+1 mm
(6)	Plan Area	Maximum : 0.03 m <sup>2</sup>	+0.001 m <sup>2</sup>
(7)	Wearing Face Area	Minimum 75% of Plan Area	-1%
(8)	Squareness	Nil	+2 mm

#### 1504.6. Compressive Strength

**1504.6.1.** The average 28 days compressive strength of 8 blocks shall be 30 M Pa and strength of individual block shall not be less than 26 M Pa. The 28 days compressive strength of paving blocks tested as per

**1504.6.2.** The 28 days compressive strength of paving blocks tested as per relevant IS specification shall be determined as explained hereinafter.

**1504.6.2.1.** Compression testing machine of adequate capacity shall be used for testing of blocks. The steel bearing plates shall have a minimum thickness of 25 mm. The surface area of the bearing side of the plate should be such that no edge of the bearing plate is less than 10 mm from the outer edge of the paving block being tested.

**1504.6.2.2.** In case the testing surface of the paving block departs from a plain surface by more than 0.05 mm, capping using suitable materials shall be adopted for testing as per IS:516.

**1504.6.2.3.** The blocks shall be stored for  $24 \pm 4$  hours in water maintained at a temperature of  $(20 \pm 5)^{\circ}\text{C}$  before testing. The dimensions and plan areas of the block shall be determined. The bearing plates of the testing machine shall be wiped clean. The specimen shall be clamped between the plates in such a way that the axes of the specimen are vertically aligned with those of the bearing plates.

**1504.6.2.4.** The load shall be applied without shock and increased continuously at a rate of  $15 \pm 3$  N/mm/minute until no greater load can be sustained by the specimen (or delamination occurs. The maximum load applied to the specimen shall be noted.

**1504.6.2.5.** The apparent compressive strength of individual block shall be calculated by dividing the maximum load (N) by the plan area (mm). The corrected compressive strength shall be calculated by multiplying the apparent compressive strength by the appropriate correction factor from Table 1500.8. The strength shall be expressed to the nearest 0.1 N/mm<sup>2</sup>.

**TABLE 1500.8: CORRECTION FACTORS FOR THICKNESS AND CHAMFER OF PAVING BLOCK FOR CALCULATION OF COMPRESSIVE STRENGTH**

Paving Block Thickness (mm)	Correction Factor for	
	Plain Block	Chamfered Block
60	1.00	1.06
80	1.12	1.18

**1504.6.2.6. Water Absorption:** The water absorption being the average of five blocks shall be not more than 6 per cent by mass.

#### **1504.7. Edge Blocks**

The edge blocks shall have equivalent cube compressive strength not less than 30 MPa. The road kerbs provided on the edges of the road also serve the purpose of edge blocks. In case the end kerbs are not provided, 300 mm x 300 mm x 150 mm of M30 grade concrete edge blocks or other suitable size as per drawings or direction of the Engineer shall be provided.

#### **1504.7.2. Subgrade**

The Subgrade shall conform to Clause 1501.5.1 of these Specifications. The soaked CBR of subgrade soil shall not be less than 4 per cent.

#### **1504.8. Sub-base**

The sub-base shall be 100 mm thick granular layer conforming to Clause 401 or 100 mm thick WBM Gr.I conforming to Clause 405 of these Specifications. In case the subgrade soil is clayey, the sub-base shall be extended over the full formation width for proper drainage.

#### **1504.9. Base Course**

A minimum 100 mm thick layer of granular stabilized base course shall be provided. The base course layer shall be extended at least 300 mm beyond the edge restraints. The material shall conform to Clause 402 of these Specifications.

#### **1504.10. Bedding Sand**

Bedding sand conforming to Table 1500.6 shall be uniformly laid to a compacted thickness of 25 mm for 60 mm thick blocks and 30 mm for 80 mm thick blocks. Bedding sand shall be unloaded in small piles regularly placed over the base course and shall preferably have a moisture content of about 6 per cent which will facilitate its spreading and compaction. Bedding sand shall be screened in a uniform layer over the base course. The screed can be guided to level by tensioned string lines set above the base course. At the time of screeding, the thickness of sand must allow for the amount by which it will be subsequently compacted which is normally about 25 per cent more than the compacted thickness. Screeding shall not proceed beyond about 1 m ahead of the planned end of block paving for the day. Sand shall preferably be compacted with a manual, fabricated plate compactor and the level shall be readjusted using the screed. The surface profile of the screeded bedding sand shall match that required for the completed pavement.

#### **1504.11. Paving Pattern**

The pattern in which blocks are to be paved shall be decided in advance from the two choices or their derived forms available. These are the herringbone and stretcher patterns, as shown in Fig. 1500.3.

**1504.11.1.** By and large, these patterns are the same as adopted for brick paving. All shapes of blocks are not amenable to the above paving patterns. For paving in trafficked areas, herringbone pattern shall be adopted for ensuring better performance. Paving shall commence and progress from one starting line only. Wherever possible, paving shall commence adjacent to or against edge restraint.

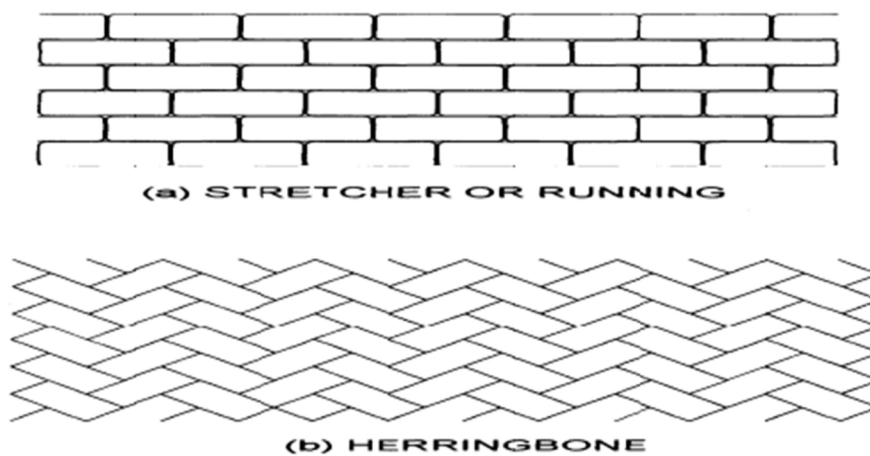


Fig. 1500.3. Basic Bonds

#### 1504.12. Paving and Compaction of Blocks

Blocks shall be placed at the correct angle to the start line to achieve the final orientation of the laying pattern. For curved or unfavourably oriented edge restraints, a string line shall be established to permit fast, easy laying such that it is not required to force a block between the blocks already paved. Control over alignment, laying pattern and joint width can be assisted by the use of chalked string lines set at about 5 m intervals. Nominal joint width of 2 to 4 mm shall be maintained by holding the paving unit lightly against the face of the adjacent block and allowing it to slide into position. Cutting paving units for filling the paving gaps occurring against edge restraints etc. shall be deferred until sufficient work has progressed to allow reasonably continuous operation. When space does not permit the use of cut pieces of blocks, premixed or dry packed concrete shall be used. After a section has been paved, compaction shall be effected by using vibrating plate compactors in the following sequence of operations:

- (i) Vibrate the blocks with 3 passes of the plate vibrator of adequate capacity.
- (ii) Spread a thin layer of fine joint filing sand on top of the paved blocks and sweep it into the joints, using suitable brooms.
- (ii) Vibrate the sand into the joints by making 3 passes of the compactor.
- (iv) Sweep off the excess sand from top of blocks.

As a guide to the characteristics of typical vibrating plate compactors, standard compactors have a weight of 90 kg, a plate area of 0.3 m<sup>2</sup> and apply a centrifugal force of 1500 kg. Heavy duty compactors weigh between 300 to 600 kg, have a plate area of about 0.5 to 0.6 m<sup>2</sup> and apply a centrifugal force in the range of 2000-3000 kg. Use of heavy duty compactors is desirable for trafficked pavements.

**1504.12.1. Trial length:** The contractor shall lay a trial length of 30 m and get it inspected and approved by the Engineer before proceeding with the regular paving work. The trial length shall be rectified/relaid if found deficient in any respect. The procedure demonstrated in the laying of trial length shall be followed while executing the main construction work.

