

NOTIFIED AREA AUTHORITY GIDC POR RAMANGAMDI **E-TENDER**

TENDER NOTICE NO. 05/2026-27 TENDER SR. NO.01

**Name of work :- Construction of Flexible Road at Por ramangamdi Notified area
GIDC**

VOLUME -I: TECHNICAL AND PRICE BID **ONLINE TENDER PAPERS**

| | | | |
|----------|--|---|--|
| 1 | Estimated cost | : | Rs.98,44,305.00 |
| 2 | Tender fee Basic + 18 % GST | : | Rs.2,832.00 |
| 3 | E.M.D. | : | Rs.96,443.00 |
| 4 | Last date on (or before) which the tender along-with DD / FDR for Tender fees& EMD (by scanning) and other required documents must upload on the web site of www.nprocure.com & www.statetenders.gujarat.gov.in | : | From 23-06-2026 to 03-07-2026 up to 17.00 hours |
| 5 | Date on (or before) which DD/FDR in original for Tender fee& EMD and other required documents must reach in the office of the Chief Officer Notified Area Authority, Plot No. 136, Nr Water Tank,GIDC Por Ramangamdi. | : | From 04-07-2026 to 06-07-2026 Up to 17.00 hours during working days only. |
| 6 | Pre-Bid Meeting | : | NA |
| 7 | Eligible class of Registered | : | "D- class & above" |

OFFICE OF THE CHIEF OFFICER, NOTIFIED AREA, GIDC, POR RAMANGAMDI
Plot No.136, Nr. Water Tank, GIDC ,Por Ramangamdi.Pin -391243
E-Mail:- naopor_136@yahoo.in

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

Name of work :- Construction of Flexible road at Por ramangamdi Notified area GIDC.

VOLUME -I: TECHNICAL AND PRICE BID
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| 6 | Pre-Bid Meeting | : | NA |
| 7 | Eligible class of Registered | : | “D-class & above” & Special category – III road. |

OFFICE OF THE CHIEF OFFICER, NOTIFIED AREA, GIDC, Por ramangamdi
Plot No. 136. Nr, Water Tank GIDC Por ramangamdi.Pin -391243
E-Mail:- naopor_136@yahoo.in

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

NOTIFIED AREA OFFICE GIDC POR RAMANGAMDI
(GUJARAT INDUSTRIAL DEVELOPMENT CORPORATION)

TENDER Notice No: 05/2026-27

Work at Sr. No. 01

BID Documents for

**Name of work :- Construction of Flexible road at Por ramangamdi Notified area
GIDC.**

I N D E X

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NOTIFIED AREA OFFICE GIDC POR RAMANGAMDI
(GUJARAT INDUSTRIAL DEVELOPMENT CORPORATION)

TENDER Notice No:05/2026-27

Work at Sr. No. 01

MEMORANDUM OF WORK IN BRIEF

**Name of work :- Construction of Flexible road at Por ramangamdi Notified area
GIDC.**

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

| | | |
|-------|---|---|
| 1) | Name of work | Construction of Flexible road at Por ramangamdi Notified area GIDC. |
| 2) | Estimated cost | Rs. 98,44,305.00 |
| 3) | Joint Venture (J.V) | ➤ Joint Venture (J.V) is not allowed. |
| 4) | Earnest Money Deposit (EMD) | ➤ Rs 98,443.00 in the form of DD/FDR for more than 180 days of Nationalized Bank/ Scheduled bank or ICICI / HDFC/ IDBI & Axis bank Only. In favor of Chief Officer Notified Area GIDC Por ramangamdi. |
| 5) | Validity period of tender offer. | 120 days from the stipulated date of receiving of the tender but no modification shall be allowed after handing over tender to postal authorities. |
| 6) | Security Deposit & Performance Bond (10%) | Rs.9,84,430.00 |
| (i) | Performance Bond in form of BG / FDR of scheduled or Nationalize Bank or any approved bank by government' GR. – 5.00% of the estimated cost. (Validity period of 18 months) | Rs. 4,92,215.00 (5%) |
| (ii) | Initial S.D (2.5%) | Rs.2,46,108.00(2.5%) |
| (iii) | To be deducted from Current R.A. bills. | Rs.2,46,108.00(2.5%) |
| | TOTAL (i + ii + iii) | Rs.9,84,430.00 |
| 7) | Liquidated Damages | As per clause of B-1 Form attached herewith. |
| 8) | Defect liability period – Refer modified clause-17A for building work as per R&B Circular No.PRCH/102008 / (2076) / N dtd.31/01/2009. | N.A |
| 9) | Free Maintenance guarantee period under clause no.17B of form B-1 | N.A |
| 10) | Workers Welfare Cess Under the Building & Other Construction Workers Cess Act 1996 (Labour Cess) | 1% of the value of work done shall be deducted from the all bills payable to the contractor. |
| 12) | Time limit for completion of work from the date of written order to commence. | 02 (Two) Month |
| 14) | <u>Submission date & time of tender documents</u> | |

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

| | | |
|-----|--|--|
| i) | a) Date on (or before) which the tender with DD / FDR for Tender fee & EMD (by scanning) except required documents must upload on the web site | From 23-06-2026 to 03-07-2026 up to 17.00 hours |
| | b) Date on (or before) which DD/FDR in original for Tender fee & EMD and required documents must reach in the office of the Office of the Chief Officer, Notified Area, Plot No.136, GIDC, Por ramangamdi.(R.P.A.D or Speed Post or Hand Delivery) | From 04/07/2026 to 06/07/2026 during working days upto 17.00 hours Only R.P.A.D or Speed Post or Hand Delivery Physical submission of documents prior to this date will not be considered and bids of the agency will be considered as nonresponsive. |
| ii) | <u>Mode of sending the tender documents.</u> | |
| | a) The tender with DD / FDR for Tender fee & EMD (by scanning) except required documents | By Online through e - tendering process |
| | b) DD/FDR in original for Tender fee & EMD and required documents | Personally i.e., Hand Delivery to In Office of the Chief Officer, Notified Area, Plot No. 136, GIDC, Por ramangamdi. |
| 15) | Opening of Technical bid | On dtd. 06/07/2026 at 11.00 Hrs. |
| | Tender to be opened by | In the Office of the Chief Officer, Notified Area, Plot No. 136, GIDC, Por ramangamdi. |
| 16) | Testing Charges | 1% Testing charges of the Estimated Cost will be deducted from each Running Account Bill of agency. |
| 17) | Description essential to be made on sealed cover for documents to be submitted by personally i.e., Hand Delivery | (1) Name of work Construction of Flexible road at Por ramnagamdi Notified area GIDC. (2) Date of receiving the documents From 04/07/2026 to 06/07/2026 during working days upto 17.00 hours Only R.P.A.D or Speed Post or Hand Delivery |

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

| | | |
|-----|-----------------|--|
| 18) | Important Note: | <ul style="list-style-type: none"> ❖ For any technical discrepancy, the latest version of MORT&H / IRC shall be applicable. ❖ Prospective bidders are requested to join the site visit. ❖ NAO reserves the right, without any obligation or liability, to accept or reject any or all the bid at any stage of the process, to cancel or modify the process or any part thereof or to vary any of the terms and conditions at any time, without assigning any reason whatsoever. ❖ Registration required “D class & above “& Special category – III road. ❖ GST registration certificate required mandatory ❖ Required Documents mentioned in as under (a), (b), (c)& (d) are mandatory for submitting scanned copies through ONLINE. Otherwise, tender offer shall be treated as NON-RESPONSIVE, without any further intimation. a) Scanned copy of tender fee and EMD b) Required Class of registration, Latest Income Tax return filed, RPFC registration certificate with latest challan, Service Tax Registration & Pan Card. c) Fresh Valid Bank Solvency- (20% value of the estimated cost put to tender) d) GST registration certificate ❖ Submit the required documents online duly named and page numbered in proper manner for simplicity. ❖ Agencies based in the Vadodara district will be given first preference during the evaluation process, subject to meeting all eligibility and qualification criteria. ❖ The agency shall mandatorily possess and operate its own functional Hot Mix Plant located within a radius of 30 to 40 km from the project site, along with all necessary equipment required for the execution of flexible road works. |
| 19) | Site Visit | <p>Contact Person:</p> <ol style="list-style-type: none"> 1. Smt D.A.Patel Chief Officer, Notified Area, Por ramangamdi. Ph.0265-2830145 2. Shree C H pathak AE,NA GIDC, Por ramangamdi Mo. No. 9925982676 |

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

| | | |
|--|----------------|--|
| <p align="center">પોર રમણગામડી નોટિફાઇડ વિસ્તાર મુખ્ય અધિકારીશ્રી ની કચેરી ફોન નં.(૦૨૬૫)૨૮૩૦૧૪૫ નિવિદાનં. ૦૫ /૨૦૨૬ -૨૭</p> | | |
| <p>મુખ્ય અધિકારી, નોટિફાઇડ એરીયા જીઆઇડીસી પોર રમણગામડી પ્લોટ નં. ૧૩૬, પાણીની ટાંકીની પાસે, જીઆઇડીસી, પોર રામનગામડી વિભાગ તરફ થી જીઆઇડીસી, ગુજરાત રાજ્ય જાહેર બાંધકામ વિભાગ, હાઉસીંગ બોર્ડ અને જાહેર આરોગ્ય ખાતા ની યોજ્ય શ્રેણીમાં નોંધાયેલ યાદીનાં કોન્ટ્રાક્ટરો પાસે થી રોડ રરીપેરીંગ, હાઉસ કિપીંગ, એરીયા ગ્રેડિંગ તથા સ્ટ્રીટ લાઇટ પોલને કલરને લગત કામો નાં ટેન્ડરો મંગાવવામાં આવેલ છે.</p> | | |
| અ.નં ૦૧ | ઓન લાઇન ટેન્ડર | આ ટેન્ડર ફક્ત ઓન લાઇન તા.૨૩ /૦૬ /૨૦૨૬ થી ૦૩ /૦૭ /૨૦૨૬ ના ૧૭-૦૦ કલાક સુધી વેબ સાઇટ www.nprocure.com અને www.statetenders.gujarat.gov.in ઉપરજ મોકલવા. |
| <p>- આ કામના ઓનલાઇન /ઓફલાઇન ટેન્ડર પેપર તથા બીજા દસ્તાવેજો પુરાવા, બાનાની રકમ, ટેન્ડર ફી, રજીસ્ટ્રેશનની કોપી વિગેરે તા.૦૪ /૦૭ /૨૦૨૬ થી તા. ૦૫ /૦૭ /૨૦૨૬ ના ૧૭-૦૦ કલાક સુધીમાં બાય સ્પીડ પોસ્ટ/કુરિય થી મળે તે રીતે ચીફ ઓફીસર, નિર્દિષ્ટ વિસ્તાર, જીઆઇડીસી, પોર રમણગામડીની કચેરીને મોકલવા. ટેન્ડર ઓપનીંગ તા.૦૬ /૦૭ /૨૦૨૬ રોજ સવારે ૧૧-૦૦ કલાકે ખોલવામાં આવશે.</p> <p>- આ કામ ની નિવિદા ઓફીસનાં નોટીસ બોર્ડ ઉપર તેમજ વેબસાઇટ www.nprocure.com અને www.statetenders.gujarat.gov.in માં જોવા મળશે. વધુ માહિતીની જરૂરીયાત હોય તો ચીફ ઓફીસર નોટિફાઇડ એરીયા જીઆઇડીસી પોર રમણગામડી (ફોન ૦૨૬૫-૨૮૩૦૧૪૫) ખાતે કામકાજ ના સમય દરમિયાન મેળવી શકશે.</p> <p align="right">સહી/- મુખ્ય અધિકારી, નિર્દિષ્ટ વિસ્તાર અધિકારી, જીઆઇડીસી, પોર રમણગામડી</p> | | |

Sign of Contractor

Chief Officer
 N.A, GIDC, Por Ramangamdi

**POR RAMANGAMDI NOTIFIED AREA
OFFICE OF THE CHIEF OFFICER,
PHONE No. (0265) 2830145
E-TENDER NOTICE No. 05 of 2026-27**

Notified Area Office, Plot No.136, Near water Tank, GIDC, Por ramangamdi are invited tenders from Gov. registered contractors.

| | | |
|---------------|---------------------------|--|
| Sr. No. 01 | Online/ offline Tender | Online tender from 23/06 /2026 to 03 /07 /2026 up to 17.00 hrs. www.nprocure.com and www.statetenders.gujarat.gov.in web site only. |
|---------------|---------------------------|--|

- Online/offline Tender documents & other document EMD, Tender Fee, Registration copy will be sending this office from 04 /07/2026 to 06 /07/2026 up to 17.00 hrs. Tender opening on Dt.07/07/2026 at 11.00 Hrs.
- Tender notice will be seen on this office notice board and web site www.nprocure.com and www.statetenders.gujarat.gov.in if any inquiry please contact this office Phone 0265-2830145

**Sd/-
Chief Officer,
Notified Area.
GIDC, por ramangamdi.**

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

E-TENDER NOTICE No. 14 of 2025-26**NOTIFIED AREA AUTHORITY, GIDC, POR RAMANGAMDI.**

- Online & offline tender is invited for the following work from the eligible contractors. This tender notice can be viewed on Website: www.nprocure.com, www.statetenders.gujarat.gov.in the work at Sr. No. 01 to 04 is online and tender can be downloaded from website, www.nprocure.com and www.statetenders.gujarat.gov.in and uploaded to the same site on or before last date of down loading and uploading 04/05/2026 to 12/05/2026 Collect from office of the Chief officer Notified Area GIDC Por Ramangamdi Plot No.136, GIDC Por Ramangamdi. Online Tender documents & other document EMD, Tender Fee, Registration copy will be sending this office from 13/05/2026 to 15/05/2026 up to 17.00 hrs. Tender opening on Dt. 16/06/2026 at 11.00 Hrs.
- & When Opening of Price BID Notified Area Authority, Por ramangamdi will intimate date to all Pre-Qualified Bidders No exemption certificate regarding earnest money shall be accepted. The amount of EMD to be paid should be in the form of demand draft or FDR for more than 180 days of Nationalized / Scheduled Banks and ICICI, IDBI, HDFC & Axis Banks in favour of Chief Officer, NA, GIDC, Por ramangamdi. Any conditional tender shall not be accepted. However, the Same shall be deposited to the Govtt. Treasury by the tenderer only at his sole responsibility.

| Sr. No. | Name of work | 1. Estimated cost Rs. | Class of Registration |
|----------------|--|--|--|
| | | 2. E.M.D. Rs. 3. Tender Fee Rs. (incl. GST) | |
| ON-LINE TENDER | | | |
| 1 | Construction of Flexible road at Por ramangamdi Notified area GIDC . | 98,44,305.90 98,443.00 2,832.00 | “D class & above “& Special category – III road. |

Note: -

1. Any conditional tender shall not be accepted.
2. Right to reject any or all the tenders / work without assigning any reasons thereof are reserved by Chief Officer, Notified Area, GIDC, PRamangamdi.
3. Rates quoted by the agency is excluding of GST will be paid separately.

Sd/-
Chief Officer,
Notified Area.
GIDC, Por ramangamdi

(B) DETAILS TO BE FURNISHED ALONG WITH APPLICATION:

Interested Bidders can view these tender documents on line, but bidders who are interested in bidding these tenders can download tender documents from web site as mentioned above and bidder who wish to submit their offer shall pay non-refundable tender fee in the form of Account payee Demand Draft payable at Panoli drawn on any Nationalized / Scheduled bank in favour of Chief Officer, Notified Area, GIDC, POor Ramangamdi & EMD in the form of Account Payee Demand Draft payable at Por Ramangamdi drawn on any Scheduled / Nationalized Bank in favour of Chief Officer, Notified Area, GIDC, Por Ramangamdi.