#### **1504.13. Opening to Traffic**

The pavement can be opened to traffic as soon as the construction work is completed. **1504.14.1.**

**Transverse profile:** When measured by a camber template, the transverse profile shall not deviate by more than 10 mm from the design profile.

**1504.14.2. Longitudinal profile :** When measured by a 3 m straight edge, the longitudinal profile shall not deviate by more than 12 mm from the design profile.

#### **1504.15. Acceptance Criteria**

From each lot of 500 blocks, 5 blocks shall be selected at random for water absorption and compressive strength tests. In case the number of blocks in the lot is less than 500, a minimum 1 per cent of the blocks delivered to site shall be tested for water absorption and strength. The blocks shall be first tested for water absorption and these shall meet the requirement of Clause 1504.5.2.6 of these Specifications. The same five blocks (or minimum 1 per cent) shall be tested for strength and shall conform to the strength as per Clause 1504.5.1 of these Specifications.

The paved surface shall meet the tolerances for lines, levels, and grades etc. as given in Section 1800 of these Specifications.

#### **1504.16. Measurements for Payment**

The measurement of the paved area shall be in square metres measured from the inner edge of edge restraints on one side of the pavement to the inner edge of the edge restraints on the transverse side of the pavement.

#### **1504.17. Rate**

The contract unit rate shall include the cost of blocks, cost of stacking, transportation to site and paving including supply and application of bedding sand and

Joint filling sand. The rate shall include full compensation for labour, tools, plant, equipment, testing and all incidentals to the work, including all royalties, taxes, storage rents wherever necessary, and all leads and lifts.

The Rate Shall be for a unit of Smt.

#### **ITEM NO.16:**

**Up gradation of Existing Manhole / Chamber including brick work and plaster as directed by EIC**

##### **Brick work**

##### **1.0. Materials**

Water shall conform to M-1. Cement mortar shall conform to M-11. Bricks shall conform to M-15.

##### **2.0. Workmanship**

##### **2.1. Proportion:**

**2.1.1.** The proportion of the cement mortar shall be 1:5 (1 cement: 5 fine sand) by volume.

##### **2.2. Wetting of bricks:**

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

**2.3. Laying:**

**2.3.1.** Bricks shall be laid in English bond unless directed otherwise. Half or cut bricks shall not be used except when necessary to complete to bond; closures in such case shall be cut to required size and used near the ends of walls.

**2.3.2.** A layer of mortar shall be spread on full width for suitable length of the lower course. Each brick shall first be properly bedded and set home by gently tapping with handle of trowel or wooden mallet. Its inside face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course, the vertical joints shall be fully filled from the top with mortar.

**2.3.3.** The walls shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joint shall be truly vertical. Vertical joints in alternate course shall generally be directly one over the other. The thickness of brick course shall be kept uniform.

**2.3.4.** The brick shall be laid with frog up wards. A set of tools comprising of wooden straight edges, man son's spirit level, square half meter rub, and pins, string and plumb shall be kept on the site of work for frequent checking during the progress of work.

**2.3.5.** Both the faces of walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brick work shall be kept not more than one meter over the rest of the work. Where this is not possible, the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45 degrees.

**2.3.6.** All futures, pipes, outlets of water, hold fasts of doors and windows etc. which are required to be built in wall shall be embedded in cement mortar

**2.4. Joints:**

**2.4.1.** Bricks shall be so laid that all joints are quite flush with mortar. Thickness of joints shall not exposed 12 mm. The face joints shall be raked out as directed by raking tools daily during the progress of work, when the mortar is still green so as to provide key for plaster or pointing to done.

**2.4.2.** The face of brick shall be cleaned the very day on which the work is laid and all mortar dropping removed.

**2.5. Curing:**

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

**2.6. Preparation of foundation bed:**

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

**3.0. Mode measurements & payment**

**3.1.** The measurements of this item shall be taken for the brick masonry fully completed in foundation up to plinth. The limiting dimensions not exceeding those shown on the plinths or as directed shall be final. Battered tapered and curved portions shall be measured net.

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

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

## **15 mm thick Plaster**

## **1.0. Materials**

**1.1.** Water shall conform to M-1. The cement mortar of proportion **1:3** shall conform to M-13.

## **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.

### **2.3. Application of plaster :**

**2.3.1.** 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 troweling 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.

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

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

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

**2.3.5.** The plastering work shall be in single coat on brick / concrete wall for interior plastering up to floor two level, finished even and smooth **in C.M. 1:3.**

**2.3.6** The coat of cement and fine sand mortar of proportion 1:1 (15 mm thick about) shall be applied to the plastered surface with a trowel to provide uniform texture while the base coat is still plastic.

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

**2.3.8. Curing :** All the plaster work shall be kept damp continuously for a period 7 days.

**2.3.9.** Providing necessary grooves between structural members as directed by Engineer in charge.

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

**3.1.** The rate shall include the cost of all materials, labour 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 **15 mm** at any point on this surface.
- 3.4. This item includes plastering for all floors.
- 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, sills 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 reveals, 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 payment shall be made for a unit of 1.0 sq.mt of work done over and above the finishing of work of base coat.
- 4.0. The rate shall be for a unit of **One Nos.**



## **SCHEDULE FOR TESTING OF MATERIALS**

**For ensuring quality control and workmanship, various tests prescribed below for materials shall Be taken at periodical intervals as stipulated below.**

<b>Sr. No.</b>	<b>Brief Description of Materials to be tested (2)</b>	<b>Qty. of Materials (3)</b>	<b>Prescription of test which shall be carried</b>	<b>Frequency @ which test shall be carried out</b>	<b>Total No. of Test 'to betaken.</b>
<b>1</b>	25 to 90 H. B.Metal 40 to 63 H. B.Metal 40 to 50 M. C.Metal 20 to 50 M. C.Metal Kapachi		- Gradation Test - Impact Value - Flakiness Index - Water absorption test - Sp. gravity	1 to 100 Cmt. - 1 Test 100 to 500 Cmt. - 3 Test 500 to 1500 Cmt. - 5 Test 1500 to 5000 Cmt. - 7 Test	
<b>2</b>	Grit		- Stripping Value, gradation, Water absorption, Sp. gravity	One test per work	
<b>3</b>	Murum		- P. I. Value - C.B.R.	One test per work	
<b>4</b>	Quarry spall		- C.B.R. - Gradation	One test per work	
<b>5</b>	Asphalt		- Penetration Test as per Specification	<b>Tanker          Test</b> 1                      1 2to15              2 16to50            3	
<b>6</b>	Tack Coat		- Binder temperature for application - Rate of spread of binder	Irregular close in intervals Two test per day.	
<b>7</b>	Carpet & Seal coat mix		- Grading - temperature of binder in boiler, aggregates in the dryer and mix at the time of laying and rolling (Binder content vide 45 IMD 2172) Rate of Spreaded mix materials.	One test on individualconstituents and mixedaggregates from the dryerfor each 100 tons of mix subject to minimum ofTwo tests per plant perday. One Test for each 100tons of mix subjects to mini. of Two per dayplant. Regular control throughchecks on layer thickness.	
<b>8</b>	Bricks		- Water absorption - Effloresce - Size - Compressive Strength	1 Test @ 50,000 Bricks	
<b>9</b>	Cement		Consistency - Compressive Strength - Initial & Final setting time - Fineness - Soundness - Specific Gravity - Chemical analysis	1 Test / 50 M.T. 2 Tests / 100 M.T. 3 Tests / 200 M.T. 4 Tests / 400 M.T. 5 Tests / 500 M.T. 6 Tests / 600 M.T.	
<b>10</b>	Steel (TMT / M.S.)		- Tensile strength - Yield Stress - Elongation - Size - Bend - Rebend	1 Test / 40 M.T. 1 Test/ 40 M.T. 1 Test / 40 M.T. 1 Test / 40 M.T. 1 Test / 20 M.T. 1 Test / 20 M.T.	
<b>11</b>	C.C. Cube in M-150 M-200, M-250, M-300,		- Compressive Strength	1 to 5 C.mt. -1 Set 6 to 15 C.mt. 2 Sets 16 to 20 C.mt. - 3 Sets 20 to 50 C.mt. - 4 Sets 51 above - 4 One	