The intending bidders have to submit the following documents also, along with the tender fee & EMD (in physical form) by personally i.e., by speed post/currier/hand delivery.

1. Registration certificate of Approved contractor in respective category for the work.
2. Fresh Bank Solvency Certificate (2025-26) (20% value of Estimated cost put to tender)
3. Latest Income Tax Return filed & Pan card details.
4. GST Registration & RPFC Registration certificate.

(C) GENERAL:

1. Intending bidders or their representative who wish to remain present at the time of tender opening can do so.
2. Tenderer shall submit their offer in electronic format online only, after digitally signing the same.
3. Offers which are not digitally signed will not be accepted.
4. No Offer in physical form except specified documents will be accepted.
5. Conditional tender shall not be accepted.
6. Scanned copied of DD for tender fee & EMD shall submit in electronic format through online (by Scanning) while uploading bid.
7. Rules of GIDC/NAO as well as committee of Board of Management Notified Area, POor Ramangamdi are binding to the tenderer.
8. Tenders without tender fee, Earnest Money Deposit (EMD) and other required documents specified above which do not fulfill all or any of the condition or submitted incomplete in any respect will be rejected.
9. Conditional tender shall not be accepted.
10. The internet site address for e-tendering is <http://www.nprocure.com> and that corporate web site is www.nprocure.com.

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

11. Chief Officer, Notified Area, Por Ramangamdi reserves the rights to reject any or all tenders without assigning any reason thereof.

**Sd/-
Chief Officer
NA, GIDC Por Ramangamdi**

Sign of Contractor

**Chief Officer
N.A, GIDC, Por Ramangamdi**

Name of work :- Construction of Flexible road at Por ramangamdi Notified area GIDC.

PRE-QUALIFICATION APPLICATION

(1) Following constitution of Pre-Qualification evaluation committees is finalized.

Statement 1.1

| Sr. No. | Constitution of Committee |
|---------|---------------------------|
| 1. | Board of Managment |

(2) Prequalification criteria for the Civil / ~~Mechanical~~ / ~~Electrical~~ works.

(2.1) Eligibility: -

(2.1.1) Bidder's registration: -

(2.1.1.1)

(I) only those bidders shall bid whose names are borne on the approval list of registered contractors in “B class & above” & Special category – III road with Gujarat state R&BD / W.R.D. / GIDC.

(2.1.1.2) if the Contractor's registration in the required class & category with Gujarat state R&BD/W.R.D./ GIDC is expired on or before the last date of online bidding period of the tender, the bidder must submit through online in electronic form the application for renewal of the same with the concerned department along with receipt of fees paid for it. In such cases, the bidder at his own responsibility must produce valid renewed registration certificate in the required class & category with Gujarat state R&BD/W.R.D./GIDC before the date of opening of technical bid. Failing to which the bidder shall be disqualified for opening of his price bid. Bidder will solely be responsible for obtaining the required registration.

(2.1.1.3) In context to above Para (2.1.1.2), it is clarified that the bidder who is having registration in class & category below than the minimum required class & category and the bidder have applied for up- gradation in required class and category with Gujarat state R&BD/ W.R.D. / GIDC shall not be considered valid. In such cases the bidder shall not be considered eligible for bidding.

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

(2.1.1.4) The bidder, who is registered in appropriate category of C.P.W.D., M.E.S., Railways and Indian state government, can also bid provided the bidder produce such registration certificate at the time of bidding and obtain registration in required class & category from the Gujarat state R&BD / W.R.D. / GIDC before issuing work order. Bidder will solely be responsible for obtaining the required registration.

Note: - Joint Venture (JV) is not allowed.

(2.2) Annual Turn Over:

(2.2.1) Average Updated Annual Financial Turnover during the **last three years**, i.e. **01/04/2023 to 31/03/2026** financial year shall be at least 30 % of the estimated cost, i.e. **Rs. 29.53 Lakhs**.

(2.2.2) For arriving at update value, total amount of Turn Over of any one financial year shall be multiplied by the enhancement factor corresponding to that financial year. Following enhancement factor will be applied to total amount of Turn Over in any one financial year and to bring them to the base year.

| Year | Financial year | Enhancement factor |
|-------------------------------|----------------|--------------------|
| Base(year of inviting tender) | 2024 to 2025 | 1.00 |
| -1 | 2023 to 2024 | 1.10 |
| -2 | 2022 to 2023 | 1.21 |
| -3 | 2021 to 2022 | 1.33 |

(2.3) Successful experience:

(2.3.1) Bidder must have experience of successfully completed similar works during last seven years ending last day of month previous to one in which applications are invited be either of the following.

“Three similar completed works **updated** costing not less than the amount equal to 40% of the estimated cost.” i.e. Rs.39.37

Lakh

OR

“Two similar completed works **updated** costing not less than the amount equal to 50% of the estimated cost.” i.e. Rs.49.22 Lakh

OR

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

“One similar completed work **78.75 Lakh**

(2.3.2) for arriving at update value, final amount of the work, completed in any one financial year shall be multiplied by the enhancement factor corresponding to that financial year. Following enhancement factors will be applied to final amount of work, completed in any one financial year and to bring them to the base year. The current financial year in which bid is invited shall be considered as the base year.

| Year | Financial year | Enhancement factor |
|---------------------------------------|---------------------|--------------------|
| Base (Year of inviting tender) | 2025 to 2026 | 1.00 |
| -1 | 2024 to 2025 | 1.10 |
| -2 | 2023 to 2024 | 1.21 |
| -3 | 2022 to 2023 | 1.33 |
| -4 | 2021 to 2022 | 1.46 |
| -5 | 2020 to 2021 | 1.61 |
| -6 | 2019 to 2020 | 1.77 |
| -7 | 2018 to 2019 | 1.95 |

A work would qualify as similar work only if it meets with definitions given in below

APPENDIX-A

(2.3.2.1) DEFINITION OF MILAR WORK

- (1) 1. The bidder must have completed at least **three different works** of flexible pavement work involving component of, having updated completion cost of each work is not less than **Rs. 39.37 Lakh.** (40 % of the Estimated Cost)

OR

The bidder must have completed at least **two different works** of flexible pavement work involving component of having updated completion cost of each work is not less than **Rs. 49.22 Lakh.** (50 % of the Estimated Cost)

OR

The bidder must have completed at least **single work** of flexible pavement work involving component of having updated completion cost not less than **Rs.78.75 Lakh.** (80 % of the Estimated Cost)

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi

(2.4) Bid Capacity:

(2.4.1) The bidder must have available bid capacity (ABC) more than the amount put to tender. (Rs. 8)

$$ABC = 2 * A * N - B$$

Where,

A is the maximum of updated total amount of works executed in any one year of the last five financial years i.e. from Dt.01/04/2021 to Dt.31/03/2026.

N is the number of years prescribed for completion of the proposed work.

B is the amount of the exiting commitments and on-going works to be discharged during time interval of N years from the bid due date. As per following schedule-E.

SCHEDULE-E**“EXPERIENCE ALL PROJECTS IN PROGRESS”**

Give information about all projects which are in progress including the company has received a letter of intent / acceptance but a formal contract has not yet been awarded.

| Employer | Engineer responsible for supervision | Location & description of works | Value of contract | Cost of work executed as on date of this bid | Remaining work to be executed as on date of this bid | Percentage of practical completion | Date of work order | Stipulated date of completion of work | Likely date of completion | Reasons for slow progress, if any. |
|----------|--------------------------------------|---------------------------------|-------------------|--|--|------------------------------------|--------------------|---------------------------------------|---------------------------|------------------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| | | | | | | | | | | |
| Total | | | | | | | | | | |

Note: Non-disclosure of any information in the schedule will result in disqualification of the bidder.

(Signature of bidder)

(2.4.2) For the purpose of updating amount of works executed in any year, procedure narrated as under shall be applied.

(2.4.3) For arriving at update value, total amount of works executed in any one year shall be multiplied by the enhancement factor corresponding to that year. Following enhancement factors will be applied to total amount of works executed in any one year

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and to bring them to the base year. The current financial year in which bid is invited shall be considered as the base year.

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

(2.4.4) Existing commitments shall include all such works for which letters of acceptance of the tenders have been received by bidder till the date on which bidder has submitted his bid for the proposed work.

2.5. Litigation history:

(2.5.1) The applicant should provide accurate information on litigation and/or arbitration resulting from contracts completed or under execution by him over the last five financial years. A consistent history of arbitration awards/judgments against the applicant or any partner of a joint venture may result in disqualification for proposed work. If the details of litigation history is hidden by the applicant and later on it comes to knowledge of the employer the bidder shall be disqualified for the proposed work and other appropriate action shall be taken against the bidder.

(2.5.2) Information of litigation history in following statement to be submitted, if any other wise Nil / Not Applicable statement to be submitted.

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LITIGATION HISTORY

Name of Applicant: -

| Sr. No. | Name of Contract | Work Completed or Under Execution | Financial Year | Brief Detail of the arbitration / Litigation Matter | Department in Opposition | Whether awards / Judgements is pending or made? | Details of result of Arbitration / Judgement | Whether Judgement in Favour or in Against |
|---------|------------------|-----------------------------------|----------------|---|--------------------------|---|--|---|
| | | | | | | | | |
| | | | | | | | | |

(Signature of bidder)

(2.6) Affidavit regarding Termination / Blacklisting / Ban / Registration kept in Abeyance.

:-

(2.6.1) The bidders shall be disqualified for opening of his price bid if he is under blacklist and / or under ban and /or his registration is under abeyance by any Central / State Government Department, Board, Corporation, Municipal Corporation, Municipality, Government Local Bodies, University etc.

(2.6.2) The bidder shall have to submit prescribed notarized affidavit on appropriate stamp paper as under, failing to which the bidder shall be disqualified for opening of his price bid.

Affidavit regarding Termination / Blacklisting / Ban / Registration kept in Abeyance.

(To be submitted on Rs.300/- stamp paper & duly notarized.)

Name of work :-

Tender ID :-

I, _____, Age, _____, Resident of, _____ in the capacity of _____ Do hereby solemnly affirm and declare as under.

We are not under blacklist and / or under ban and /or our registration has not been kept under abeyance by any Central / State Government Department, Board, Corporation, Municipal Corporation, Municipality, Government Local Bodies, University etc. as on date of participating for this bid.

Date: -

Authorised signatory

Place:-

(2.7) Machinery / Equipment: -

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Bidder shall have to submit a prescribed notarized undertaking on Rs.300/- stamp paper for deploying machinery/equipment for the work under tender as per below.

Undertaking for deploying Machineries/Equipments/Tools & Plants

(To be submitted on **Rs.300/-** stamp paper & duly notarized.)

Name of Work: -

Tender ID: -

APPENDIX – B

Indicative List of minimum **Machineries/Equipments/Tools & Plants** to be deployed on Contract Work.

| Sr. No. | Type of Equipment | Minimum No. of equipment required |
|----------------|--|--|
| 1 | Motor Grader | 1 No. |
| 2 | Vibratory Roller | 1 No. |
| 3 | Hot Mix Plant with Electronic Controls (Minimum 60-70 TPH) | 1 No. |
| 4 | Paver Finisher | 1 No. |
| 5 | Mechanical Bitumen Sprayer | 1 No. |
| 6 | Tandem Roller | 1 No. |
| 7 | Pneumatic Tier Roller | 1 No. |
| 8 | Wet mix plant with electronic controlled system | 1 No. |
| 9 | Mechanical Broom Hydraulic / Road Sweeper | 1 No. |
| 10 | Tipper Trucks | 2 No. |
| 11 | Water Tanker | 2 No. |

I/We hereby undertake that if i/we awarded the above said work then i/we shall deploy all Machineries/Equipments/Tools and Plants etc. as shown in the Appendix-B in fully working condition and utilize the same while execution of the work.

We also undertake that i/we shall deploy other Machineries/Equipments/Tools and Plants etc. over and above shown in Appendix-B in working condition and utilize the same as per instruction of Engineer-In-Charge.

Failing to above we shall not object any action taken against us within the tender provision.

In case of any dispute, Superintendent Engineer's decision shall be final.

Date :-

Authorised signatory

Place :-

Sign of Contractor

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(2.7.1) SITE VISIT CERTIFICATE. :-

Before quoted the rate, it is mandatory to carry out a survey of the functioning area of the Notified, Por-Ramangamdi and after the survey, it is mandatory to attach a certificate of Site Visit which is provided by the Notified after the visit and survey of the area.

SITE VISIT CERTIFICATE

Hence, the certificate is given. Today, on...../...../2026, With the Agency.....

..... the Site of work
..... has been visited.

**Chief officer,
Por-Ramangamdi NOTIFIED AREA**

Note: The agency will have to get the signature of the Chief Officer and submit the same with bid.

(2.8) Bidding in E-tendering:-

(2.8.1) Submission of documents must be through e-tendering i.e. electronic form, unless specified in Para (2.9).

(2.8.2) All of the online submitted documents must be clearly readable, failing to which the same shall be considered as void.

(2.8.3) Bids of those bidders who have submitted all information, statistical details as required in the bid documents through E-Tendering will only be considered. If the employer desires any clarification, for verification/clarification, ambiguity of difference found in the documents/statistical details submitted online (by e-tendering) by the bidder the same shall be furnished within stipulated time otherwise further processing will be carried out in absence of above and the bidders shall be liable for any consequence.

(2.8.4) No bidder can participate in more than one bid for proposed work.

(2.9) Submission of documents: -

(2.9.1) Following documents/papers shall form part of the bid & must be submitted through online in electronic form unless specified separately, failing to which the bidder shall be disqualified for opening of his price bid.

(2.9.1.1) D.D. of require tender fee. (To be submitted in electronic form at the time of online submission of the bid & the same to be submitted in original during prescribed time period for submission of documents in physical form.)

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- (2.9.1.2) DD/FDR & BG of required EMD. (To be submitted in electronic form at the time of online submission of the bid & the same to be submitted in original during prescribed time period for submission of documents in physical form.)
- (2.9.1.3) Copy of valid bank solvency certificate of minimum 20 % amount of the estimated cost put to the tender of the work. (Bank Solvency certificate issued during current calendar year is considered as valid up to end of the December of the current calendar year. 31st march of the next calendar year. In case, where solvency certificate is not obtained in time, the certificate of previous year will be considered valid up to the end of March of current calendar year. In some certificates date of validity is stated. In such cases the same stated date is considered for validation instead of end of December of the current calendar year.)
- (2.9.1.4) Copy of relevant required Registration Certificate / Certificates. (In case of renewal, copy of application & receipt of fee paid.)
- (2.9.1.5) Copy of annual turnover certificate issued by chartered accountant for last three financial years. (If turnover of any of the last three financial years is not shown in the certificate then the same shall be considered as NIL and accordingly average annual turnover of last three financial year/years shall be calculated.)
- (2.9.1.6) Copy of form-3A / Experience certificate issued by employer (Government / Semi Government) showing all details as required as per Pre-Qualification criteria of successful experience of similar work and copy of letter of permission given by employer (Government / Semi Government) for subletting the work, if case may be of.
- (2.9.1.7) when employer is not a government, following need also to be furnished.
- (2.9.1.7.1) Copy of work order.
- (2.9.1.7.2) Copy of agreement.
- (2.9.1.7.3) Copy of Form-3A / Experience certificate showing all relevant details issued by employer & certified by Chartered Accountant.
- (2.9.1.7.4) Copy of final bill.
- (2.9.1.7.5) Copy of TDS certificates.
- (2.9.1.7.6) Copy of letter of permission given by employer for subletting the work.
- (2.9.1.8) Copy of annual total amount of works executed certificate issued by chartered accountant for last five financial years. (If annual total amount of works executed of any or some of the last five financial years is not shown in the certificate then annual total amount of works executed of financial year/years which has been shown in the certificate shall only be considered.)