	M-350 Grade			additional sample for each 100 C.mt. / or.	
<b>12</b>	Coarse Sand		C.B.R., silt content, sieve analysis	One Test per work	
<b>13</b>	Sand (For concrete work)		<ul style="list-style-type: none"> <li>- Specific Gravity</li> <li>- Alkali Reactivity</li> <li>- Petrography Exa.</li> <li>- Gradation</li> <li>- Silt Content</li> <li>- Water absorption test</li> </ul>	2 Tests per season or change of river	
<b>14</b>	Crushed stone Aggregate (For concrete work)		<ul style="list-style-type: none"> <li>- Gradation</li> <li>- Water absorption</li> <li>- Impact Value</li> <li>- Abrasion Value</li> <li>- Soundness Test</li> </ul>	1 Sample / 150 Cum. or 2 Sample / Season each source.	
<b>15</b>	Water for all item pertaining to water		<ul style="list-style-type: none"> <li>- Portability</li> <li>- Salinity</li> <li>- Chemical analysis</li> </ul>	One sample for each source of supply	
<b>16</b>	Earthwork for Embankment		<ul style="list-style-type: none"> <li>- Sand content</li> <li>- Atterberg's limit</li> <li>- Density test</li> <li>- Moisture content</li> <li>- C.B.R.</li> </ul>	2 Test / 8000 Cum 2 Test / 8000 Cum 2 Test / 8000 Cum 1 Test / 250 Cum. 1 Test / work	
<b>17</b>	Cement concrete		- Mix design	One time test for each concrete grade beyond M-200	

## **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 Khambhat Nagarpalika Khambhat 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.

No	Item	Approved make
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, Rinl, Jindal , Vizag , GUJ NRE, Kamdhenu, National Electotherm, ASR Thermax, Gallant, Sanghi, Friends, Vinayak, Varsana, Utkarsh, Aditya, Grace, God
7	Structural steel	Sail ,Tata, Rinl, 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), Roff Plast 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 Concrete Bond (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/Laticrete or 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



No	Item	Approved Make
<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/SF U	HAVELLS, KEW,C&S, INDOASIAN
19	MAIN LT CABLE	AVOCAB,FINOLEX,PRIMECAB,POLYCAB,DIA MOND 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

LIGHTNING PROTECTION & EARTHING SYSTEM		
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,SPIDER 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,MAT RIX
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:

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BID

To :

Address :

1. We offer to execute the Works described above and remedy any defects therein in conformity with the conditions of Contract, specification, drawings, Bill of Quantities and Addenda for the sum (s) of

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

(-----)

2. We undertake, if our Bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works in the Contract within the time stated in the document.
3. We agree to abide by this Bid for the period of 120 Days from the date fixed for receiving the same, and it shall remain binding upon it and may be accepted at any time before the expiration of that period.
4. Unless and until a formal Agreement is prepared and executed this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this ----- day of ----- 20

Signature ----- in the capacity of -----

----- Duly authorized to sign bids for and on behalf of -----

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\_\_\_\_\_

(in block capitals or typed)

Address

---

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Witness

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Address

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Occupation

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

# **INDEX**

## **BILL OF QUANTITIES**

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## **1. BILL OF QUANTITIES Preamble to Price Schedules**

**NAME OF PROJECT : ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27)....** The bill of Quantities shall be read in conjunction with the Instructions to Bidder, 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 Khambhat 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 KHAMBHAT 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. The rates to be quoted by the contractor are inclusive of sales GST & all other taxes. No extra payment on this account will be made to the contractor.
36. 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.
37. 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)
38. 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 here with)

39. 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.
40. Agency shall have to take Insurance policy and intimate to Khambhat 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.
41. Khambhat 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.
42. 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.
43. 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  
KHAMBHAT NAGARPALIKA KHAMBHAT



## **2. BID FORM**

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

**To,  
CHIEF OFFICER  
KHAMBHAT NAGARPALIKA  
KHAMBHAT**

Dear Sir,

**SUB: : ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).**

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 12 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 12 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 \_\_\_\_\_

SOR/Estimated Rate	Item No.	Item Description	Qty	UNIT
0.00	1	Scarifying gravelled macadam or bitumen macadam surface 6 cm to 10 cm.depth including stacking useful materials on road side and disposing off remaining stuff.	1.00	Sq.mt
0.00	2	Demolition including stacking of servicable materials and disposal of unserviceable materials with all lead and lift. (1)C.C WORK (2) RCC WORK	1.00	Cmt
0.00	3	Providing and Supplying Quarry Spell Including Collection carting, staking & Spreading. Quarry Spell on road site including all Labour & Machinerys (JCB Tractore etc) taxes and etc complete.	1.00	Cmt
0.00	4	Providing and laying cement concrete 1:3:6 (1-Cement: 2-coasre sand: 6-handbroken stone aggregates 40mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth.	1.00	Cmt
0.00	5	Providing and laying cement concrete work M200 and curing complete excluding the cost of form work an reinforcement of reinforced concrete work.	1.00	Cmt
0.00	6	Providing Thermo Mechanically treated Bars TMT Bars FE500/500D reinforcement for R.C.C work includng cutting, bending,binding and placing in position complete for all floor.	1.00	Kgs.
0.00	7	Providing & Laying M.S. Side rail of road thickness with necessary nut bolt plates, fixing as per width, applying plates vibrator, electric or diesel on channel comp. with V.D.System (Trimix) by using the necessary equipments 7 material & Machinery, such as running screed vibrator on prelaid M.S. channel for levelling vaccum pumps, floating & powr trowling etc. compl. also including gruv cutting and filling joint with bituminous every 5 mtr.(incl. hardner)	1.00	Sq.mt
0.00	8	Providing and laying Compacted WBM (Grade II) with BT crushed metal of size (40mm to 63mm) including using 20 percentage stone screening grit 0.16 cum and stone dust 0.08 cum as filler including for Spreading, watering & consolidation by vibrator power road roller & 8 tone to 12 tone etc complete as per morth clause 404.	1.00	Cmt
0.00	9	Providing and Laying W.M.M. mm thick with M.C BT chips as per required gradation mixing with required optimum quantity of water including spreading watering consolidation using power and roller etc. complete.	1.00	Cmt
0.00	10	Preparing surface by Brushing with wire brushes for removing caked mud etc. Air compressor / sweeping with brooms and finally fanning the cleaned surface with gunney bags to remove all loose dirt etc.(ii) Black top/ CC surface.	1.00	Sq.mt

0.00	11	Providing and Laying Bitumeneous grout compacted with (VG 30) asphalt 60/70 grade at tare of 1.99 percentage by weight of total mix for mixing and tack coat at 2.5k/10 sq.m. emulsion on BT Surface using B.T chips of required gradation including cleaning and heating the aggregate and asphalt by continuous batching of Drum mix plant and spreading the same by paver finisher one layer and consolidation with vibratory roller and power roller including providing all materials, equipment, tools and plants, oil, kerosene, firewood, labour charges etc. complete using contractor own machineries Drum mix plant and paver finisher etc. complete.	1.00	MT
0.00	12	Providing & Laying 37.5mm thick B.M. with B.T Aggregate as per M.O.R.T & H. specification and (VG 30) asphalt Grade 60/70 for tack coat 2.5 kg/10 st and mixing 34.00kg/ M.T. i.e. 3.40 percentage by weight of total mix including heating the aggregate and asphalt in continuous batching drum mix plant and spreading the same by paver finisher & consolidation with vibratory roller including providing all materials equipments, tools and plants, fire wood, oil, kerosene, labour charges etc. complete using contractor own machinery drum mix plant and paver finisher etc.	1.00	MT
0.00	13	Providing and Laying 25mm thick S.D.B.C. with B.T Aggregate as per M.O.R.T and H. specification and (VG 30) asphalt grade 60/70 mixing at 50 kg/M.T. i.e. 5.0 percentage by weight of total mix including heating the aggregate and asphalt in continuous batching drum mix plant and spreading the same by paver finisher and consolidation with vibratory roller including providing all materials equipments, tools and plants, fire wood, oil, kerosene, labour charges etc. complete using contractor own machinery drum mix plant and paver finisher etc. complete.	1.00	MT
0.00	14	Providing and Laying asphalt painting on BT surface with bitumen VG-30 @ rate 5 kg per 10smt by mechanical sprayer and spreading the stone dust on prepared surface at the rate of 0.03 cmt/10smt and rolling with smooth wheeled and pneumatic roller and brushing etc. completed.	1.00	Sq.mt
0.00	15	Providing and fixing pre-cast Rubber Dye / steel Dye inter locking concrete block 60mm thick with grade of concrete M300 pneumatic compressed / vibrated mechanically and as per approved design Confirming to IS 15658 : 2006 including 35 mm Sand layer for levelling and filling the joint with sand in proper line and level as per guidelines of IRC : SP 63-2018 etc. Complete.	1.00	Sq.mt