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- (2.9.1.9) Schedule-E “Experience all projects in progress” as under in prescribed format as Per Para (2.4).
- (2.9.1.10) Litigation history as per Para (2.5).
- (2.9.1.11) Affidavit regarding Termination / Blacklisting / Ban / Registration kept in Abeyance as per Para (2.6).
- (2.1.1.12) The undertaking for deploying machinery/equipment for the work under tender as per Para (2.7).
- (2.9.1.13) MOU & all relevant required documents of MOU agency.
- (Note :- The MOU must be submitted in prescribed format as **incorporated in the approved D.T.P.** & to be executed on relevant valued stamp paper & duly notarized.)
- (2.9.2) Following documents/papers shall also form part of the bid, but these documents are not mandatory to be submitted through online in electronic form. However, the same shall be submitted in physical form, if not submitted through online in electronic form, within time period given by authority holding the digital key, failing to which the bidder shall be dis-qualified for opening of his price bid.
- (2.9.2.1) Copy of registration certificate of firm / documents of public limited / private limited / partnership firm / proprietor firm, whichever is applicable. For example, Partnership Deed, Certificate of incorporation, Memorandum of association, Article of Association etc.
- (2.9.2.2) Copy of Power of Attorney, if any.
- (2.9.2.3) Copy of PAN Card.
- (2.9.2.4) Copy of latest income tax return certificate. (Note: - latest income tax return certificate means the income tax return certificate of the last completed financial year for which pre-determined/extended time period by the Income Tax Department for filing income tax return is over on or before last date of online submission.
- (2.9.2.5) Copy of Goods & Services (G.S.T.) registration certificate.
- (2.9.2.6) Copy of RPFC registration certificate.
- (2.9.2.7) Copy of RPFC Challan of any of the completed last three months from the month of last date of online submission of the tender.
- (2.9.3) Following Undertaking / Declaration to be incorporated on (n) **Procure website** in such a manner that without attending this undertaking / declaration the tender cannot be uploaded.

UNDERTAKING / DECLARATRION

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“I hereby declare that I have after thoroughly understand the Pre-Qualification criteria / conditions and the details filed & documents submitted are true and correct to the best of my knowledge and belief. I shall not have any objection against any action taken by GIDC if any of the information submitted is found to be incorrect / false.”

- (2.9.4) Any information, data, statistics etc. which are not related to bid document will not be considered in evaluation even through furnished by the applicant.
- (2.9.5) In accordance with stipulated of Para (2.8), employer reserves the right to call any information/documents which is mandatory, essential and critical for the purpose of evaluation. Any information provided by the applicant after last date of electronic submission will not be considered in evaluation, unless except the employer has specially asked for any information/document, which is mandatory, essential and critical for evaluation of PQ document. If required information is not furnished within stipulated time, proposal will be liable for rejection.
- (2.9.6) If any of the information provided by the bidder is found false during scrutiny or at the later stage, his EMD shall be forfeited and he shall be disqualified for the proposed work. In case when bidder has furnished exemption certificate in lieu of EMD, an amount equal to EMD shall be appropriated from his FDR pledged to avail of exemption certificate. If any of the information provided by the bidder is found false after award of work, the performance security of the bidder shall be forfeited and the contract shall be terminated.
- (2.9.7) Authority holding the digital key ((n) code solution), respective Executive Engineer of Civil branch, respective Executive Engineer of M&E branch and Account Officer / Divisional Accountant of the respective Division office shall be jointly liable to download, evaluate, verify all online documents submitted by the bidder with respect to Pre-Qualification criteria.
- (2.9.8) In case of committee of Chief Engineer, concerned field Superintending Engineer and Concerned field Executive Engineers (Civil) & (M&E), after carried out all above procedures and verifying all print outs of the online documents submitted by the bidders, shall submit the same documents (Indicating page no. on each & every documents submitted by the bidder through online in electronic form.) along with evaluation sheet (Details against each P.Q. Criteria along with page No., remarks etc. **Note :-** To be prepared by respective Executive Engineer of Civil branch, respective Executive Engineer of M&E branch and Account Officer / Divisional

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Accountant of the respective Division office jointly), duly signed by all the concerned, to Chairman (i.e. Chief Engineer) of the Pre-Qualification committee and also shall brief the other members of the Pre-Qualification committee on documents submitted by the bidders through online in electronic form and evaluation done by his office, at the time of meeting of the Pre-Qualification committee.

- (2.9.9) In case of committee of Superintending Engineer, concerned field Executive Engineer (Civil) & (M&E) and Account Officer/Divisional Account jointly, after carried out all above procedures and verifying all print outs of the online documents submitted by the bidders, shall submit the same documents (Indicating page no. on each & every documents submitted by the bidder through online in electronic form.) along with evaluation sheet (Details against each P.Q. Criteria along with page No., remarks etc.), duly signed by all the concerned, to Chairman, (i.e. Superintending Engineer) of the Pre-Qualification committee and also shall jointly brief the Chairman of the Pre-Qualification committee on documents submitted by the bidders through online in electronic form and jointly evaluation done by them, at the time of meeting of the Pre-Qualification committee.
- (2.9.10) accordingly, concerned Pre-Qualification committee shall decide to qualify / dis-qualify the bidder & circulate / issue minutes of the meeting to concerned for further action.

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APPENDIX – C**SELF EVALUATION FORM**

| Sr. No. | Component | Requirement as per tender | M/s. | | | | Page No. | Remarks | | |
|----------------------|--|---|----------------------------------|---|--------------------|-----------|----------|--|--|--|
| | | | DETAILS FURNISHED BY BIDDER | | | | | | | |
| 1 | Tender Fees including GST | Rs.2.832.00/- by DD | Name of Bank | | | | | | | |
| | | | D.D. No. and Date | | | | | | | |
| | | | Amount in Rs. | | | | | | | |
| 2 | EMD | (A) Rs.98,443.00 by DD / FDR | Name of Bank | | | | | | | |
| | | | D.D. / F.D.R. No. and Date | | | | | | | |
| | | | Amount in Rs. | | | | | | | |
| | | (B) Rs. by B.G. (Schedule or Nationalized Bank Only) | Name of Bank | | | | | | | |
| | | | B.G. No. and Date | | | | | | | |
| | | | Valid up to Date. | | | | | | | |
| | | | Amount in Rs. | | | | | | | |
| | | 3 | Bank Solvency Certificate | 20% amount of Estimated Cost i.e., Rs.19.68 (Refer Para 2.9.1.3) | Name of Bank | | | | | |
| Amount in Rs. | | | | | | | | | | |
| Date of Issue | | | | | | | | | | |
| Valid up to Date. | | | | | | | | | | |
| 4 | Registration certificate & special category (Civil) | (A) "D-class & above "& Special category – II road. | Name of Department | | | | | | | |
| | | | Valid up to Date. | | | | | | | |
| | | | Authority | | | | | | | |
| | | | Name of Department | | | | | | | |
| | | | Valid up to Date. | | | | | | | |
| | | | Authority | | | | | | | |
| 5 | C.A. Certified and copy of Annual Turnover for Last Five Financial Years | Average updated Annual Financial Turnover during the last three year shall be at least Rs.29.53 Lakh (i.e. 30 % of the estimated cost.) (Refer Para 2.2) | Year | Financial year | Enhancement Factor | Turn Over | | C.A. Certified Copy must be submitted. | | |
| | | | Bae (year of inviting tender) | 2025-2026 | 1.00 | | | | | |
| | | | -1 | 2024-2025 | 1.10 | | | | | |
| | | | -2 | 2023-2024 | 1.21 | | | | | |
| | | | -3 | 2022-2023 | 1.33 | | | | | |
| | | | Enhancement Factor | | | | | | | |
| | | | | | | | | | | |
| 6 | Successful Experience of Similar Work: copy of completion work. (Form 3A) must submit by the bidder. | Successful Experience of Similar Work: As per Appendix - A | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | Name of work | | | | | | | |
| | | | Date of Completion | | | | | | | |
| | | | Amount of Work (Rs. Lakh) | | | | | | | |
| | | | Enhancement Factor | | | | | | | |
| | | | Updated Amount (Rs. Lakh) | | | | | | | |
| | | | Name of Department and Authority | | | | | | | |
| | | | | | | | | | | |
| Private work details | | | | | | | | | | |

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| | | | | | | | |
|----|---|---|--|--------------------|---|--|--|
| | | | Copy of work order | | | | |
| | | | Copy of agreement | | | | |
| | | | Copy of form 3A | | | | |
| | | | Copy of final bill | | | | |
| | | | Copy of TDS | | | | |
| | | | Copy of letter of permission given by employer for subletting the work | | | | |
| | | | Date of Completion | | | | |
| | | | Amount of Work (Rs. Lakh) | | | | |
| | | | Enhancement Factor | | | | |
| 7 | Experience all projects in progress"- SCHEDULE-E | (Refer Para 2.4) | | | | | |
| 8 | Litigation History | (Refer Para 2.5) | | | | | |
| 9 | Affidavit regarding Termination / Blacklisting / Ban / Registration kept in Abeyance | (Refer Para 2.6) | | | | | Details shall be given on Rs. 300/- stamp paper duly notarized |
| 10 | Machinery/Equipment: Proof of deployment of required minimum machinery / equipments mentioned in Appendix – B | (Refer Para 2.7) | | | | | Details shall be given on Rs. 300/- stamp paper duly notarized |
| 11 | Registration certificate / Documents of /public Limited / Private Limited/ Partnership deed / Proprietor Firm. | To be furnished whichever is applicable | | | | | |
| 12 | Power of Attorney | | | | | | |
| 13 | Bid Capacity ABC=2*A*N-B A = Maximum updated total amount executed in any one year from 2017-18 to 2022-23 N = 01 (Time Limit 12 Months) is the number of years prescribed for completion of the proposed work. B is the amount of the existing commitments and ongoing works to be discharged during time interval of N years from the bid due date. As per following schedule E. The bidder must have Available Bid Capacity (ABC) more than the tender amount i.e., Rs. 2,47,83,869.00 | A= N= B= ABC = | | | | | |
| 14 | C.A. Certified copy of Annual work execution amount for Last Five Financial Years (For Bid capacity) | Year | Financial Year | Enh. Factor | Updated value of turn over (Lacks) | | |
| | | Base (Year of inviting tender) | 2025-2026 | 1.00 | | | |

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| | | | | | | | |
|----|---|--|-----------------|------|--|--|--|
| | | -1 | 2024-2025 | 1.10 | | | |
| | | -2 | 2023-2024 | 1.21 | | | |
| | | -3 | 2022-2023 | 1.33 | | | |
| | | -4 | 2021-2022 | 1.46 | | | |
| | | -5 | 2020-2021 | 1.61 | | | |
| 15 | Latest Income tax return filed and PAN Card Details | (A) Year of Income tax Return filed | Assessment Year | | | | |
| | | | Name | | | | |
| | | (B) PAN Card No. | PAN Card No. | | | | |
| | | | Name | | | | |
| 16 | Goods and Service Tax (GST) Number | GST No. | GST No. | | | | |
| | | | Name | | | | |
| 17 | RPFC Registration certificate & RPFC Challen | (A) RPFC Registration Certificate No. | | | | | |
| | | Name | | | | | |
| | | (B) RPFC Challen of any of the completed last three months from the monthh of last date of submission of the tender. | | | | | |
| | | Name | | | | | |
| 18 | Undertaking / Declaration | Truth fullness certificate | | | | | |
| 19 | Other Remarks | | | | | | |
| 20 | Whether Qualified or not? | | | | | | |

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INFORMATION AND INSTRUCTION FOR BIDDERS

INTRODUCTION:

Bids i.e., Price Bid and Technical Bid for the work of **Arc for road repairing at GIDC Notified Area Por rmangamdi**. Is invited from Contractors on e-tendering process. The contractors, who wish to bid for this contract, should also apply for prequalification in the manner set out in this document.

The pricebid will be opened only of those tenderers pre-qualified by the Notified area as having necessary qualification, suitability to perform the contract satisfactorily and also opened Technical Bid with Prequalification Application will be considered. Technical Bid with Prequalification Application of dis-qualified bidders will not be considered.

LOCATION OF WORK AND SITE INFORMATION:

The work site is located in Notiified area, Panoli of GIDC Por Ramangamdi.

1. BIDDER'S RESPONSIBILITY

The intending Bidders shall be deemed to have visited the site and familiarized themselves thoroughly with the site conditions and all other aspects affecting the work under this Contract before submitting the tender. No claim / extension of time whatsoever shall be entertained on account of prevailing site conditions.

Interested Bidders may obtain further information at the following address:

1) Chief Officer, Notified Area, Plot No. 136, GIDC, Por ramangamdi-391243.

2. EARNEST MONEY DEPOSIT (EMD)

EMD is payable in the manner set out in the Form B1.

Demand Draft for E.M.D. shall be submitted in electronic format only through online (by scanning) while uploading the bid. The submission shall mean that E.M.D. is received for purpose of opening the bid. Accordingly, offer of those shall be opened whose E.M.D. is received electronically. However, bidder shall submit the DD in original to **Chief Officer, Notified Area, Plot No. 136, GIDC, Por Ramangamdi-391243** payable at **Por Ramangamdi** As per the schedule specified in tender notice for submission of document in physical form i.e **From 04/07/2026 to 06/07/2026 during working days upto 17.00 hours Only R.P.A.D or Sppeed Post or Hand Delivery** (During office Hour). The submission of document before **06/07/2026** and after **07/07/2026** will not be considered and offer treated as non responsive. Exemption certificate shall not be acceptable.

Earnest money in specified form @ 1 % of the estimated cost must be sent as mentioned above preceding electronically. Tenderer may pay earnest money up to Rs. 50,000 in cash or in the form of Crossed Demand Draft or fixed deposit or fixed deposit at-call receipts with a validity period of not less than 180 days of Nationalized or Scheduled bank or Narmada/Shrinidhi F.D.Rs. drawn in favour of Chief Officer, Notified Area Officer, GIDC, Panoli concerned. Earnest money by cheque& Bank Guarantee shall not be accepted. (vide R & BD G. R. No. TNC/ 1090/(100) (4)-C, dated 4-11 -2000). However, in respect of the works estimated to cost above Rs. 50 Lakh, the amount of earnest money in excess of Rs. 50,000 can be offered by the contractor, at his choice, in the form of Bank Guarantee of the Scheduled or nationalized Bank only. The Bank Guarantee in such cases will be furnished in the following form. In such cases also, the amount of earnest money first Rs. 50,000 will be paid only in the form of crossed demand drafts or fixed deposit receipts or deposit at call

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receipts worth the validity period of not less 180 days of the nationalized or scheduled or Narmada/ Shrinidhi F.D.

If the contractor does not turn up to pay the Security Deposit and execute contract agreement within specified (or extended) time after intimation to him about acceptance of his offer, the earnest money paid for this work will be forfeited according to Clause-1 of this tender form tenderer's tender shall be rejected and then according to aforesaid provision of tender, action to blacklist the Contractor will be initiated without Delay. (Vide R & B D G.R. No. Misc.- 1097 -90-1091/97 -Z/C dated 04-10-97 & Parach-102008-5-C-Partfile dated 27-11-08).

Bank Guarantee is permissible only when the estimated cost of work is more than Rs. 50 Lakh.

BANK GUARANTEE

Where as M/s _____ (hereinafter called the Tenderer) is desirous and preferred to tender for works in accordance with the terms and conditions of tender for the work of _____ and where as We, Bank, agree to give the tenderer a guarantee for the Earnest Money. Therefore, we hereby affirm that we are guarantors on behalf of the Tenderer upto total rupees _____ in _____ words) Rs. _____ (in figures) and we undertake to pay to Executive Engineer _____ Division _____ Department of Government of Gujarat _____ upto his first written demand, without demur, without delay and without the necessity of a previous notice of judicial or administrative procedures and without the necessity to prove to the Bank the defects or shortcomings or debits of the contractor any sum within the limit of Rs. _____.