0.00	16	Up gradation of Existing Manhole / Chamber including brick work and plaster as directed by EIC.	1.00	Nos.
------	----	---	------	------

**SECTION - 8**

**SECURITIES AND OTHER FORMS**

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

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

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

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

THE CONDITIONS of these obligations are:

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

**Or**

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

- A Fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or
- B. Fails or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders; or
- C. does not accept the correction of the Bid Price pursuant to Clause 27 (Correction of Errors)

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

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

DATE -----

SIGNATURE-----

WITNESS -----

SEAL-----

---

(Signature, name and address)

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

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



## PERFORMANCE SECURITY

TO,

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

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

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

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

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

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

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

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

Signature and Seal of the guarantor -----

Name of Bank -----

Address -----

Date -----

---

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

## ADDITIONAL PERFORMANCE SECURITY

[Clause 34.1. (A)]

TO,

----- (Name of Employer)

----- (Address of Employer)

-----

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

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

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

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

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

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

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

Signature and Seal of the guarantor -----

Name of Bank -----

Address -----

Date -----

## BANK GUARANTEE FOR ADVANCE PAYMENT

TO,

----- (Name of Employer)

----- (Address of Employer)

----- (Name of Contractor)

Gentlemen:

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

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

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

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

YOUR'S TRULY

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

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

**Letter of Acceptance**  
(Letter head paper of the Employer)

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

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

Dear Sirs,

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

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

Yours Faithfully

Authorized Signature  
Name and title of Signatory  
Name of Employer

---

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

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

(Letterhead of the Employer)

----- (date)

To,

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

\_\_\_\_\_

\_\_\_\_\_

Dear Sirs,

Pursuant to your furnishing the requisite security in ITB Clause 34.1 and  
signing of the Contract for the construction of \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ at a bid Price of Rs.

\_\_\_\_\_.

You are hereby instructed to proceed with the execution of the said works in  
accordance with the contract documents.

Yours faithfully

(Signature, name and title of signatory authorized  
To sign on behalf of Employer)

## AGREEMENT FORM

This agreement, made on the \_\_\_\_\_ day of \_\_\_\_\_ Between  
\_\_\_\_\_ (name and address of Employer) (Hereinafter called "the  
Employer) and \_\_\_\_\_ (name and address of  
Contractor) hereinafter called "the Contractor" of the other part.

Whereas the Employer is desirous that the Contractor execute  
\_\_\_\_\_

Name and identification number of contract (hereinafter called "the works") and the  
employer has accepted the Bid by the Contractor for the execution and completion of  
such works and the remedying of any defects therein, at a cost of Rs.  
\_\_\_\_\_

### NOW THIS AGREEMENT WITNESSETH AS FOLLOWS

1. In this Agreement, words and expression shall have the same meanings as are  
respectively assigned to them in the conditions of contract hereinafter referred to  
and they shall be deemed to form and be read construed as part of this Agreement.
2. In Consideration of the payment to be made by the Employer to the contractor as  
hereinafter mentioned, the Contractor hereby covenants with the Employer to  
executive and complete the works and remedy any defects therein in conformity  
in all aspects with the provisions of the contracts.
3. The employer hereby covenants to pay the Contractor in consideration of the  
execution and completion of the works and the remedying the defects wherein  
contract price or such other sum as may become payable under the provisions of  
the Contract at the times and in the manner prescribed by the contract.
4. The Following documents shall be deemed to form and be ready and construed as  
part of this Agreement viz
  - i ) letter of Acceptance
  - ii ) Notice to proceed with the works:
  - iii ) Contractor's Bid

- iv )        Conditions of contract: General and Special
- v )         Contract Data
- vi)        Additional conditions
- vii )      Drawings
- viii )     Bill of Quantities and
- ix )       Any other documents listed in the Contract  
data as forming part of the Contract.

In witness whereof the parties there to have caused this Agreement to be  
executed the day and year first before written

The Common seal of \_\_\_\_\_

Was hereunto affixed in the presence of :

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

\_\_\_\_\_

In the presence of

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

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

## **UNDERTAKING**

**(For Investment)**

I, the undersigned do hereby undertake that our firm M/s  
..... Would invest a minimum cash up  
to **25 %** of the value of the work during implementation of the contract.

\_\_\_\_\_  
(Signed by an Authorized officer of the firm)

\_\_\_\_\_  
Title of officer

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

\_\_\_\_\_  
DATE



## UNDERTAKING (For Validity)

I, the undersigned do hereby undertake that our firm M/s

.....

..... agree to abide by this bid for a period

.....

days

for date fixed for receiving the same and it shall be binding on us and may be  
accepted at any time before the expiration of that period.

\_\_\_\_\_  
\_\_\_\_\_. (Signed  
by an Authorized officer of the  
firm)

\_\_\_\_\_  
Title of officer

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

\_\_\_\_\_  
DATE

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

**To,  
CHIEF OFFICER  
KHAMBHAT NAGARPALIKA  
KHAMBHAT.**

**Respected Sir,**

**SUB: ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).**

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 Khambhat Nagarpalika, Khambhat , 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 KHAMBHAT NAGARPALIKA Khambhat 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 Khambhat 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.**

## GENERAL INSTRUCTIONS TO BIDDERS

### A. GENERAL

#### 1. BID INVITATION:

The Khambhat Nagarpalika (hereinafter referred to as “the Employer”) invites competitive bids from all interested and eligible bidders for

##### **Project Description:**

**ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27)..... As per Appendix to bid details.**

#### 1.2 Scope of Bid:

The scope of work/services to be done / provided by the contractor under this bid will be as under:

##### 1.2.3 Construction Scope:

As per Appendix to Bid details.

#### 1.3 Time of Performance:

The successful bidder will be expected to complete the works within (time in months) as per time limit given in Appendix to Bid details from the date of issue of letter of acceptance.

#### 1.4 Project Implementing Agency:

The “KHAMBHAT NAGARPALIKA” shall be the project-implementing agency. This contract shall be administered and managed by the KHAMBHAT. NAGARPALIKA as per given in Appendix to Bid details.

#### 1.5 Allocation of Risk & Responsibilities:

##### 1.5.1 Contractor:

The preliminary designs and details contained in the bid documents are based on limited and indicative field data as available with the Employer at the time of preparation of the bidding documents. Bidder shall be responsible to verify / examine / check and make his own assessment of the site, site data, soil data and the schematic details shown in the bid documents based on his own investigations and/or additional surveys, if required, at bidder's own cost.

- The contractor will be responsible to procure and supply equipment and materials like cement, steel, for construction of Above Mentioned Work etc. to be supplied by the bidder at his own cost and risk. These materials and equipment shall conform to the specification contained in this document and will be procured from the approved vendors listed in this document as a part of this tender document. Vendor list cannot be changed at post tender or post contract stage.
- The procurements shall be made from the vendors approved by the NAGARPALIKA and contained in the vendor list provided in this document. Such vendors shall have BIS mark and ISO 9002 certification wherever applicable contained in **Appendix 2** of this document.