We further agree that the Guarantee herein contained, shall remain in full force and effect during the period that would be taken for the acceptance of tender.

However, unless a demand of claim under this guarantee is made on us in writing on or before the _____ (Date to be specified - will not be less than 180 days from the stipulated date of receiving the tender) we shall be discharged from all liabilities under this guarantee thereafter.

We undertake not to revoke the guarantee during its currency except with the previous consent of the Executive Engineer _____ Division _____ in writing.

We lastly undertake not to revoke the guarantee for any charge in constitution of the Tenderer or of the Bank.

Date Signature & Seal of Guarantor _____

Bank Address _____

The Earnest Money submitted in the form of Deposit-At-call receipt shall need minimum validity of six months from the last date of online submission of tender. **Tender not supported with tender fee, Earnest Money & documents and not submitted in electronic format (by scanning) while uploading the bid shall be rejected as NON-Responsive.** If the tenderer modifies or withdraws his tender, the Earnest Money (in case of EMD exemption certificate, proportionate amount equivalent to EMD of a particular tender) shall be forfeited and the tenderer may be disqualified from tendering for future works under the Government.

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The Earnest Money will be returned to the unsuccessful tenderers. The Earnest Money will be returned to the successful tenderer after he furnishes security deposit and duly enters into the contract.

Within Ten days or within such time as may be decided by the Tender Inviting Authority from date of receipt of the Letter accepting his tender, the successful tenderer shall furnish the required security deposit and attend the office of the Tender Inviting Authority for execution of the contract documents. If he fails to furnish the security deposit or execute the contract document, his Earnest Money (in case of EMD exemption certificate equivalent amount there from) shall be forfeited and action to blacklist the contractor bill be initiated without delay (Vide R & B.D. G. R. No. Misc. 1097-90-1091-97 -Z/C dated 4-10-97).

3. SECURITY DEPOSIT (SD) & Performance Bond– 5% of Estimated Cost put to tender.

SD is payable in the manner set out in the Technical Bid with Prequalification Application by the successful tenderer / Bidder.

| | |
|---|-----------------------------|
| Initial Security Deposit in the form of small saving or Narmada Bond or FDR – 5% of the estimated cost. (Validity period of 18month) & Performance Bond | Rs. 4,92,215.00 (5%) |
| Initial S.D (2.5%) | Rs.2,46,108.00(2.5%) |
| To be deducted from R.A. Bill - 2.5% of the estimated cost. | Rs.2,46,108.00(2.5%) |
| Total | Rs.9,84,430.00 |

4. PROGRAMME OF WORK:

The program of work for this contract is as under.

| Online Submission of Bid Document | Period for Validity of offer | Period of completion |
|--|--|--------------------------------------|
| From 23-06-2026 to 03-07-2026 | 120 days from the stipulated date of receiving of the tender but no modification shall be allowed after handing over tender to postal authorities. | 02 Month from the date of work order |

The time is essence of the contract. The contractor shall have to ensure progress of the work proportionately as per Schedule-C of B-1 agreement.

5. SUPERVISION OF WORK:

The quality assurance and quality control in addition to the Engineer-in-charge of the work.

6. FREE MAINTENANCE GUARANTEE PERIOD: Clause No.17 B of B-1 Form

N.A

7. DEFECT LIABILITY PERIOD:

N.A

8. PRICE VARIATION CLAUSE & STAR RATE FOR CEMENT, STEEL AND BULK

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BITUMEN:

Please read the clause of **B1 form (Contract agreement to be executed)** attached herewith for price variation for cement, steel & Bulk Bitumen. **Star rate for cement, steel & bulk bitumen** (Bulk Bitumen Emulsion & paving bitumen) is given in the Clause of **B1 form (Contract agreement to be executed)** attached herewith.

| Sr. No | Quantity | | Star Rates with GST | Month in Which DTP is Approved |
|--------|----------|-----------|---------------------|--------------------------------|
| 1 | VG-40 | 39.407 MT | Rs. 97,515.20 MT | 16-May.26 |
| 2 | VG-10 | 1.785 MT | Rs.85,821.40 MT | 16-May-26 |

9. MOBILIZATION ADVANCE:

Not Applicable.

10. PURCHASE OF BITUMEN BY THE AGENCY:

The contractor shall have to purchase the bitumen in Bulk only from only Govt. recognized refinery & shall have to produce the original purchase bills along with the original gate passes etc. The bitumen to be brought on site includes all transportation charges, taxes etc. with all lead and lift.

11. POWER SUPPLY / WATER SUPPLY / OTHER UTILITIES:

The Contractor will make his own arrangement at his cost for power supply / water supply and other utilities required for the execution of work and arrangements for temporary distribution. All the works will be done as per IEA regulations. The Contractor shall ensure at his cost that all electrical lines, water supply lines and equipment & all installations are approved by the state electricity inspector before power can be supplied by State Electricity Board & GIDC for water/ other utilities.

12. CONDITIONS OF CONTRACT:

Successful bidder shall have to enter in to prevailing agreement B-1 with GIDC, all the tender documents including pre-bid meeting minutes, negotiation letter and acceptance letter will form-A integral part of the contract. All works will confirm to the Indian Standards, specifications for road & Bridge works of Ministry of Road Transport and Highway or other equivalent standard mentioned in the contract document as approved by the Engineer-in-charge.

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**Name Of Work: Construction of Flexible road at Por ramangamdi Notified area
GIDC .**

SPECIAL CONDITIONS

- 1) EMD:
 - a) The amount of EMD to be paid should be in the form of demand draft or FDR for more than 180 days of Nationalized / Scheduled Banks and ICICI, IDBI, HDFC & Axis Banks in favour of Chief Officer, NA, GIDC, Por ramangamdi.
 - b) Units registered with Industries Dept. or with NSIC as a Small-Scale Unit shall have also to pay prescribed tender fees and earnest money deposit. Exemption certificate issued by Govt. / any other authority for EMD shall not be valid for Notified works.
 - c) The amount of earnest money deposit to be paid in the form of DD / FDR in favour of “Chief Officer Notified Area Office GIDC Por ramangamdi” should be attached, along with the tender only, otherwise it will not be accepted. It may be noted that DD / FDR brought personally at the time of opening, will not be accepted at all.
 - d) The earnest money deposit of the unsuccessful contractor(s) shall be returned without interest within reasonable time after final decision on the tenders and after entering into a contract with the Corporation by the contractor whose tender is accepted.
- 2) The contractor shall have to furnish Income Tax Clearance certificate before his tender is accepted and intimate assessment number and ward under which is accessed.
- 3) **As Per GIDC Circular No. GIDC: ENG: CIR: CE: 594 dtd. 18th July 2007. &GIDC Circular No. GIDC: ENG: CIR: CE: 808 dtd. 13.12.2007** and Due to Modification /Changes in the clauses of B1 agreement of R & B department and to match the R&B department tender agreement, it is decided to adopt the Performa of B1 agreement of R & B Department for Notified tender works, except for the following clauses: -
 - i) **Clause: 60/APrice variation clause (Star Rate)**
B-1 Agreement (As per Clause No.9)
 - ii) **Clause No 72: Secured Advance to Contractor..... Deleted.....**
 - ii) **Clause No 73: Advance Payment..... Deleted.....**

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- iii) **Clause No. 74: Advance against Machineries** Deleted.....
- iv) **Clause No 75: Mobilization Advance** Deleted.....
- v) **For EMD:** - Exemption certificates for EMD issued against standing security by any other authority shall not be valid for Notified works.
- vi) Copies of certificate as regards previous experience, if any, must accompany the tender.

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**Name of Work: Construction of Flexible road at Por ramangamdi Notified area
GIDC.**

GENERAL CONDITIONS

Contractors may please read be carefully

1) LABOUR CONTRACTACT:

The contractor tendering for the work shall have to obtain licence under the labour contract (Regulation and Abolitions) Act, 1970 within a week or award of work comply with all the provision of Act. As licence. Also, they hall provide all the amenities for the amenity I not provided by the contractor such amenity shall be provided by the Contractor such amenity shall be provided by the Chief Officer, as principal employer as his representative within the prescribed time and the expense incurred by the principal employer providing the evenly shall be recovered by the amount payable by the Contractor. The Contractor shall act in accordance with the provisions of the act in all respect and shall absolve the Principal employer from any consequence whatsoever. Every principal Employer shall nominate a representative duly authorized by him to be present at the time of disbursement of wages and it shall be the duty of such representative to certify the amount paid as wages in such manner as may be prescribed, shall nominate representative duly authorized by him to be present at the time of disbursement of wages and it shall be the duly of such representative to certify the amount paid as wages in such manner as may be prescribed.

In case the Contractor fails to make payment of wages within the prescribed period or makes short payment. The principal employer shall be liable to make payment of wages in full or the unpaid balance due as the case may be the contract labour employed by the contractors and recover the amount so paid from the contractor by deduction from any amount form the contractor by deduction from any amount payable to the contractor under contract.

The contractor shall provide every facility to the principal employer to maintain registers and records giving particulars of contract labour employers. The nature of work performed by the contact labour the contractor labour rate of wages paid to the contact labour and such other particulars that are prescribed under the provision of said Act.

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2) **CONDITION**

The contractor shall be responsible for complying with the provisions of the employee's provident fund and Miscellaneous Act 1992 scheme and modification of the Act from time to time.

The contractor shall get themselves enrolled with Regional Provident Fund Commissioner or any competent officer appointed under the Act and shall have to get separate code number in respect of their respective establishment as decided in section-3 of the Employees Provident Fund Act and shall discharge all the liabilities arising out of aforesaid Act as provided in pere-36 A of the scheme and other provisions of the Act.

The Engineer-in-charge on receiving a report from the competent inspecting officer under the said Act shall have the power to deduct from the payment to the contractor any sum required or estimated to be required for good the loss suffered by the worker or workers by reasons of non fulfillment of the conditions of the contractor for the benefit of the workers under the said Act. The contractor shall indemnify GIDC against any payment to be made and for the observance of the Regulations aforesaid.

3) **GENERAL CONDITION:**

Tender shall very carefully read through a take Note of following conditions.

1. The successful tender shall have to enter into an agreement, in prescribed "B1" From.
2. The tenderer shall get himself well acquainted with the job requirement, site conditions, route and alignment etc.
3. Contractor shall make his own agreement for all the necessary tools, plants equipment and provide for manpower as and when required. No extra payment in any such respect be payable to contractor.
4. Contractor shall while entering into agreement shall produce the registration certificate of his establishment with the competent authority of Regional Provident Fund Commissioner failing which 3% (Three percent) of the bill value due to be paid to Contractor shall be deducted at source and will be dealt as per Clause 74 of B-1 from.
5. In conformity with prevailing Income-Tax Rules necessary of bill value shall be deducted at source for which necessary certificate shall be deducted by the Chief Officer.

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6. Contractor shall also provide assistance representative and/or authentic person for the purpose of inspection and verification of transit damages, defects etc. for the insurance claims but shall not charge any extra payment against such assistance provided.
7. Security deposit of 5% of contract value will be deposited by contractor as per rules.
8. Tender fees, EMD etc. payable to GIDC, by the tenderer by D.D. of FDR etc. shall be drawn in favour of **Chief Officer Notified Area Office GIDC Por Ramangamdi**. The validity of FDR should not be less than 180 days.
9. Bank guarantee shall not be accepted in any case.

4) GENERAL SPECIFICATION

1. The entire work shall have to be carried out as per the specification of P.W.D. Hand Book Vol. I & II.
2. The entire work shall be carried out as per the instructions of the Engineer and to his entire specification.
3. The specifications of the materials shall be followed as per front sheet.
4. No extra payment will be made due to change in design and plans of the structure.
5. The contractor shall have to make his own arrangements for water to be used in the construction work.

5) FOLLOWING CORRECTIONS ARE THERE IN B1 AGREEMENT BOOKLET.

CONTRACTORS MAY PLEASE BE READ CAREFULLY.

1. Any sort of correction or erasures in the tender shall not be done by the tender, by applying white fluid or any other chemical. The tender with correction made in aforesaid manner shall be outrightly rejected by Corporation.
2. If any corrections erasures or overwriting are required by the tendered before submitting the tender, all the corrections shall be initialed by the tenderer only before submission of the tender, otherwise the tender shall be rejected by the corporation.

6) SPECIAL CONDITIONS

1. Price escalation/adjustment clause shall not be applicable for this work.
2. Neither secured advance nor mobilization advance shall be payable for this work.
3. The contract shall be governed by the law and order of India for the time being in force and subject to the jurisdiction of total works at Bharuch district.
4. As applicable Income tax deduction shall be made at source at every running bill.
5. As applicable Sales tax deduction shall be made at source at every running bill

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6.Security Deposit

- 1) 5% of the estimated cost put to tender payable in two stages.
- 2) 2.5% of the estimated cost put to tender through running bills at the rate of 5% of value of RA bills to built up remaining 2.5% of the estimated cost put to tender shall be deducted so as to complete in 50% of the time limit work.
- 3) 2.5 of the estimated cost put to tender payable in form of Narmada Bond / NSC against signing agreement.

7) Bank guarantees for any purpose shall not be accepted

- 1) In case of Road work, 5% towards one year performance shall be dedicated from every running bill and shall be released after on year from the actual date of completion. The same should be applicable for the work whose estimated cost of Rs. 15/- lacs and above.
- 2) Labour welfare cess shall be applicable as per the latest circular /G.R.
- 3) Recovery of royalty charges should be applicable as per latest Government policy.

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Name Of Work : **Construction of Flexible road at Por ramangamdi Notified area GIDC.**

Detailed Specification

BOQ Item No .1

Box cutting the road surface to proper slope and camber for making a base for road work including removing the excavated stuff and depositing on the road side slope as directed upto 50Mt.lead.

SCOPE :

This item shall consist of excavation, removal and satisfactory disposal of all materials necessary widening of Road, Re-sectioning & Profile correction of Road., Side Shoulder & Road by using cutting stuff received from cutting, in accordance with the requirement of these specification including all lead and lift and conformity with the lines, grades and cross sections shown in the drawings or directed by the engineer- in – charge. This work shall include the hauling and stacking of or hauling to sites of embankment for land scapping Island, Road work & side shoulder construction etc. of suitable cut materials as required and also the disposal of unsuitable cut materials in specified manner, including all lead and lifts including trimming and finishing of the road to specified dimensions or as directed by the engineer in charge including rolling and watering etc. complete.

1) CLASSIFICATION OF EXCAVATED MATERIALS:

2.1.) Classification:

All materials involved in excavation shall be classified by the engineer in charge in the following groups:

- i) All sorts of soil and soft murrum.
- ii) Hard murrum.
- iii) Soft rock not required blasting.
- iv) Hard rock.(not required blasting)
- v) Hard rock.(required blasting)
- vi) Hard rock (blasting prohibited)

2.2.) Authority for Classification:

The classification of excavation shall be decided by the Engineer in charge and his decision shall be final and binding to the contractor. Merely the use of explosives in excavation will not be considered as a reason for higher classification unless blasting is clearly necessary in the opinion of the Engineer in charge.

2) CONSTRUCTION OPERATIONS:

SITE CLEARANCE:

The land width on which the earth work is to be done, shall be cleared from all trees, bushes, shrubs, rubbish and other objectionable materials. Useful material shall be arranged in convenient stacks and un-useful material shall be burnt or other wise disposed off by contractor at his own cost. MoRTH specification clause No.201 shall be also followed.

OUT:

After the site has been cleared, the limits of excavation and the alignment of the road shall be set out true to lines, curves, slopes, grades and sections as shown on the drawings or as directed by the Engineer in charge. The contractor provide all labour and materials such as strings, time pegs, stones etc. required in connection with the setting out of works and establishment of Temporary & permanent Bench mark, centre line stone & other marks. The contractor shall be responsible for the maintenance of the bench mark and other marks, and stacks as long as in the opinion of the Engineer in charge. Before start of the work, toe line of embankment shall be marked on ground.

COMPACTING ORIGINAL GROUND:

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The original ground, where construction of embankment for land scapping Island, Road work, side shoulders and water way to be done, with excavated stuff shall be consolidated by rolling as directed by Engineer in charge and in accordance with MoRTH specification Clause No.305.3.4.

EXCAVATION:

All excavation shall be carried out in a manner approved by the Engineer in charge and in conformity with the directions laid herein under and in manner approved by the Engineer in charge. The work shall be so done that the suitable materials available from excavation are satisfactory utilized as decided upon before hand.

While planning or executing excavations, the contractor shall take all adequate precaution against soil erosion, water pollution etc. as per MoRTH Clause No.306 & take appropriate drainage measures to keep the site free from water in accordance with the MoRTH Clause No.311.

The excavation shall conform to the lines, side slopes, and levels shown on the drawings or directed by the Engineer in charge. The contractor shall not excavate outside the limit of excavation subject to the permitted tolerance, any excess depth/width excavated beyond the specified levels/ dimensions on the drawing shall be made at the cost of contractor with suitable material of characteristics similar to that removed and compacted to the requirements of MoRTH clause No.305.

Care shall be taken to see that excavation is arranged in a safety way so that there will be no risk to the work or workmen. If slides occur in cutting during the process of the construction, they shall be removed at the cost of contractor as ordered by the Engineer in charge. While planning or executing excavations, the contractor shall take all adequate precautions against soil erosion, water pollution etc. as per MoRTH specification clause no.306.

All debris and loose materials on the slopes of cutting shall be removed. No back filling shall be allowed to obtain required slopes excepting that when boulders or soft materials are encountered in instruction of the Engineer in charge & the resulting cavities filled with suitable materials and thoroughly compacted in an approved manner.

For rock excavation, specifications under MoRTH clause No. 301.3.5 shall be followed.

DISPOSAL & UTILIZING OF EXCAVATED STUFF:

All the excavated material shall be property of the corporation. The material obtained from the excavation of roadways, widening work, SWD, foundation for structures etc. shall be used for the work of embankment, for land scapping Island, Road work, embankment for side shoulder of roads & embankment work as directed by the Engineer in charge including leveling & spreading with all lead and lift and no extra payment shall be made for the same.

Unsuitable and surplus materials not intended for use shall be removed from site of the work to outside estate limit or within estate limit by suitable means. No extra payment shall be made for the same.

The useful excavated materials shall be used in embankment and it shall be directly deposited at the required location in specified layer. No handling or conveyance charges shall be paid. If no GIDC land is available, but the excavated useful stuff is to be stacked temporarily before use under the same agreement, the contractor shall make his own arrangements for the stacking of this material temporarily on private land or land of plot holders, by paying rent etc. without claiming any compensation. Surplus material not required for use on embankment or unsuitable materials may be used of his own cost to uniformity widen embankment to flatten slopes and fill low places in the road land or plot land, if so permitted by the Engineer in charge. Material not required for any use whatsoever may be disposed off by the contractor at his own cost in a manner approved by the Engineer in charge.

The excavation shall be finished neatly, smoothly and evenly to the correct lines, curves, grades sections and side slopes as shown on the plans or directed by the Engineer. Any damage to the existing works or work in hand caused as a result of his operations or negligence shall be made good by the contractor at his own cost. Road side gutters shall be excavated to the specified section.

SPREADING THE EXCAVATED STUFF IN LAYERS:

The excavated stuff shall be spread uniformly over the entire width of embankment for land scapping Island, Road work, side shoulders in layers not exceeding 250 mm in loose thickness. Successive layers of embankment shall not be placed until the layer under construction has been thoroughly compacted to the requirements set down in the detailed specifications of MoRTH

Clods or hard lumps of cutting stuff shall be broken as directed by the Engineer in charge.

DEWATERING:

If water is met with the excavation due to springs, seepage, rain etc. shall be removed by suitable diversions, pumping or bailing out and the excavation part kept dry whenever so required or directed. Care shall be taken to discharge, the drained water into suitable outlets as not to cause damage to the works,

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demarcated plots, crops any other property. Due to any negligence on the part of the contractor, if any such damage is caused, it shall be the sole responsibility of the contractor to repair/ restore to the original condition at his own cost or compensate for the damage. MoRTH Specification Clause No. 304.3.3 shall also apply.

PUBLIC SAFETY:

Near towns, villages and all frequented places, trenches and foundation pits shall be securely fenced, provided with proper caution signs and marked with red lights at night to avoid accidents. The contractor shall take adequate protective measures to see that the excavation operations do not affect or damage adjoining structures. For safety precautions, guidance may be taken from IS: 3764.

PRESERVATION OF PROPERTY:

The contractor shall undertake all reasonable precautions for the protection and preservation of any or all existing road side trees, structures, drains, sewers, pipes, conduits and any other structures under or above ground, which may be affected by construction operations and which in the opinion of the Engineer in charge shall be continued in use without any change. Safeguards taken by the contractor in this respect, shall be got approved by him from the Engineer in charge. However, if any of these objects is damaged by reason of the contractor's negligence, it shall be replaced or restored to the original condition at his expense. If the contractor fails to do so, within the required times as directed by the Engineer in charge or if, in the opinion of the Engineer, the actions initiated by the contractor to replace/ restore the damage objects are not satisfactory, the Engineer shall arrange the replacement/ restoration directly through any other agency at the risk and cost of the contractor after issuing a prior notice to the effect.

REPARATION OF CUT FORMATION

The cut formation, which serves as a sub-grade, shall be prepared to receive the sub – base / base course as directed by Engineer.

Any unsuitable material encountered in the sub grade level shall be removed as directed by Engineer in charge & replace with suitable materials compacted in accordance with the MoRTH clause no.305.

In rock formations, the surface irregularities shall be corrected and the level brought up to the specified elevation with granular base material as directed by the Engineer in charge, laid and compacted in accordance with the respective specifications of these materials. After satisfying the density requirement, the cut formation shall be prepared and to receive the sub-base / base course in accordance with MoRTH Clause No.310 & 311 to receive the sub-base/ base course.

FINISHING OPERATIONS:

Finishing operations shall include the work of properly shaping and dressing all excavated surface/embankment works, and shall conform to MoRTH specification Clause No.301.7 and 305.3.9.

The finished cut surface shall satisfy the surface tolerance described in MoRTH Clause 902.

QUALITY CONTROL OF WORK:

Control on the quality of materials and works shall be exercised by the Engineer-in-charge in accordance with these specifications and general specification for quality control on works and materials attached herewith. All testing charges shall be borne by the contractor.

ARRANGEMENT FOR TRAFFIC:

MoRTH specification Clause –112 shall be applicable.

MODE OF MEASUREMENT & PAYMENT:

The contract rate shall be for a unit of one cubic meter for the strata mentioned in the wording of the item of excavation acceptable completed and limited to the dimensions shown on the plans and construction of embankment/ side shoulders with cutting stuff, acceptably completed and limited to the dimensions only. Excavation shall be measured in its original position by taking cross sections before the work starts and after it is entirely completed, or levels shall be taken before and after construction. The quantity shall be worked out by the average end area method. Where it is not feasible to compute volumes by this method, because of erratic location of isolated deposits, the volumes shall be computed of the strata changes, the contractor shall bring this to the notice of the Engineer-in-charge who will then verify and if necessary take levels for the changed strata for purposes of measurements.

Levels and sections of the ground shall be taken in the presence of the contractor or his authorized agent before the excavation is started so as to serve as the basis of measurement. The contractor or his representative shall sign the field book in token of his acceptance of the levels. If there is any disagreement the contractor shall inform of it in writing to the officer concerned with the specific reference to the sections before starting further work. Once the work is started, no cognizance of any complaint shall be taken. Merely not signing of the field book shall not be deemed as disagreement.

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The contract unit rate for this item shall be payment in full for carrying out the required operations including full compensation for setting out, transporting the excavated materials & disposing the same on site of the embankment/ work of side shoulder etc. as directed within all lead and lift. trimming bottoms and slopes of excavation, dewatering, keeping the work free of water as per clause 311, all materials, labours, tools, equipment, safety measures all testing charges, making arrangement for traffic and incidentals necessary to complete the work to the specifications above and all leads and lifts. No extra payment shall be made for the cutting stuff used in embankment/ shoulders.

The contract unit rate shall be for a unit of one Cubic meter of finished work at the site of work.

BOQ Item No. 2

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

Scarifying existing bituminous surface: Where necessary, the existing bituminous layer in the specified width shall be removed with care without causing undue disturbance to the underlying layer by suitable method approved by the Engineer. After removing it, all loose and disintegrated materials of underlying layer which might have been disturbed in the process of removal shall, before laying of the overlay course, be reset properly by spreading/hand packing of aggregates and compacting with suitable roller/heavy hand rammers/approved mechanical tamper so that the level of the top surface of such scarified area shall be even and properly graded with respect to adjoining surface. Where applicable, the granular surface, after removal of the existing bituminous layer, shall be primed as per Clause 502 to receive a bituminous profile corrective course. Reusable materials shall be stacked as directed by the Engineer with all lift and lead of 1000 m.

The payment shall made on sq.mtr. basis.

BOQ Item No.03

Providing, supplying and laying of Minimum 6.5% CBR soil for Embankment including breaking colds, dressing with all lead and lift and including waterering, rolling and consolidation of subgrade in layers at OMC to required dry density including filling the depression which occur during the process using power roller 8T to 10T.

BOQ Item No. 4

Graded Granular sub base (GSB)

Providing & laying Closed Graded Granular sub base (GSB) laying in uniform layer (each layer should be less than 200 mm) of graded granular material consisting of black trap machine cut crushed stone aggregate as per grading - V given in table 400-1 of the specification MORT&H and compactor to the required density with 8 - 10 tonne vibratory roller with plain drum or heavy pneumatic tyred roller of minimum 200 to 300 KN weight in all seasons as per MORT&H, maintaining the required slope & grade during the operation as approved by the engineer in charge & watering to the proper moisture content and sprinkled with the help of truck mounted water tank fitted with suitable arrangement. (Fully saturated having CBR value minimum 30)

SCOPE:

This work shall consist of laying and compacting well graded granular materials or suitable materials for constructing the sub-base & side shoulder on prepared sub-grade in accordance with the requirements of these specifications. The graded granular materials or suitable material shall be laid in three layer as sub-base or lower sub-base and upper sub-base as necessary according to lines, grades, and cross sections shown on the drawing or as directed by the Engineer-in-charge.

MATERIALS: SOURCE:

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The graded granular materials or suitable materials shall be obtained from outside sources/ area other than G.I.D.C. land. The contractor will have to make his own arrangement to get sources/ area for obtaining the graded granular materials/materials of the approved quality with all leads and lifts at his own cost. The general specifications for collection of road materials attached herewith shall be also followed.

The source/quarries arranged by the contractor to obtain the graded granular materials/ suitable material shall be got approved from the Executive Engineer prior to use in the work.

The sample of graded granular materials/ suitable materials collected from approved quarries shall be got tested at Govt. recognized laboratory as may be directed to the contractor at his own cost. The results shall conform to the standard requirements set down hereunder. The graded granular materials/materials of the approved quality shall be only permitted for use in the work.

GENERAL REQUIREMENTS:

The materials to be use for the work shall be natural graded granular materials. The graded granular materials shall be free from organic or other deleterious constituents.

If inferior quality of graded granular materials is used in the work, same shall be removed by the contractor at his own cost.

PHYSICAL REQUIREMENTS:

TABLE 400-1. GRADING FOR GRANULAR SUB-BASE MATERIALS

| IS Sieve | Percent by weight passing the IS sieve |
|---------------------|---|
| <i>Designation</i> | <i>Grading V (AS PER MORTH 5TH REVISION)</i> |
| 75.0 mm | 100 |
| 53.0 mm | 80-100 |
| 26.5 mm | 55-90 |
| 9.50 mm | 35-65 |
| 4.75 mm | 25-50 |
| 2.36 mm | 10-20 |
| 0.85 mm | 02-10 |
| 0.425 mm | 00-05 |
| 0.075 mm | - |
| CBR Value (Minimum) | 30 |

Note : The material passing 425 micron (0.425 mm) sieve for all the three gradings when tested according to IS : 2720 (Part 5) shall have liquid limit and plasticity index not more than 25 and 6 percent respectively.

1) Strength of sub-base

It shall be ensured prior to actual execution that the material to be used in the sub-base satisfies the requirements of CBR and other physical requirements when compacted and finished.

When directed by the Engineer, this shall be verified by performing CBR tests in the laboratory as required on specimens remoulded at field dry density and moisture content and any other tests for the “quality” of materials, as may be necessary.

2) CONSTRUCTION OPERATIONS: PREPARATION OF SUB-GRADE:

Immediately prior to the laying of sub-base, finished sub-grade/ sub-base shall be prepared by removing all vegetation and other extraneous matter, lightly sprinkled with water if necessary and rolled with one or more passes of 80/100 KN smooth roller as directed by the Engineer-in-charge.

SETTING OUT:

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After completion of the sub-grade the alignment of the road shall be properly set out true to lines curves, slopes, grades and sections as shown in the plan or as directed by the Engineer-in-charge. The contractors shall provide all labours and materials such as lime, string, pegs, nails, bamboos, stones, mortar, concrete etc. required for setting out, establishing temporary & permanent bench marks, center line stone & other marks and giving profiles, alignments and other marks, as longer they are required for the marks and long as opinion of the Engineer-in-charge.

SPREADING AND COMPACTION:

The graded granular materials shall be spread on the prepared sub-grade/blanket layer with the help of a motor graders of adequate capacity, its blade having hydraulic controls suitable for initial adjustment and for maintaining the required slops and grade during the operation or other approved means. The thickness of loose layer shall be so regulated that the maximum thickness of the layer after consolidation of required thickness, shown on the drawing or as directed by the Engineer-in-charge. Successive layers of W.M.M. shall not be placed until the layers under construction have been thoroughly compacted to the requirements set down hereunder and accepted by the Engineer-in-charge.

The operation of laying the successive layers of graded granular materials shall have to be suitable synchronized with the consolidation work. Moisture content of the loose material shall be checked in accordance with IS:2720 (Part-2) and suitable adjusted by sprinkling additional water from a truck mounted or trailer mounted water tank and suitable for applying water uniformly and at a control quantities to variable width of surface or other approved means so that at the time of compaction it is from 1 percent above to 2 percent below the optimum moisture content corresponding to IS:2720 (Part-B). While adding water, due allowance shall be made for evaporations losses. After water has been added the material shall be processed by mechanical or other approved means if so directed by the Engineer-in-charge until the layer is uniformly wet.

Immediately thereafter rolling shall be started with vibratory roller of 80 to 100 KN static weights with plain drum or heavy pneumatic tyre roller of minimum 200 to 300 KN weight having a minimum tyre pressure of 0.70 MN/m² or other approved plant. Rolling shall commence at the lower edges and proceed towards the upper edge longitudinally for portion having unidirectional cross fall and on super elevation and shall commence at the edge and progress towards the centre of portions having cross fall on both sides.

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

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

FINISHING OPERATIONS:

The sub-base shall be finished conformity with the alignments, levels, cross sections and dimensions shown on the plans or as directed by the Engineer-in-charge. Finishing operations shall include the work of shaping and dressing the sub-base/shoulders and the side slopes to conform to the cross section.

When earthwork operations have been substantially completed, the road way are shall be cleared of all debris and ugly scraps in the construction area, responsible for objectionable appearance shall be eliminated. The defective portion shall be removed and re-constructed as directed by the Engineer-in-charge.