- **If case of procurement of materials outside India, no exemption Certificate shall be granted for import duty or any other duties applicable thereto. Further, the quality standard of the materials shall be of ISO /country of origin standard and shall have to be equivalent or higher than relevant BIS standard.**
- The contractor will supply the goods, materials and equipments duly tested and certified by the manufacturer as per "Quality Assurance Plan" (QAP) provided by the bidder and approved by the employer and/or it's appointed third party inspection agency.
- The Contractor will undertake all soil & site investigations and other explorations at his cost as may be necessary for design of all civil structures etc, which is covered under the scope of this contract.
- The Contractor will have to design the civil works Mentioned Above etc. as per the relevant national and/or international standards & as per latest specification and c Khambhat of practice published by the Bureau of Indian standards and shall be subjected to Nagarpalika or its appointed agencies approval at his cost so as to make them multi hazard proof (i.e. Cyclone, Earthquake). **IS 1893-2002 Criteria for Earthquake Resistance Design of Structures Part - I & Draft IS 1893-2002 Part II (Liquid Retaining Tanks) should be observed strictly.**
- The Contractor shall organize on the job and off the job-training program for the staff of the Nagarpalika or their nominated personnel within a period of four months from the date of completion.
- The Contractor shall be responsible to make good and bring to original position road and land surfaces etc. damaged during construction of structures at his cost.
- The Contractor shall be responsible for all the damages to the underground cables, power lines, telephone lines, other water/sewer lines and other infrastructure facilities etc. while executing the works under this contract and shall bear all costs relating to repairs / replacements.
- The contractor shall be responsible for failure of Structure during the full period of contract and the **defect liability period of Three year from the date of completion.**
- The Contractor will prepare and present interim/running and final bills.
- The Contractor shall be responsible for the safety and performance of all civil and other structures up to the end of period of defect liability of Three year from the date of completion. The damages/defects identified by the "Engineer in-charge" shall be made good, as per Standards, by the contractor at his cost and risk. In case of collapse of structures in part or full replacement/reconstruction shall be done by the contractor at his cost and risk.
- On successful completion of works and Operation & Maintenance as per the contract thereafter contractor shall handover the works to Nagarpalika.
- **The document can be down loaded from the site of department**
- The **NAGARPALIKA** assures all participants for the contract that adequate financial resources are available to cover the financial requirements and funds are available to meet the disbursement needs of the construction contracts in accordance with the provisions of tender documents.
- All the material shall be inspected by Nagarpalika internal system and/or through Third Party Agency appointed by the employer.
- **Special Condition:** - If Contractor fails provide materials in time and Nagarpalika have rights to provide those materials through its internal system of purchasing or utilization of those materials on their project the rate chargeable shall be the actual cost of material at site including all the taxes and 5% cost for storage.

## 1.6 **The Employer:**

- Nagarpalika only under special circumstances and solely at its own absolute discretion consider the request of contractor to provide material to the contractor which he is unable to provide because of acceptable and recorded reasons, on payment of a price equivalent to the unit rate contained in the Price Bid or the Nagarpalika issue rate whichever is higher. Contractor will have to arrange his own transportation from the Nagarpalika store to his site of work at his own cost.
- Nagarpalika will handover the clear possession of the site of works to the contractor immediately after the issuance of work order to commence the works.
- Nagarpalika will provide indicative drawings and design parameters for all works to be designed by the contractor.
- Nagarpalika will approve the detailed designs and drawings presented by the contractor either through its own internal system or through its authorized and appointed Third Party Agency.
- Nagarpalika will approve and pay all interim/running/final bills presented by the Contractor.
- Nagarpalika will be responsible to get all statutory permissions and clearances from the concerned central / state or local statutory authorities. However, the contractor shall have to manage the day-to-day activities based on these clearances on site. Nagarpalika shall provide required help and assistance for such day-to-day activities.
- The Nagarpalika will make available Right of Use for construction of shelter home, its day-to-day management on site shall be the responsibility of the contractor for which Nagarpalika shall provide necessary help and assistance.

1.7 The works under this Contract shall be executed on the basis of Turnkey concept of Design Building, Constructing, testing and Commissioning all Civil Mechanical, electrical works and also cover Three year of defect liability period.

1.8 The Bidder is required to note that details of the proposed project given in the bid are subject to review and refinement during the course of detailed engineering to be undertaken by the successful bidder before commencement of the works.

1.9 All bids are to be completed and returned to the Employer in accordance with these Instructions to Bidders.

**1.10 Throughout these bid documents the term "Bid" and "Tender" and their derivatives (Bidder/Tendered/Contractor/Applicant, bid/tendered, bidding/tendering, etc.) are synonymous. Also, throughout the bid documents, the word "day" means a calendar day, the word "month" means a calendar month and the word "year" means a calendar year.**

1.11 Information material borrowed by the Bidders, if any, shall remain the property of the Nagarpalika and shall be provided by the Nagarpalika for information, solely for the purpose of the bids execution under this Contract. All such borrowed material shall be returned to Nagarpalika after submission of the bids.

## **2 SOURCE OF FUNDS:**

**ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27)..... As is to be financed through the funds available with the Nagarpalika or resources to be raised by Nagarpalika from financial institutions.**



### **3 ELIGIBLE BIDDERS:**

- 3.1 The bidders who, after a look to the qualification criteria feel that they will be qualified can participate in this **Single Stage - Two Envelope** bidding procedure. The participating bidders shall be subjected to assessment of their technical and financial competence to carry out the work under this tender as per the **Qualification Criteria** contained in **Appendix - 1**. Only bidders qualified under this process will become eligible for opening of the price bid.
- 3.2 Bidders shall provide evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.
- 3.3 Bidders shall not be listed under a declaration of ineligibility for corrupt or fraudulent practices issued by the Central Govt. State in accordance with sub-clause 45.1 (c) or the list of black listed contractors announced by Nagarpalika / Govt. of Gujarat or its Public Sector undertakings.

### **4 ELIGIBLE MATERIALS, EQUIPMENTS & SERVICES:**

- 4.1 For purposes of Clause 4 above, "services" means the works and all project-related services including design services.
- 4.2 For purposes of Clause 4 above, "origin" means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing or substantial or major assembling of components, a commercial recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.
- 4.3 The materials, equipment and services to be supplied under the contract shall comply with the following provisions:
  - (a) All materials, equipment and services (including without limitation all computer hardware, software and systems, whether separately procured or incorporated within other equipment and services) shall be designed to be used prior to, during, and after the calendar year (**latest year**);
  - (b) Neither the performance nor functionality of such materials, equipment and services shall be affected by dates prior to, during, and after the (**latest year**)(c) Such materials, equipment and services, and the logic included therein, shall operate during each such time period without error relating to date data, specifically including any error relating to, or the production of, date, data which represents or references different centuries or more than one century and the correct treatment of the Year as a leap year, and
  - (d) The provision and use of such materials, equipment and services shall not infringe or violate any industrial property or intellectual property rights or claim of any third party.

### **5. QUALIFICATION OF THE BIDDER:**

- 5.1 To be qualified for award of Contract, bidders shall:
  - (a) Submit a written power of attorney authorizing the signatory of the bid to commit the bidder; and
  - (b) Submit Qualification requirements specifying financial capacity, technical capacity, minimum acceptable levels with regards to Bidder's experience in relevant projects and other relevant factors such as work in hand, future commitments, and litigation history as given and described in the **Appendix 1** to Instruction to Bidders.
  - (c) Submit proposals regarding work methods, scheduling and re sourcing which shall be, provided in sufficient detail to confirm the bidders' capability to

complete the works in accordance with the specifications and the time for completion.

- (d) Submit Memorandum of Understanding (MoU) with material supplier clearly stating the terms & conditions of the MoU. Such MoU shall not be amended or modified without prior consent from Nagarpalika during the period of performance of contract, Nagarpalika shall not allow such change except for special reasons.

~~5.2 Joint venture consortium of two or more firms / members / companies, as partners shall comply with the following requirements:~~

- ~~(a) In case of bidder participating as a Joint Venture, on his selection for award of contract, all members of the Joint Venture will have to sign the contract with the Employer and will be jointly and severally liable for performance of the contract/ Award of contract will be in the name of Joint Venture consortium which will be considered as “Legal Entity” as far as this bid/contract concern.~~
- ~~(b) The bid, and in case of a successful bid, the Form of Contract Agreement, shall be signed with the name of Joint Venture which will be legally binding on all partners;~~
- ~~(c) One of the partners shall be declared as Prime Bidder authorized to be in charge; and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the partners;~~
- ~~(d) The partner in charge shall be authorized to incur liabilities, receive payments and receive instructions for and on behalf of any or all partners of the joint venture and the entire execution of the Contract;~~
- ~~(e) All partners of the joint venture shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms, and a relevant statement to this effect shall be included in the Authorization mentioned under (b) above as well as in the Bid Form and the Form of Contract Agreement (in case of a successful bid); and~~
- ~~(f) A copy of the Stamped and notarized agreement entered into by the joint venture partners shall be submitted with the bid. Roles, responsibilities and financial stakes of all members of the Joint Venture consortium shall be clearly and unambiguously prescribed in the Joint Venture agreement. In case of non-prescription, the JV agreement will be declared as invalid and the bid will be treated as a single bidder, in the name of bidder, who has purchased the bid documents.~~
- ~~(g) In case of Joint Venture technical strengths of all the members shall be grouped together for evaluation. Financial strengths of all the JV members will be considered proportionate to their financial stakes.~~
- ~~(h) In case of “MoU”, with a supplier experience and strengths of supplier will be considered for evaluation of Supply and manufacture experience criteria.~~

~~5.3 Bidders shall also submit proposals of work methods and schedule, in sufficient detail to demonstrate the adequacy of the bidders' proposals to meet the Employer's Requirements and the completion time referred to in Sub-Clause 1.2 above.~~

~~5.4 All guarantees shall be in the name of the joint venture if the bid is submitted in the form of a joint venture consortium.~~

## **6. ONE BID PER BIDDER:**

Each bidder shall submit only one bid either by itself, or as a partner. A bidder who submits or participates in more than one bid under this proceed will cause all those bids to be rejected.