The surface finish of construction shall conform to the requirements as per general technical specification for Quality control on works and materials attached herewith (As per MORT & H clause No.902 section 900).

3) ARRANGEMENT FOR TRAFFIC:

M.O.R.T. & H. specification clause no. 112 shall be followed.

4) QUALITY CONTROL OF WORK:

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C.B.R. tests on materials to be used in the sub-base shall be carried out as and when required by the Engineer-in-charge. All testing charges shall be borne by the contractor.

Control on the quality of materials and works shall be exercised by the Engineer-in-charge in accordance with this specifications and general technical specifications for quality control on the works and materials attached herewith. The Engineer-in-charge shall have the right to modify the frequencies of testing according to the needs.(As per M.O.R.T. & H. clause no.900).

5) **MODE OF MESUREMENT AND PAYMENT:**

The work of providing, spreading & compacting the graded granular materials shall be measured as compacted and finished work in position in cubic meters. The finished and compacted thickness to be paid on volume basis shall be computed in the following manner. **Levels shall be taken before and after construction at a grid of points 10 or 30m centre to centre longitudinally in straight but 5 meters at curves. Normally on two lane roads, the levels shall be taken at four position transversely at 0.75 and 2.75meters from either edge of the carriage way or as directed by the Engineer-in-charge** and on single lane roads these shall be taken at two positions transversely being at 1.25m from the either edge of the carriage way or as directed by the Engineer-in-charge. The measurement may be taken at closer intervals also if so desired by the Engineer-in-charge.

The average thickness of the layer of granular material in any area shall be the arithmetical mean of the difference of levels before and after construction at all the grid points falling in that area, provides that thickness of finished work shall be limited to those shown on the drawings or approved by the Engineer-in-charge in writing.

The contractor shall sign day to day leveling work and also original cross section, longitudinal section in token of his acceptance etc. The working sections both longitudinal and cross of the sub-grade shall be taken by the Engineer-in-charge before the work is started. The contractor or his authorized representative shall attend day to day leveling work and sign with date the field book daily in token of this acceptance.

If there is any dis-agreement the contractor shall inform of it in writing to the officer concerned with specific reference to the sanctions before starting further work. Once the work is started no cognizance of any complaint taken, merely not signing of the level book shall not be deemed as dis-agreement. The contractor shall maintain the finished work to proper formation and grade till this item is finally measured and accepted by department. The measurement shall be taken on compacted work.

The contract unit rate for the work of providing, Laying, & compacting the graded granular materials for sub-base, shall be payment in full for carrying out the required operations including full compensation for :

- i) Cost of arrangement of land as a source of supply of granular material of required quality for construction.
- ii) Setting out
- iii) Compacting ground surrounding embankment prepared surface, sub-grade except where removal & replacement of unsuitable material or loosening and re compacting is involved.
- iv) Scarifying or cutting continuous horizontal benches 300mm wide on side slope of existing embankment and sub-grade as applicable.
- v) Cost of watering.
- vi) Spreading in layers, bringing to the appropriate moisture content and compacting to specifications requirement.
- vii) Shaping & dressing the top and slope.
- viii) Transporting the material to embankment & sub-grade side with all lead and lift.
- ix) All materials, labours, tools, equipments and incidental necessary to complete the work to the specifications.
- x) Carrying out required tests for quality control.
- xi) Making arrangement for traffic.
- xii) Furnishing of all material to be incorporated in the work including all royalty, fee, rent & all lead & lift.
- xiii) Dewatering.

The contract unit rate shall be for a unit of one cubic meter of finished compacted work in position at site of work.

BOQ Item No. 5

Wet Mix Macadam (WMM)

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Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including trimix the materials with water at OMC in mechanical mix plant carriage of mixed materials by tipper to site laying in uniform layers (Layer should not be more than 200 mm) with paver in sub base/base course on well prepared surface and camber with Sensor paver consolidation by vibratory road roller to achieve the desired density by using machine crushed chips as per required gradation mixing with required optimum quantity of water incl material, labour, plant and machinery and equipment etc. complete.

Scope

This work shall consist of laying and compacting clean, crushed, graded aggregate and granular material, premixed with water, to a dense mass on a prepared subgrade/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 one or more layers as necessary to lines, grades and cross-sections shown on the approved drawings or as direction by the Engineer.

The thickness of a single compacted Wet Mix Macadam layer shall not be less than 75 mm. 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 increased to 200 mm upon approval of the Engineer.

Materials

Aggregates

Physical requirements: Coarse aggregates shall be crushed stone. If crushed gravel/shingle is used, not less than 90 percent by weight of the gravel/shingle 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 400-10 below.

TABLE 400-10. PHYSICAL REQUIREMENTS OF COARSE AGGREGATES FOR WET MIX MACADAM FOR SUB-BASE/BASE COURSES

| | Test | Test Method | Requirements |
|----|---|------------------------------------|----------------------|
| 1. | * Los Angeles abrasion value | IS : 2386 (Part-4) | 40 per cent (Max.) |
| | Or * Aggregate Impact value | IS : 2386 (Part-4) or IS : 5640 | 30 per cent (Max.) |
| 2. | Combined Flakiness and Elongation indices (Total) | IS : 2386 (Part-1) | 30 per cent (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 be 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.

If the water adsorption 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).

Grading requirements: The aggregates shall conform to the grading given in Table 400-11.

TABLE 400-11. GRADING REQUIREMENTS OF AGGREGATES FOR WET MIX MACADAM

| IS Sieve Designation | Per cent by weight passing the IS sieve |
|----------------------|---|
| 53.00 mm | 100 |
| 45.00 mm | 95-100 |
| 26.50 mm | - |

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| | |
|---------------|-------|
| 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.

Construction Operations

Preparation of base: Clause 404.3.1. shall apply.

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 407.4.1.

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 pugmill or pan type mixer of concrete batching plant. For small quantity of wet mix work, the Engineer may permit the mixing to be done in concrete mixers.

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, due 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.

Spreading of mix: Immediately after mixing, the aggregates shall be spread uniformly and evenly upon the prepared subgrade/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 paver finisher shall be self-propelled, having the following features:

- (i) Loading hoppers and suitable distribution mechanism
- (ii) The screed shall have tamping and vibrating arrangement for initial compaction to the layer as it is spread without rutting or otherwise marring the surface profile.
- (iii) The paver shall be equipped with necessary control mechanism so as to ensure that the finished surface is free from surface blemishes.

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 layer and fine particles should be allowed. The aggregates as spread should be of uniform gradation with no pockets of fine materials.

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, smooth wheel roller of 80 to 100 kN weight may be used. For a compacted single layer upto 200 mm, the compaction shall be done with the help of

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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 track 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, Krebs, 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 meter 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.

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

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 laid.

Surface Finish and Quality Control of Work

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

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

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 subgrade 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 re-compacted in accordance with Clause 406.3. The area treated in the aforesaid manner shall not be less than 5 m long and 2 m wide. In no case shall depressions be filled up with unmixed and ungraded material or fines.

Arrangement for Traffic

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

Measurements for Payment

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

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The Contract unit rate for wet mix macadam shall be payment in full for carrying out the required operations including full compensation for all components.

The contract rate shall be for a unit of one Cubic meter.

BOQ Item No. 6

Providing and applying primer coat with bitumen emulsion SS1 on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.70 kg/sqm using mechanical means.

SCOPE :

This work shall consist of the application of a single coat of medium viscosity liquid bituminous material over porous granular base(wet mix macadam base) surface preparatory to the super imposition of bituminous treatment or mix.

MATERIALS

The primer shall be bitumen emulsion (Grade SS1) complying with IS- 8887.

The agency shall have to purchase bitumen from only Govt. recognized refinery.

The agency has to produce the original purchase bills of bitumen of refinery along with original gate passes.

Gate pass no. and Tanker no. shall be invariably mentioned in the original bills produced by the agency.

The grade of bitumen emulsion purchase by the agency shall be mentioned in the original bills of the refinery.

The agency shall have to produce the certificate of the test results of the bitumen emulsion showing the actual grade of bitumen emulsion purchased & tested.

Agency shall have to make adequate arrangement for storage of bitumen emulsion at plant site according to requirement.

Bitumen emulsion shall be stored as to allow easy inspection and in such place as well not damage the stored primer and cause the leakage or allow water and other foreign matter to enter. Agency has to make his own arrangement / insurance at his own cost for safety of stocked primer brought on plant as well as site of work. For the purpose of calculating consumption, wastage will not be allowed beyond (+ / -) 2.00 percent. Quantity of excess Consumption over (+) 2.00% shall not be paid. If actual consumption of bitumen emulsion is found below (-) 2.00% then the theoretically consumption, necessary reduce rate analysis for this item shall be worked out and accordingly paid.

The agency shall keep a day to day account of the receipt, consumption and balance of bitumen emulsion in a separate bound register having numbered pages and in the Performa's prescribed by the department day to day signature of the agency's representatives shall be initiated in this register. The register shall be maintained by the agency. " P " form shall not be provided by the corporation for purchasing the primer no claim shall be made by the agency on account of delay in supply of bitumen emulsion by I.O.C. The bitumen emulsion shall be got tested at govt. recognized laboratory as may be directed the agency at his own cost. The result shall confirm the IS 8887 (grade SS1).

T A B L E

VISCOSITY REQUIREMENT AND QUANTITY OF LIQUID BITUMINOUS PRIMER.

| Type of surface | Kinetic Viscosity of primer at 60 deg. centigrade. | Quantity of liquid bituminous material per 10 m2 |
|-----------------|--|--|
| Low porosity | 30 - 60 | 8.50 Kg. |

The testing frequencies set forth in the table – 2 control test and their frequency for bituminous construction for general specification for quality control on works & materials attached here with are the minimum as desired by the Engineer-in-charge or shall have the full Authority to carry out test as per frequently or he may found necessary to satisfy himself that the materials and works comply the appropriate specification. All testing charges involved in the entire work shall be borne by the contractor.

CONSTRUCTION : WEATHER AND SEASONAL LIMITATIONS :

Bituminous primer shall not be applied to a wet surface or during a dust storm or when the weather is foggy / rainy / windy or when the temperature in the shade is less than 100 degree centigrade. Surfaces which are to receive emulsion primer shall be damp but no free or standing water shall be present.

EQUIPMENT

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The primer distributor shall be a self-propelled or towed bitumen pressure sprayer equipped for spraying the material uniformly at specified rates i.e. 8.50 kg. per 10 sq.meter and temperatures. Hand spraying shall not be allowed at any cause.

PREPARATION OF ROAD SURFACE :

The surface to be primed shall be prepared in accordance as MoRTH clause no. 501.8 & clause no. 902 as appropriate. Immediately prior to applying the primer, the surface shall be carefully swept, clean of dust and loose particles, care being taken not to disturb the interlocked aggregates. There is best achieved when the surface layer is slightly moist (Lightly sprayed with water and the surface allowed to dry) and the surface should kept moist until the primer is applied.

APPLICATION OF BITUMINIOUS PRIMER

The viscosity and rate of application of the primer shall be 8.5 Kg per 10 m² the bituminous primer shall be spread uniformly in accordance with MoRTH clause no. 501.

The method of application of the primer shall depend on the type of equipment to be used, size of nozzles, pressure at the spray par and speed of forward movement as approved by the Engineer-in-charge. The contractor shall demonstrate at a spraying

trial, that the equipment and method to be used is capable of producing a uniformly spray within the tolerances specified, if required.

CURING OF PRIMER AND OPENING TO TRAFFIC :

A primed surface shall be allowed to cure at least 24 hours or such other period as is found to be necessary to allow all the volatiles to evaporate before any sub sequent surface treatment or mix is laid.

Any unabsorbed primer shall first to be blotted with an application of sand using the minimum quantity possible as directed by Engineer-in-charge.

A Primed surface shall not be opened to traffic other than that necessary to lay the next course a very thin layer of clean sand shall be applied to the surface of the primer, to prevent the primer picking – up under the wheels of the paver and trucks delivering bituminous material to the paver, if required or as directed by Engineer-in-charge.

QUALITY CONTROL OF WORK :

For control of the quality of materials supplied and the works carried out, the relevant provisions of MoRTH clause No. 900 and General specification of quality control on works and materials attached herewith shall be applied.

ARRANGEMENT FOR TRAFFIC :

During construction operation, arrangements for traffic shall be made in accordance with the provision of MoRTH clause no.112.

MEASUREMENT FOR PAYMENT :

The contract unit rate of prime coat with adjustment as described in MoRTH clause no. 502.7, shall be payment in full for carrying out the required operation including full compensation for all components listed in MoRTH clause no.401.8 (I to V) and as applicable to be to the work specified in this specifications. Payment shall be made on the basis of the provision of prime coat at an application rate of 8.5 kg per 10 m², with adjustment, plus or minus, for the variation between this amount and the actual amount approved by the Engineer-in-charge after preliminary trails referred to in accordance with MoRTH clause no. 502.4.3 as directed by Engineer-in-charge.

Prime coat shall be measured in terms of area of application and payment shall be made in square meters.

BOQ Item No. 7

DBM

Providing & laying compacted 50mm thick dense graded bituminous macadam (DBM) Grade-II in Single layer using 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour, tack coat at the rate of 2.5 kg / 10 m² (VG10) in each using crushed aggregates of specified grading. premixed with bituminous binder @ 4.5% (VG - 40)Bitumen by weight of total mix and filler , transporting the hot mix to work site laying with a hydrostatic paver finisher with sensor control with minimum road width or as directed by Engineer in charge to the required grade, level and alignment, rolling with smooth wheeled vibratory and tandem rollers and pneumatic tyre roller to acheive the desired compaction as per MORT&H specification etc complete in all respects. The agency shall have to get the mix design done from approved laboratory and submit to the Engineer in charge for approval. (Va=3.5%&Vbe=11.5% must be consider in Mix Design) If the asphalt (bituminous) content

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is more than above, the agency shall have to bear the cost of additional asphalt. The payment shall be done on the permissible field density achieved on the site instead of density derieved in the mix design. (The density obtained by mix design above 2.40 MT /Cu.m shall be borne by agency)

SCOPE:

This work shall consist of construction of Dense Graded Bitumen Macadam in single layer of 90 mm thick thickness course of compacted crushed aggregates premixed with a bituminous binder on a previously prepared base (i. e. existing W.M.M.) to the requirements of these specifications. The work in general shall be carried out as per specification No. 505 of Ministry of Road. Transport & Highways specification for road and bridge work published by the Indian Roads Congress, New Delhi (5th Revision).

MATERIALS : BINDERS : Bitumen

The bitumen shall be paving bitumen of penetration Grade complying with I.S.S. for "paving bitumen" IS: 73 & of the penetration indicated in the Table- Viscosity grade for mixing as a Binder and **Bitumen (Grade – VG 10) complying with I.S. 73:2006 for tack coat.**

The agency shall have to purchase the bitumen from only Govt. recognized Refinery.

Bitumen is a thermoplastic material and its stiffness is dependent on temperature. The temperature-vs-stiffness relationship of bitumen is dependent on the source of crude oil and the method of refining. The Bureau of Indian Standards (BIS) introduced paving grade bitumen specifications (IS: 73- 1950) for the first time in the year 1950 and classified it on penetration. The specifications were revised in the years 1962 and 1992. To improve the quality of Bitumen, BIS revised IS-73-1992 specifications based on Viscosity (Viscosity at 60oC) in July 2006. As per these specifications, there are four grades VG-10, VG-20, VG-30 & VG-40. A few qualification tests like specific gravity, water content, ductility, loss on heating & Farass breaking point were removed from IS:73-1992 specifications as these tests do not have any relationship either with the quality or performance of the product.