**7. COST OF BIDDING:**

The bidder shall bear all costs associated with the preparation and submission of its bid and the Employer will in no case be responsible or liable for those costs.

**8. SITE VISIT:**

- 8.1 The bidder is advised to depute a suitable team to visit and examine the Site of Works and its surroundings for fully understanding of the job and ascertain the difficulties that may be encountered during execution of the works and for obtaining for himself, on his own responsibility, all information that may be necessary for preparing the bid and entering into the Contract. The cost of visiting the Site shall be entirely at bidder's own expense.
- 8.2 The bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such inspection, but only upon the express condition that the bidder, its personnel and agents, will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses Incurred as a result of the inspection.

**B. BIDDING DOCUMENTS**

**9. CONTENT OF BIDDING DOCUMENTS**

- 9.1 The bidding documents are those stated below, and should be read in conjunction with any Addenda issued in accordance with Clause 11:

**VOLUME - I: TECHNICAL BID**

AS PER SBD

**VOLUME - II: PRICE BID**

AS PER SBD

- 9.2 The bidder is expected to examine carefully the contents of the Bidding documents. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Pursuant to Clause 28, bids which are not substantially responsive to the requirements of the bidding documents will be rejected.

**10. CLARIFICATION OF BIDDING DOCUMENT:**

A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing or by fax (hereinafter the term "fax" is deemed to include electronic transmission such as facsimile, cable and telex) at the Employer's address indicated in the Invitation for Bids. The Employer will respond to any request for clarification, which it receives earlier than 7 days prior to deadline for submission of bids. Copies of the Employer's response, including a description of the enquiry, will be forwarded to all purchasers of the bidding documents.

**11. AMENDMENTS OF BIDDING DOCUMENTS:**

- 11.1 At any time prior to the deadline for submission of bids, the Employer may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder modify the bidding documents by issuing addenda.

- 11.2 Any addendum thus issued shall be part of the bidding documents pursuant to Sub-Clause 9.1, and shall be communicated in writing or by fax to all purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum by fax to the Employer.
- 11.3 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may extend the deadline for submission of bids, in accordance with Clause 23.
- 11.4 All amendments and modifications issued by the Employer shall be deemed to be integral part of the contract to be signed with the successful bidder.

## **C. PREPARATION OF BIDS**

### **12. LANGUAGE OF BID:**

The bid, and all correspondence and documents, related to the bid, exchanged between the bidder and the Employer shall be written in the English language. Supporting documents and printed literature furnished by the bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English language, in which case, for purposes of interpretation of the bid the English translation shall prevail.

### **13. DOCUMENTS COMPRISING THE BID:**

- 13.1 The bid Shall be submitted Online Through N-Procure, Where Criteria relating to Technical Bid and Price bid shall be filled and submitted On-Line.

- 13.2 The technical proposal shall contain the following:

- (i) Bid Form for Technical Proposal and Appendix to Technical Proposal;
- (ii) Power of Attorney
- (iii) Information on Qualification (Completion Certificate given by component Authority as per Bid Evolution Criteria)
- (iv) Confirmation of Eligibility
- (v) Schedule of Major items of equipment's
- (vi) Schedule of major items of Constructional plant
- (vii) Schedule of key personnel
- (viii) Schedule of key Sub-contractors
- (ix) Schedule of recommended spare parts
- (x) Schedule of compliance with the bidding documents
- (xi) Schedule of construction facilities
- (xii) Schedule of construction method
- (xiii) Any other material required to be completed and submitted by bidders in accordance with these instructions to bidders.
- (xiv) Form of Bid Security
- (xv) Original Document of Tender Fee and Earnest Money Deposit

- 13.3 The price proposal shall be submitted On-Line

### **14. BID FORM & PRICE SCHEDULE:**

The Bidder shall complete the Bid Forms and schedules furnished in the bidding documents in the manner and detail indicated therein, following the requirements of Clauses 15 and 16.

**15. BID PRICES:**

- 15.1 Unless specified otherwise in Employer's Requirements, Bidders shall quote for the entire facilities on a "single responsibility" basis such that the total bid price covers all the Contractor's obligations mentioned in or to be reasonably inferred from the bidding documents in respect of the design, manufacture, including procurement and subcontracting (if any), delivery, construction, installation and completion of the facilities. This includes all requirements under the Contractor's responsibilities for testing, pre-commissioning and commissioning of the facilities and, where so required by the bidding documents, the acquisition of all permits, approvals and licenses, etc. services as may be specified in the bidding documents, all in accordance with the requirements of the Conditions of Contract.
- 15.2 The bidders shall have to give detailed rate analysis in justification of the prices as may be required by the employer as a part of the evaluation process, if so desired by the employer.

**16. BID CURRENCIES:**

The prices shall be quoted on fixed and firm price basis in Indian currency (i.e. INR) only without any price escalation and / or statutory variation.

**17. BID VALIDITY:**

- 17.1 Bids shall remain valid for a period of 120 days after the date of opening of technical proposals specified in Sub-Clause 26.1
- 17.2 In exceptional circumstances, prior to expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing or by cable. A bidder may refuse the request without forfeiting its bid security. A bidder agreeing to the request will not be required or permitted to modify its bid, but will be required to extend the validity of its bid security for the period of the extension, and in compliance with Clause 18 in all respects.

**18 BID SECURITY:**

- 18.1 The bidder shall furnish, as part of its bid with the technical proposal, a bid security in the amount of **(Almost 1% of the Amount put to tender)**.
- 18.2 The bid security shall, at the bidder's option, be in one of the following form:
- (a) A Demand Draft payable to **(Name of Executing Authority given in Appendix to Bid details)** issued by a reputed Scheduled Bank except co-operative bank or a foreign bank.
  - (b) A fixed deposit receipt pledged in the name of **(Name of Executing Authority given in Appendix to Bid details)** from reputed Scheduled Bank except co-operative bank or a foreign bank and valid up to 30 days from the date of closure of the bid validity period of 120 days.
  - ~~(c) An unequivocal and unconditional Bank Guarantee in the prescribed format given in this document issue by reputed Scheduled Bank except co-operative bank or a foreign bank and valid up to 28 days from the date of closure of the bid validity period of 120 days.~~
- ~~The format of the bank guarantee shall be in accordance with the sample form of bid security included in Section 6; other formats may be permitted, subject to the prior approval of the Employer. The bid security shall remain valid for 28 days beyond the original validity period for the bid, and beyond any period of extension subsequently requested under Sub-Clause 17.2.~~
- 18.3 Any bid not accompanied by an acceptable bid security shall be rejected by the Employer as non-responsive.

- 18.4 The bid securities of unsuccessful bidders will be returned as promptly as possible, after the expiration of the period of bid validity.
- 18.5 The bid security of the successful bidder will be returned when the bidder has signed the Contract Agreement and furnished the required performance security.
- 18.6 The bid security may be forfeited;
- (a) If the bidder withdraws its bid, except as provided in Sub-Clauses 25.1 and 30.2.
  - (b) If the bidder does not accept the correction of its bid price, pursuant to Sub-Clause 36.2; or
  - (c) In the case of a successful bidder, if it fails within the specified time limit to:
    - (i) Sign the Contract Agreement,
    - (ii) Furnish the required performance security,

**19. ALTERNATIVE PROPOSALS BY BIDDERS:**

Bidders are not permitted to give any alternative offer containing technical or other alternatives. Their bid proposals shall be in total conformity of the employer's requirement as described in the bidding documents.

**21. FORMAT AND SIGNING OF BID:**

**21.1 The bidder shall prepare one original hard copy of the technical proposal**

- 21.2 The original copy of the bid shall be typed or written in indelible ink (in the case of copies, Photostats) are also, acceptable and shall be signed by a person or persons duly authorized to sign on behalf of the bidder, pursuant to Sub-Clauses 5.1 (a) or 5.2 (b), as the case may be. All pages of the bid where entries or amendments have been made shall be initialed by the person or persons signing the bid.
- 21.3 The bid shall contain no alterations, omissions or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

**D. SUBMISSION OF BIDS**

**22 SEALING AND MARKING OF BIDS:**

- 22.1 The bid shall be submitted online through E-tendering.

**Online: The Price bid shall be filled online in the prescribed format provided on the Website and Submitted before 17/07/2026 up to 18.00 hrs.**

**22.2 SUPPORTING DOCUMENTS :**

While the bid shall be submitted online all the supporting documents including EMD and tender fee shall be submitted in sealed envelope along with other enclosure. Information to be provided in hard copy as a part of supporting documents shall be sent to the Chief Officer, Khambhat. Nagarpalika, Khambhat. Duly signed by the authorized signatory. The Supporting documents shall be submitted on or before due date and time in a sealed envelope clearly super-scribed with Tender Description, Address of Bid office and Due date.

The Bidder has to send all supporting documents by registered post only. So as to reach at the Bid Submission Office on or before the last date & time fixed for receipt of BID. Khambhat. Nagarpalika is not responsible for any loss or delay of Tender in transit.



The bid shall be in two envelopes as follows:

Envelop A - Bid security

Envelop B - Technical Bid & Supporting Documents.

22.2 The bidder shall seal the original bids in an inner and outer envelope; duly marking the envelopes as "ORIGINAL".

22.3 The inner and outer envelopes shall

(a) Be addressed to the: Employer at the following address:

**Chief Officer,  
KHAMBHAT. NAGARPALIKA,  
KHAMBHAT.  
Phone No: (O) 02698 (221300)**

(b) Bear the following identification:

**ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).**

22.4 In addition to the identification required in Sub-Clause 22.3, the inner envelope shall indicate the name and address of the bidder to enable the bid to be returned, unopened in case it is declared "late" pursuant to Clause 24.

22.5 If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

### **3. DEADLINE FOR SUBMISSION OF BIDS:**

**23.1 Bids must be received by the Employer at the address specified above not later than 27/07/2026 up to 18.00 Hrs. through registered post/ speed post only.**

23.2 The Employer may, at its discretion, extend the deadline for submission of bids by issuing an addendum in accordance with Clause 11, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.

### **24 LATE BIDS:**

24.1 Any bid received by the Employer after the deadline for submission of bids prescribed in Clause 23 will be rejected and returned unopened to the bidder.

### **25 MODIFICATION & WITHDRAWAL OF BIDS:**

25.1 The bidder may modify or withdraw its bid after bid submission, provided that written notice of the modification or withdrawal is received by the Employer prior to the deadline for submission of bids.

25.2 The bidder's modification or withdrawal notice shall be prepared, sealed, marked and delivered in accordance with the provisions of Clause 22, with the outer and inner envelopes additionally marked "MODIFICATION" or "WITHDRAWAL", as appropriate. A withdrawal notice may also be sent by fax but must be followed by a signed confirmation copy.

25.3 No bid may be modified by the bidder after the deadline for submission of bids, except in accordance with Sub-Clauses 25.2 and 36.2.

- 25.4 Except as provided in Sub-Clause 30.2, withdrawal of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity specified in Sub-Clause 17.1 may result in the forfeiture of the bid security pursuant to Sub-Clause 18.6.

## **E. OPENING & EVALUATION OF TECHNICAL PROPOSAL**

### **26 OPENING OF TECHNICAL PROPOSAL:**

- 26.1 The Employer will open the technical proposals, in the presence of bidders' representatives who choose to attend at:

<p style="text-align: center;"><b>Chief Officer</b> <b>KHAMBHAT NAGARPALIKA</b> <b>In Office of the Nagarpalika</b> <b>Khambhat</b> <b>Date &amp; Time 28/07/2026 at 12.00 Hrs. (If Possible)</b></p>
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The bidder's representatives who are present shall sign a register evidencing their attendance.

- 26.2 The price proposals will remain unopened and will be held in the custody of the Employer unit the time of bid opening of the price proposals. The time and date and location of the bid opening of the price proposals will be advised in writing or by fax by the Employer and will follow the receipt of approval by the Nagarpalika of the evaluation of the technical proposals.
- 26.3 Envelop marked "WITHDRAWAL" shall be opened and read out first bids for which an acceptable notice of withdrawal has been submitted pursuant to clause 25 shall not be opened.
- 26.4 The bidder's names, bid modification & withdrawals, such other details as the employer may consider appropriate, will be announced & recorded by the employer at the opening. The bidder's representatives will be required to sign this record.
- 26.5 The Employer shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with sub clause 26.4.

### **27 PROCESS TO BE CONFIDENTIAL:**

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. Any effort by a bidder to influence the Employer's processing of bids or award decisions by any way may result in the rejection of the bidder's bid.

### **28 PRELIMINARY EXAMINATION OF TECHNICAL PROPOSAL:**

The Employer will examine the bids to determine whether they are complete, whether the documents have been properly signed, whether the required security is included, and whether the bids are generally in order. Any bids found to be non-responsive for any reasons or not meeting the minimum levels of the performance or other criteria specified in the bidding documents will be rejected by the Employer and not included for further consideration.



## **29 EVALUATION & COMPARSION OF TECHNICAL PROPOSAL:**

The employer will carry out a detailed evaluation of the bids in order to determine whether the bidders are qualified and whether the technical aspects are substantially responsive to the requirements set for the in the bidding documents. In order to reach such a determination, the Employer will examine the information supplied by the Bidders and other requirements in the bidding documents, taking into account the following factors:

### **a. Qualification**

- i. the determination will take into account the Bidder's financial, technical all production capabilities and past performance; it will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to Sub-Clause 5.1(b), as well as such other information as the Employer deems necessary and appropriate; and
- ii. An affirmative determination will be a prerequisite for the employer to continue with the evaluation of the technical proposal; a negative determination will result in rejection of the Bidder's bid.

### **b. Technical:**

- i. Overall completeness and compliance with the Employer's Requirements; the technical merits of plant and equipment offered and deviations from the Employer's Requirements; suitability of the facilities offered in relation to the environment and climatic conditions prevailing at the site; quality, function and operation of any process control concept included in the bid;
- ii. Achievement of specified performance criteria by the facilities;
- iii. Compliance with the time schedule called for in Technical proposal and any alternative time schedules offered by Bidders, as evidenced by a milestone schedule provided in the bid;
- iv. Any deviations to the commercial and contractual provisions stipulated in the bidding documents.

## **30 CLARIFICATION OF TECHNICAL PROPOSALS:**

- 30.1 The Employer may conduct clarification meetings with any Bidder to discuss any matters, technical or otherwise, 'where the Employer requires amendments or changes to be made to the Technical Proposal.
- 30.2 Any effort by the bidder to influence the employer in the Employer's evaluation of technical proposals, bid comparison or the Employer's decisions on acceptance or rejection of bids may result in the rejection of the bidder's bid.

## **31 INVITATION TO ATTEND OPENING OF PRICE PROPOSALS:**

- 31.1 At the end of the evaluation of the technical proposals the Employer will invite bidders who have submitted substantially responsive technical proposals and who have been determined as being qualified for award to attend the bid opening of the price proposals. Bidders shall be given reasonable notice of the price proposal bid opening.
- 31.2 The Employer will notify Bidders that have been rejected on the grounds of being substantially non-responsive to the requirements of the bidding documents in writing and return the unopened price proposal.

## **F. OPENING & EVALUATION OF PRICE PROPOSALS**

### **32 OPENING OF PRICE PROPOSALS:**

- 32.1 The employer will open the price proposals of all bidders who submitted substantially responsive technical proposals at the time and date at the location advised to the bidders. The bidder's representatives who are present shall sign a register evidencing their attendance.
- 32.2 The bidder's name, the Bid Prices, the total amount of each bid, any discounts, and such other details as the employer may consider appropriate, will be announced and recorded by the employer at the opening. The bidder's representatives will be required to sign this record.
- 32.3 The employer shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with Sub-clause.