Indian Oil commenced marketing of Bitumen as per Viscosity Grade specifications conforming to IS: 73-1992 from all its refineries from Aug 2009. Therefore, the Penetration grades have been replaced by Viscosity grade Bitumen.

According to viscosity (degree of fluidity) grading, higher the grade, stiffer the Bitumen. Tests are conducted at 60o C and 135o C, which represent the temperature of road surface during summer (hot climate, similar to northern parts of India) and mixing temperature respectively. The penetration at 25° C, which is annual average pavement temperature, is also retained.

Different Grades of Bitumen marketed by Indian Oil :

VG-10 BITUMEN: VG-10 is widely used in spraying applications such as surface-dressing and paving in very cold climate in lieu of old 80/100 Penetration grade. It is also used to manufacture Bitumen Emulsion and Modified Bitumen products.

VG-20 BITUMEN: VG-20 is used for paving in cold climate & high altitude regions

VG-30 BITUMEN: VG-30 is primarily used to construct extra heavy duty Bitumen pavements that need to endure substantial traffic loads. It can be used in lieu of 60/70 Penetration grade.

VG-40 BITUMEN: VG-40 is used in highly stressed areas such as intersections, near toll booths and truck parking lots in lieu of old 30/40 Penetration grade. Due to its higher viscosity, stiffer Bitumen mixes can be produced to improve resistance to shoving and other problems associated with higher temperature and heavy traffic loads.

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TABLE: VISCOSITY GRADE (VG) BITUMEN SPECIFICATION AS PER IS 73:2006

| Characteristics | VG-10 | VG-20 | VG-30 | VG-40 |
|-------------------------------------|--------------|--------------|--------------|--------------|
| Absolute Viscosity, 60oC, poises, | min 800 | 1600 | 2400 | 3200 |
| Kinematic Viscosity, 135oC, CST, | min 250 | 300 | 350 | 400 |
| Flash point, C, | min 220 | 220 | 220 | 220 |
| Solubility in trichloroethylene, %, | min 99.0 | 99.0 | 99.0 | 99.0 |
| Penetration at 25oC | 80-100 | 60-80 | 50-70 | 40-60 |
| Softening point, C, | min 40 | 45 | 47 | 50 |

Tests on residue from thin film over test / RTFOT:

| | | | | |
|--|---------|-----|-----|-----|
| i. Viscosity ratio at 60oC, | max 4.0 | 4.0 | 4.0 | 4.0 |
| ii. Ductility at 25oC, cm, min, after thin film over test | 75 | 50 | 40 | 25 |

The bitumen shall be paving bitumen of penetration Grade complying with I.S.S. for "paving bitumen" IS: 73 & of the penetration indicated in the Table-3. A-65 or S-65 (VG - 30 GRADE) for mixing as a Binder and Bitumen A -90 or S- 90 (Grade: VG – 10) for tack coat.

The agency shall have to purchase the bitumen from only Govt. recognized refinery.

The agency shall have to produce the original purchase bills of bitumen of refinery along with original gate passes.

Gate pass No. & Tanker No. shall be invariably mentioned in the original bills produced by the contractor.

The grade of binder purchased by the agency shall be mentioned in the original bills of the refinery.

The agency shall have to produce the certificate of the test results of the bitumen showing the actual grade of bitumen purchased & tested.

Contractor shall have to make adequate arrangement for storage of bulk bitumen at plant site according to requirement.

Bitumen shall be so stored so as to allow easy inspection and in such place as will not damage the stored asphalt and cause the leakage or allow water and other foreign matter to enter. Contractor has to make his own arrangement/ Insurance at his own cost for safely of stacked bitumen brought on plant site.

For the purpose of calculating consumption, wastage will not be allowed beyond (+/-) 2.00 percent. Quantity of excess consumption over (+) 2.00% shall not be paid. If actual consumption of bitumen is found below (-) 2.00% then the theoretically consumption will be worked out and necessary reduced rate analysis for similar items of this tender will be worked out and accordingly paid.

The contractor shall keep a day to day account of the receipt, consumption, & balance of bitumen in a separate bound register having numbered pages and in the Performa as prescribed by the department. Day to-day signature of the contractor's representative shall be initiated in this register.

The register shall be maintained by the agency.

"P" form shall not be provided by the corporation for purchasing the bitumen. No claim shall be made by the contractor on account of delay in supply of bitumen by the I.O.C.

The bitumen shall be got tested at Govt. recognized laboratory as may be directed to the contractor at his own cost. The results shall conform to the standards requirements laid down in I.S. Code or M.O.R.T. & H. specifications.

The testing frequencies set forth in the Table-2, control Test & Their frequency for bituminous construction of general specification for quality control on works & materials attached herewith are the minimum as desired by the Engineer in charge or shall have the full authority to carry out tests as per frequently or he may found necessary to satisfy himself that the materials and works comply

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with the appropriate specifications.

All testing charges involving in the entire work shall be borne by the contractor.

COARSE AGGREGATE: Coarse aggregates:

The coarse aggregate shall consist of crushed stone. These shall be strong, durable, of cubical shape, free of disintegrated pieces, organic or other deleterious matter and adherent coatings. The aggregate shall preferably be hydrophobic and of low porosity and shall satisfy the physical requirements set forth in table – 1.

TABLE -1: PHYSICAL REQUIREMENT FOR COARSE AGGREGATE FOR DBM

| PROPERTY | TEST AND TEST METHOD | SPECIFICATION |
|-------------------|---|-----------------------------------|
| Cleanness | Grain size analysis (IS : 2386-Part-1) | Maximum 5% passing 0.075mm sieve. |
| Particle shape | Flakiness & Elongation combined (IS: 2386-Part-1) | Maximum 35% |
| Strength* | Los Angle Abrasion Value. Aggregate impact value (IS: 2386 Part-4) | Maximum 35% Maximum 27% |
| Durability | Soundness (IS: 2326- Part-5) Sodium sulphate Magnesium sulphate | Maximum 12% Maximum 18% |
| Water absorption | Water absorption (IS: 2386, PART-3) | Maximum 2% |
| Stripping | Coating & stripping of bitumen aggregate mixture (IS: 6241) | Minimum retained coating 95% |
| Water sensitive** | Retained tensile strength | Minimum 80% |

NOTE:

- 1) (*)Aggregate satisfy the requirements of either of these two tests.
- 2) (**)The water sensitive test is only to be carried out if the minimum retained coating in the stripping test is less than 95%.

Fine aggregate:

The fine aggregates shall consist of crusher run screenings, natural sand or a mixture of both, passing 2.36mm sieve and retained on 75-micron sieve. These shall be clean, hard, durable, dry and free from dust, & soft or friable matters, organic or other deleterious matter.

The fine aggregate shall have a sand equivalent value not less than 50 when tested in accordance with the requirement of IS-2720-Part-37. The plasticity index of the fraction passing the 0.425mm sieve shall not exceed 4, when tested in accordance with IS: 2720(Part-5).

The aggregate shall satisfy the physical requirements set forth in the table -1 above.

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-2 as under.

TABLE – 2 : GRADING REQUIREMENT FOR MINERAL FILLER :

| I.S. sieve (mm) | Cumulative percent passing by weight of total aggregate. |
|-----------------|--|
| 0.6 | 100 |

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| | |
|-------|--------|
| 0.3 | 95-100 |
| 0.075 | 85-100 |

The filler shall be free from organic impurities and have a plastic index not greater than 4. The plastic index requirement shall not apply if filler is cement or lime. Where the aggregates fail to meet the requirement of water sensitivity test in Table-1 then 2% by total weight of aggregate, of hydrated lime shall be added without additional cost.

Aggregate grading & binder content:

When tested in accordance with I.S 2326 – Part-1 (Wet sieving method), the combined grading of the coarse and fine aggregate and added filler shall fall within the limit shown in table-3 for grading No. 2 as specified.

TABLE – 3 : COMPOSITION OF DENSE GRADED BITUMINIOUS MACADAM PAVEMENT LAYERS

| | |
|--|---|
| Grading | 2 |
| Nominal aggregate sieve | 26.5 mm |
| Layer thickness | 50-75 mm |
| I.S. Sieve¹ (mm) | Commutative percentage by weight of total aggregate passing. |
| 45 | |
| 37.5 | 100 |
| 26.5 | 90-100 |
| 19 | 71-95 |
| 13.20 | 56-80 |
| 9.5 | - |
| 4.75 | 38-54 |
| 2.36 | 28-42 |
| 1.18 | - |
| 0.6 | - |
| 0.30 | 7-21 |
| 0.15 | - |
| 0.075 | 2-8 |
| Bitumen content percentage by mass of total mix² | 4.50 % |
| Bitumen grade (VG) | VG 40 |

Note:

- 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 Marshal method.

Proportioning of materials: The binder content shall be within a tolerance of +0.3 or -0.3 % by of the total mix when individual specimens are taken for quality control tests in accordance with the provisions of section 900.

Preparation and transportation of the Mix

Pre-mixed bituminous materials, including bituminous macadam, dense bituminous macadam, semi-dense bituminous concrete and bituminous concrete, 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. Appropriate mixing temperatures can be found in **TABLE 500-2** of these Specifications; the difference in temperature between the binder and aggregate should at no time exceed 14°C. In order to ensure uniform quality of the mix and better coating of aggregates, the hot mix plant shall be calibrated from time to time.

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If a continuous mixing-plant is to be used for mixing the bituminous bound macadam; the Contractor must demonstrate by laboratory analysis that the cold feed combined grading is within the grading limits specified for that bituminous bound material. In the case of a designed job mix, the bitumen and filler content shall be derived using this combined grading. Further details are available in the Manual for Construction and Supervision of Bituminous Works.

Bituminous materials shall be transported in clean insulated vehicles, and unless otherwise agreed by the Engineer, shall be covered while in transit or awaiting tipping. Subject to the approval of the Engineer, a thin coating of diesel or lubricating oil may be applied to the interior of the vehicle to prevent sticking and to facilitate discharge of the material.

Spreading: The provisions of Clauses 501.5.3 shall apply.

TABLE 500-2. Mixing, Laying and Rolling Temperatures for Bituminous Mixes (Degree Celcius)

| Bitumen Viscosity Grade | Bitumen Temperature (°C) | Aggregate Temperature (°C) | Mixed Material Temperature (°C) | Rolling Temperature (°C) | Laying Temperature (°C) |
|-------------------------|--------------------------|----------------------------|---------------------------------|--------------------------|-------------------------|
| VG-40 | 160-170 | 160 - 175 | 160- 170 | 100 Minimum | 150 Minimum |
| VG-30 | 150-165 | 150 - 170 | 150-165 | 90 Minimum | 140 Minimum |
| VG-20 | 145-165 | 145 - 170 | 145-165 | 85 Minimum | 135 Minimum |
| VG-10 | 140-160 | 140 - 165 | 140-160 | 80 Minimum | 130 Minimum |

3.1) MIXTURE DESIGN: Requirement of the mixture:

Apart from confirmative with the grading and quality requirement for individual ingredients mixture shall meet the requirement set out in Table - 4.

TABLE – 4 : REQUIREMENT OF BITUMINIOUS CONCRETE PAVEMENT LAYER

| | |
|--|--|
| Minimum, stability (KN at 60 ⁰ C) | 9.0 |
| Minimum flow (MM) | 2 |
| Maximum flow (MM) | 4 |
| Compaction level (No. of blows) | 75 blows on each of the two faces of the specimen. |
| Percent air voids | 3-5 |
| Percent voids in mineral aggregate (VMA) | See Table – 500 – 13 OF MORTH |
| Percent voids filled with bitumen (VFB) | 65 - 75 |
| Viscosity Grade | as per VG – 40 & MoRTH. |

The requirement for minimum percent voids in mineral aggregate (VMA) are set out in Table No. 500 -12 .

- 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.

Binder content:

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The binder content shall be optimized to achieve the requirement of the mixture set out in Table – 3 & 4 and the traffic volume (may be obtained from the Engineer-in-charge). The marshal method for determining the optimum binder content shall be adopted as described in the asphalt institute manual at MS-2, replacing the aggregates retains on the 26.5mm sieve and retained on the 22.4mm where approved by the Engineer.

Job mix formula :

The contractor shall inform the Engineer in writing, at least 20 days before the start of the work, of the job mix formula proposed for use in the work and shall give following details.

- (i) Source and location of all materials.
- (ii) Proportion of all materials expressed as follows where is applicable.
 - (a) Binder type & percentage by weight of total mixture.
 - (b) Course aggregate, fine aggregate, mineral filler as percentage by weight of total aggregate including mineral filler.
- (iii) A single definite percentage passing each sieve for the mix aggregate
- (iv) The individual grading of the individual aggregate fractions, and the proportion of each in the combined grading.
- (v) The result of test enumerated in Table-3 as obtained by the contractor.
- (vi) Where mixture is a batch mixture, the individual weights of each type of aggregate, & binder per batch.
- (vii) The test result of physical characteristics of the aggregate to be used.
- (viii) Mixing temperature and compacting temperature.

While establishing the job mix formula, the contractor shall ensure that it is based on a correct and truly representative sample of the materials that will actually be used in the work and that the mixture and its different ingredients satisfied the physical and strength requirements of these specifications.

Approval of the job mix formula shall be based on independent testing by the Engineer for which samples of all ingredients of its mix shall be furnished by the contractor as required by the Engineer.

The approved job mix formula shall remain effective unless and until a revised job mix formula is approved, should a change in the source of materials be proposed, a new job mix formula shall be forwarded to the Engineer for approval before the placing of the material.

3.2) Plant trial – permissible various in Job mix formula:

Once the laboratory job mix formula is approved, the contractor shall carryout plant trials at the mixture to establish that the plant can be set up to produce uniform mix confirming to the approved job mix formula. The permissible variations of the individual percentages of the various ingredients in the actual mix from the job mix formula to be used shall be within the limits as specified in the table – 500-13 as under:

The various are intended to apply to individual specimens taken for quality control test in accordance with General quality control works on materials attached herewith.

TABLE – 500-13 : PERMISSIBLE VARIATIONS FROM THE JOB MIX FORMULA

| Description | Permissible variation |
|---------------------------------------|-----------------------|
| | Base / binder course |
| Aggregate passing 19mm size or larger | +/- 8% |

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| | |
|--|-----------|
| Aggregate passing 13.2mm , 9.5mm | +/- 7% |
| Aggregate passing 4.75mm | +/- 6% |
| Aggregate passing 2.36mm, 1.8mm, 0.6mm | +/- 5% |
| Aggregate passing 0.3mm,0.15mm | +/- 4% |
| Aggregate passing 0.075mm | +/- 2% |
| Binder content | +/- 0.3% |
| Mixing temperature | +/- 10* C |

Once the plant trials have demonstrated the capability of the plant, and the trials are approved, the laying operation may commence. Over the period of the first month of production for laying on the work, the Engineer shall require additional testing of the product to establish the reliability and consistency of the plants.

Laying trials :

Once the plant trials have been successfully completed and approved, the contractor shall carry out laying trial to demonstrate the proposed mix can be successfully laid, and compacted all in accordance with MoRTH Clause -501. The laying trial shall be carried out on a suitable area which is not form part of the works, unless specifically approved in writing, by the engineer. The area of the laying trial shall be a minimum of 100 sq.mtr. of construction similar to that of the project road and it shall be in all respect particularly compaction, the same as the project construction, on which the bituminous materials is to be laid.

The contractor shall previously inform the Engineer of the proposed method for laying and compacting the materials. The plant trial shall then establish if the proposed laying plant, compaction plant, and methodology is capable of producing satisfactory results. The density of the finished paving layer shall be determined by taking cores, no sooner than 24 hours after laying, or by other approved method. Once the laying trial have been approved, the same plant and methodology shall be applied to the laying of the material on the project, and no variation of either shall be acceptable, unless approved in writing by the Engineer, who may at discretion require further laying trials.