### **33 PROCESS TO BE CONFIDENTIAL:**

Information related to the examination, clarification, evaluation and comparison of bids and recommendation of 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 a bidder to influence the employer's, processing of bids or award decisions may result in rejection of the bidder's bid.

### **34 CLARIFICATION OF PRICE PROPOSALS AND CONTACTING THE EMPLOYER:**

- 34.1 To assist in the examination, evaluation and comparison of price proposals, the employer may, at its discretion, ask any bidder for clarification of its bid. The request for clarification and the response shall be in writing or by cable, but no change in price or substance 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 bid in accordance with clause 36.
- 34.2 Subject to Sub-clause 34.1, no bidder shall contact the employer on any matter relating to its bid from the time of opening of price proposals to the time the contract is awarded. If the bidder wishes to bring additional information to the notice of the employer, it should do so in writing.
- 34.3 Any effort by the bidder to influence the employer in the employer's evaluation of price proposal, bid comparison or contract award decision may result in the rejection of the bidder's bid.

### **35 PRELIMINARY EXAMINATION OF PRICE PROPOSALS AND DETERMINATION OF RESPONSIVENESS:**

- 35.1 The Employer will examine the bids to determine whether they are complete, whether the documents have been properly signed, whether the required security is included, whether the bids are substantially responsive to the requirements of the bidding documents; and whether the bids provide any clarification and / or substantiation that the Employer may require pursuant to Clause 3.4.
- 35.2 A substantially responsive bid is one which conforms to all the terms, conditions and requirements of the bidding documents, without material deviation or reservation and includes the amendments and changes, if any, requested by the Employer during the evaluation of the bidder's technical proposal.

- 35.3 If a price proposal is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

**36 CORRECTION OF ERRORS:**

- 36.1 Price Proposals determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Arithmetic errors will be rectified on the following basis. If there is a discrepancy between the unit rate and the total cost that is obtained by multiplying the unit rate and quantity, the unit rate shall prevail and the total cost will be corrected unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit rate, in which case the total cost as quoted will govern and the unit rate corrected. If there is a discrepancy between the total bid amount and the sum of total costs, the sum of the total costs shall prevail and the total bid amount will be corrected.
- 36.2 The amount stated in the Form of Bid for Price Proposal will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, its bid will be rejected, and the bid security may be forfeited in accordance with Sub-Clause 18.6(b).

**37 EVALUATIONS AND COMPARISON OF PRICE PROPOSAL:**

- 37.1 The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 35.
- 37.2 The Employer's evaluation of a bid will take into account, in addition to the bid prices indicated in the Schedule of Prices, the following costs and factors that will be added to each Bidder's bid price in the evaluation using pricing information available to the Employer, in the manner and to the extent indicated in Sub-Clause 38.4 and in the Employer's Requirements.
- (a) The additional price, if any, reflected in the price proposal. If the price stated is not realistic the bid is liable to be rejected,
  - (b) Compliance with the time schedule called for in the Appendix to Price Proposal and evidenced as needed in a milestone schedule provided in the bid;
  - (c) The projected operating costs during the initial period of operation of the facilities,
  - (d) The functional guarantees of the facilities offered against the specified performance criteria of the plant and equipment; and
  - (e) The extra cost of work, services, facilities etc., required to be provided by the Employer or third parties.
- 37.3 (a) The Employer reserve the right to accept or reject any variation or deviation. Variations, deviations, and other factors which are in excess of the requirements of the bidding documents or otherwise result in the accrual of unsolicited benefits to the Employer shall not be taken into account in bid evaluation.
- (b) The estimated effect of the price adjustment provisions of the Conditions of Particular Application, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
  - (c) If the bid of the successful bidder is substantially below the Employer's estimate for the contract, the Employer may require the

bidder to produce detailed price analyses to demonstrate the internal consistency of those prices. After evaluation of the price analysis, the Employer may require that the amount of the performance security set forth in Clause 42 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.

## G.        AWARD OF CONTRACT

### **38      AWARD:**

Subject to Clause 41, the Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has offered the Lowest Evaluated Bid Price, provided that such bidder has been determined to be (i) eligible in accordance with the provisions of Clause 3; and (ii) qualified in accordance with the provisions of Clause 5.

### **39      EMPLOYER'S RIGHT TO ACCEPT ANY BID OR TO REJECT ANY OR ALL BIDS:**

Notwithstanding Clause 40, the Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the Employer's action.

### **40      NOTIFICATION OF AWARD:**

- 40.1 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder by fax, confirmed by registered letter, that its bid has been accepted. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") shall name the sum which 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 Conditions of Contract called "the Contract Price").
- 40.2 The notification of award will constitute the formation of the Contract.
- 40.3 Upon the furnishing by the successful bidder of a performance security (and domestic preference security where required), the Employer will promptly notify the other bidders that their bids have been unsuccessful.

### **41      SIGNING OF CONTRACT AGREEMENT:**

- 41.1 At the same time that he notifies the successful bidder that its bid has been accepted, the Employer will send the bidder the Form of Contract Agreement provided in the bidding documents, incorporating all agreements between the parties.
- 41.2 Within 15 days of receipt of the Form of Agreement, the successful bidder shall sign the Form and return it to the Employer.

### **42      PERFORMANCE SECURITY:**

- 42.1 Within 15 days of receipt of the notification of award from the Employer, the successful bidder shall furnish to the Employer a performance security in an amount of 10 percent of the Contract Price in accordance with the Conditions of

Contract. The form of performance security provided in Section 6 of the Bidding documents may be used or some other form acceptable to the Employer.

- 42.2 Failure of the successful bidder to comply with the requirements of Clauses 42 or 43 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

### **43 CORRUPT OR FRAUDULENT PRACTICES:**

- 43.1 The Nagarpalika requires that bidders/suppliers/contractors has follow the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy:

- (a) Defines for the purposes of this provision, the terms set forth below as follows:
  - (i) “Corrupt practices” means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them, or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; and
  - (ii) “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the determination 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;
- (b) Will reject a proposal for award if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
- (c) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded an contract if it at any time determines that the firm has engaged in corrupt and fraudulent practices in competing for, or in executing, an contract.

Furthermore, bidders shall be aware of the provision stated in sub-clause 1.16 and Sub-clause 15.5 of the Conditions of Contract, part II – conditions of particular application.

## **KHAMBHAT NAGARPALIKA KHAMBHAT**

### **Terms and Conditions:**

- Bidder must have follow all Rules and Resolutions Issued by Government of Gujarat Roads and Building Department/Finance Department /Central Government.
- For Roads Works Bidder must have to Follow Resolution No.PRC-10-2015-55-C Dated 04.11.2015 issued by GOG, R&B Department.
- Price Escalation / Star Rate Price Adjustment Will not be paid by KHAMBHAT NAGARPALIKA KHAMBHAT.
- All other Acts / Rules / Regulation, by laws order, notification etc. present or future Applicable to the CONTRACTOR / OWNER from time to time for performing the aforesaid WORKS.

**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:



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

**LETTER OF SUBMISSION OF BID, ASSURANCE LETTER.**

**To,  
CHIEF OFFICER  
KHAMBHAT NAGARPALIKA  
KHAMBHAT.**

**Respected Sir,**

**SUB: ITEM RATE TENDER FOR ROAD RESURFACING WORK OF EXISTING DAMAGED ASPHALT ROAD, R. C. C. ROAD AND PAVER BLOCK IN VARIOUS AREA DUE TO HEAVY RAINFALL AT KHAMBHAT NAGARPALIKA, KHAMBHAT UNDER: ROAD RESURFACING GRANT (YEAR: 2026-27).**

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 Khambhat Nagarpalika, Khambhat, 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 KHAMBHAT NAGARPALIKA KHAMBHAT 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 Khambhat Nagarpalika, does not bind itself to accept the lowest tender.

**Yours faithfully,**

**Date:**  
**firm)**

**(Signature of the Tenderer with the seal of the**

**Witness:**

**1. Signature :**

**Name:**

**Address:**

**2. Signature :**

**Name:**

**Address:**