Keeping Records :

The department shall keep a day-to-day account of incoming material i.e. aggregate and consumption of material in a bond register having numbered pages and in the pro-formas prescribed by the department. Day to day signature of the contractor's representative shall be obtained in this register.

Bound and numbered register in the form prescribed by the Department shall be maintained to show daily outgoing tipper trucks which are measured before leaving the depot by the authorized departmental representative. Gate pass shall be issued at the hot mix plant site while leaving the depot, which shall be collected at the paver work site by another departmental representative. The same should also be signed by the contractor or his authorized representative.

General :

The samples of aggregate of required grading for the work shall be got approved from the Engineer in charge prior to transportation and collection on plant site. The aggregates shall be of approved quality with all leads and lifts. The rejected 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 contractor. Collection of aggregate shall be in different stacks according to various sizes of aggregates.

The materials shall be got tested at Govt. recognized laboratory as may be directed to the contractor at his own cost. The results shall conform to the standards requirements laid down in Table No. 1 & 2 above.

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The testing frequencies set forth are the desirable minimum and the Engineer-in-charge shall have the full authority to carry out tests as frequently as he may deem necessary to satisfy himself that the materials and works comply with the appropriate specifications.

Testing charges shall be borne by the contractor.

The aggregate shall be proportioned and blended to produce a uniform mixture complying with the requirement of Table No. 1 & 2.

CONSTRUCTION OPERATION:

Weathered & Seasonal Limitation:

Bitumen macadam shall not be laid during rainy weather or when the base course is damp or wet. The provision of clause 501.5.1 of M.O.R.T. & H shall also apply.

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

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.

Opening to Traffic

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

Surface Finish and Quality Control of Work

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.

Arrangements for Traffic

During the period of construction, arrangements for traffic shall be made in accordance with the provisions of Clause 112 of the Ministry's Specification for Road and Bridge Works (third revision) 1995.

Preparation of base:

The base on which D.B.M. is to be laid shall be prepared. Shaped and conditioned to the specified lines grade and cross-sections in accordance with requirements as directed by the Engineer-in-charge.

The surface shall be thoroughly swept and scraped clean and free of dust and foreign matter as directed by the Engineer-in-charge.

M.O.R.T & H specification clause No. 501.8 & 902.3 as appropriate shall also follow.

Measurement for Payment

The Payment shall be made on **M.T.**

BOQ ITEM NO. 08

BC

Providing and laying 40 mm Thick Bituminous Concrete using crushed stone aggregate BT chips as per required gradation and using emulsion asphalt as a tack coat @ 2.5 kg / 10 sq.m (VG 10) and the VG-40 Bitumen grade asphalt at 5.40 % by total weight of mix hot laid process using 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour incl. transporting the mix and laying by hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory, tandem and pneumatic type roller to achieve the desired compaction as per MoRT&H specifications clause 509 complete including cost of material labour machinery equipment and fuel, oil. Lubricant for plant and machinery using contractor's own plant and machinanes etc complete. The agency shall have to get the mix design done from approved laboratory and submit to the Engineer in charge for approval.(Va=3.5%&Vbe=11.5% must
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be consider in Mix Design) If the asphalt (bituminous) content is more than above, the agency shall have to bear the cost of additional asphalt. The payment shall be done on the permissible field density achieved on the site instead of density derieved in the mix design

SCOPE:

This work shall consist of the preparation, laying and compaction of Bituminous Concrete of 40 mm thickness compose of graded aggregates premix with bituminous binder on a previously prepared base, in accordance with the requirements of these specifications, to serve as a wearing course.

The work in general shall be carried out as per relevant specifications of Ministry of Road Transport & Highway-specifications for Road and Bridge work published by the Indian Roads Congress - New Delhi (5TH Edition).

MATERIALS: Bitumen :

The bitumen shall be paving bitumen of penetration Grade complying with I.S.S. for "paving bitumen" IS: 73 & of the penetration indicated in the Table- Viscosity grade for mixing as a Binder and **Bitumen (Grade – VG 10) complying with I.S. 73:2006 for tack coat.**

The agency shall have to purchase the bitumen from only Govt. recognized Refinery.

The relevant specifications under **Item MENTIONED ABOVE of Schedule – B** above shall be made applicable.

Course aggregates:

The coarse aggregate shall consist of crushed stone. These shall be strong, durable, of cubical shape, free of disintegrated pieces, organic or other deleterious matter and adherent coatings. The aggregate shall preferably by hydrophobic and of low porosity and shall satisfy the physical requirements set forth in table – 1.

TABLE -1: PHYSICAL REQUIREMENT FOR COARSE AGGREGATE FOR BC

| PROPERTY | TEST AND TEST METHOD | SPECIFICATION |
|-------------------|---|-----------------------------------|
| Cleanness | Grain size analysis (IS : 2386-Part-1) | Maximum 5% passing 0.075mm sieve. |
| Particle shape | Flakiness & Elongation combined (IS: 2386-Part-1) | Maximum 35% |
| Strength* | Los Angle Abrasion Value. Aggregate impact value (IS: 2386 Part-4) | Maximum 30% Maximum 24% |
| Polishing | Polishing stone value (B.S.:812-PART-114) | Minimum 55 |
| Durability | Soundness (IS: 2326- Part-5) Sodium sulphate Magnesium sulphate | Maximum 12% Maximum 18% |
| Water absorption | Water absorption (IS: 2386, PART-3) | Maximum 2% |
| Stripping | Coating & stripping of bitumen aggregate mixture (IS: 6241) | Minimum retained coating 95% |
| Water sensitive** | Retained tensile strength | Minimum 80% |

NOTE:

- 1) (*)Aggregate satisfy the requirements of either of these two tests.
- 2) (**)The water sensitive test is only to be carried out if the minimum retained coating in the stripping test is less than 95%.

Fine aggregate:

The fine aggregates shall consist of crusher run screenings, natural sand or a mixture of both,

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passing 2.36mm sieve and retained on 75-micron sieve. These shall be clean, hard, durable, dry and free from dust, & soft or friable matters, organic or other deleterious matter.

The fine aggregate shall have a sand equivalent value not less than 50 when tested in accordance with the requirement of IS-2720-Part-37. The plasticity index of the fraction passing the 0.425mm sieve shall not exceed 4, when tested in accordance with IS: 2720(Part-5).

The aggregate shall satisfy the physical requirements set forth in the table -1 above.

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-2 as under.

TABLE – 2 : GRADING REQUIREMENT FOR MINERAL FILLER :

| I.S. sieve (mm) | Cumulative percent 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 plastic index not greater than 4. The plastic index requirement shall not apply if filler is cement or lime. Where the aggregates fail to meet the requirement of water sensitivity test in Table-1 then 2% by total weight of aggregate, of hydrated lime shall be added without additional cost.

Aggregate grading & binder content:

When tested in accordance with I.S 2326 – Part-1 (Wet sieving method), the combined grading of the coarse and fine aggregate and added filler shall fall within the limit shown in table-3 for grading No. 2 as specified.

TABLE – 500- 17 : COMPOSITION OF BITUMINIOUS CONCRETE PAVING LAYERS

| | |
|--|---|
| Grading | 2 |
| Nominal aggregate sieve | 13.2 mm |
| Layer thickness | 30-40 MM |
| I.,S. Sieve¹ (mm) | Commutative percentage by weight of total aggregate passing. |
| 19 | 100 |
| 13.20 | 90 - 100 |
| 9.5 | 70 - 88 |
| 4.75 | 53 - 71 |
| 2.36 | 42 - 58 |
| 1.18 | 34 - 48 |
| 0.6 | 26 - 38 |
| 0.30 | 18 - 28 |
| 0.15 | 12 - 20 |
| 0.075 | 4 - 10 |
| Bitumen content percentage by mass of total mix² | 5.40 % MINIMUM |
| Bitumen grade (VG – 40) | VG - 40 |

Note:

- 1) The combined aggregate grading shall not vary from the low limit on one sieve to the high limit on

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the adjacent sieve.

2) Determined by the Marshal method.

Proportioning of materials: The binder content shall be within a tolerance of +0.3 or -0.3 % by of the total mix when individual specimens are taken for quality control tests in accordance with the provisions of section 900.

Preparation and transportation of the Mix

Pre-mixed bituminous materials, including bituminous macadam, dense bituminous macadam, semi-dense bituminous concrete and bituminous concrete, 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. Appropriate mixing temperatures can be found in Table 500-2 of these Specifications; the difference in temperature between the binder and aggregate should at no time exceed 14°C. In order to ensure uniform quality of the mix and better coating of aggregates, the hot mix plant shall be calibrated from time to time.

If a continuous mixing-plant is to be used for mixing the bituminous bound macadam; the Contractor must demonstrate by laboratory analysis that the cold feed combined grading is within the grading limits specified

for that bituminous bound material. In the case of a designed job mix, the bitumen and filler content shall be derived using this combined grading. Further details are available in the Manual for Construction and Supervision of Bituminous Works.

Bituminous materials shall be transported in clean insulated vehicles, and unless otherwise agreed by the Engineer, shall be covered while in transit or awaiting tipping. Subject to the approval of the Engineer, a thin coating of diesel or lubricating oil may be applied to the interior of the vehicle to prevent sticking and to facilitate discharge of the material.

Spreading: The provisions of Clauses 501.5.3 shall apply.

TABLE 500-2. Mixing, Laying and Rolling Temperatures for Bituminous Mixes (Degree Celcius)

| Bitumen Viscosity Grade | Bitumen Temperature (°C) | Aggregate Temperature (°C) | Mixed Material Temperature (°C) | Rolling Temperature (°C) | Laying Temperature (°C) |
|-------------------------|--------------------------|----------------------------|---------------------------------|--------------------------|-------------------------|
| VG-40 | 160-170 | 160 - 175 | 160- 170 | 100 Minimum | 150 Minimum |
| VG-30 | 150-165 | 150 - 170 | 150-165 | 90 Minimum | 140 Minimum |
| VG-20 | 145-165 | 145 - 170 | 145-165 | 85 Minimum | 135 Minimum |
| VG-10 | 140-160 | 140 - 165 | 140-160 | 80 Minimum | 130 Minimum |

1) MIXTURE DESIGN :

Mix Design

Requirement of mix: Apart from conformity with grading and quality requirements of individual ingredients, the mix shall meet the requirements set out in Table 500-11.

TABLE -500-11 : REQUIREMENT OF BITUMINIOUS CONCRETE PAVEMENT LAYER

| | |
|--|---|
| Minimum, stability (KN at 60 ⁰ C) | 9 |
| Minimum flow (MM) | 2 |

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| | |
|--|--|
| Maximum flow (MM) | 4 |
| Compaction level (No. of blows) | 75 blows on each of the two faces of the specimen. |
| Percent air voids | 3-5 |
| Percent voids in mineral aggregate (VMA) | See Table – 500 – 13 OF MORTH |
| Percent voids filled with bitumen (VFB) | 65 - 75 |
| Coating of aggregate particle | 95% minimum |
| Tensile strength ratio | 80% Minimum |
| Viscosity Grade | as per VG – 40 & MoRTH. |

Binder content: The binder content shall be so fixed as to achieve the requirements of the mix set out in Table 500-17. Marshall method for arriving at the binder content shall be adopted, replacing the aggregates retained on 26.5 mm sieve by the aggregates passing 26.5 mm sieve and retained on 22.4 mm sieve.

Job mix formula: The Contractor shall intimate to the Engineer in writing, at least 20 days before the start of the work, the job mix formula proposed to be used by him for the work and shall give the following details:

- Source and location of all materials;
- Proportions of all materials expressed as follows where each is applicable; (a) Binder, as percentage by weight of total mix; (b) Coarse aggregate/Fine aggregate/Mineral filler as percentage by weight of total aggregate including mineral filler;
- A single definite percentage passing each sieve for the mixed aggregate;
- The results of tests enumerated in Table 500-10 (MORT & H) as obtained by the Contractor;
- Test results of physical characteristics of aggregates to be used;
- Mixing temperature and compacting temperature.

While working out the job mix formula, the Contractor shall ensure that it is based on a correct and truly representative sample of the materials that will actually be used in the work and that the mix and its different ingredients satisfy the physical and strength requirements of these Specifications. Approval of the job mix formula shall be based on independent testing by the Engineer for which samples of all ingredients of the mix shall be furnished by the Contractor as required by the former. The approved job mix formula shall remain effective unless and until modified by the Engineer. Should a change in the source of materials be proposed, a new job mix formula shall be established and got approved from the Engineer before actually using the materials.

Permissible variation from job mix formula: It shall be the responsibility of the Contractor to produce a uniform mix conforming to the approved job mix formula subject to the permissible variations of the individual percentages of the various ingredients in the actual mix from the job mix formula to be used within the limits as specified in Table 500-11. These variations are intended to apply to individual specimens taken for quality control tests vide Section 900.

TABLE 500-18.PERMISSIBLE VARIATIONS FROM THE JOB MIX FORMULA

| S. No. | Description of Ingredients | Permissible variation by weight of total mix-in per cent |
|--------|---|--|
| 1. | Aggregate passing 19.00mm sieve and larger sieves | ±7 |
| 2. | Aggregate passing 13.2 , 9.5 mm sieve and larger sieves | ±6 |
| 3. | Aggregate passing 4.75 mm sieve | ± 5 |
| 4. | Aggregate passing 2.36,1.18& 0.6 mm sieve | ± 4 |
| 5. | Aggregate passing 300,150 micron sieve | ± 3 |
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| | | |
|----|-----------------------------------|--------------------------|
| 6. | Aggregate passing 75 micron sieve | ± 1.5 |
| 7. | Binder | ± 0.3 |
| 8. | Mixing temperature | $\pm 10^{\circ}\text{C}$ |

Requirement of the mixture:

Apart from confirmative with the grading and quality requirement for individual ingredients mixture shall meet the requirement set out in Table - 500 – 18 OF MORTH.

Note:

- 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.

Binder content:

The binder content shall be optimized to achieve the requirement of the mixture set out in Table – 500-17 and the traffic volume (may be obtained from the Engineer-in-charge). The marshal method for determining the optimum binder content shall be adopted as described in the asphalt institute manual at MS-2, replacing the aggregates retains on the 26.5mm sieve and retained on the 22.4mm where approved by the Engineer.

Job mix formula :

The contractor shall inform the Engineer in writing, at least 20 days before the start of the work, of the job mix formula proposed for use in the work and shall give following details.

- (i) Source and location of all materials.
- (ii) Proportion of all materials expressed as follows where is applicable.
 - (a) Binder type & percentage by weight of total mixture.
 - (b) Course aggregate, fine aggregate, mineral filler as percentage by weight of total aggregate including mineral filler.
- (iii) A single definite percentage passing each sieve for the mix aggregate
- (iv) The individual grading of the individual aggregate fractions, and the proportion of each in the combined grading.
- (v) The result of test enumerated in Table – 500-18 as obtained by the contractor.
- (vi) Where mixture is a batch mixture, the individual weights of each type of aggregate, & binder per batch.
- (vii) The test result of physical characteristics of the aggregate to be used.
- (viii) Mixing temperature and compacting temperature.

While establishing the job mix formula, the contractor shall ensure that it is based on a correct and truly representative sample of the materials that will actually be used in the work and that the mixture and its different ingredients satisfied the physical and strength requirements of these specifications.

Approval of the job mix formula shall be based on independent testing by the Engineer for which samples of all ingredients of its mix shall be furnished by the contractor as required by the Engineer. The approved job mix formula shall remain effective unless and until a revised job mix formula is approved, should a change in the source of materials be proposed, a new job mix formula shall be forwarded to the Engineer for approval before the placing of the material.

Plant trial – permissible various in Job mix formula:

Once the laboratory job mix formula is approved, the contractor shall carry out plant trials at the mixture to establish that the plant can be set up to produce uniform mix confirming to the approved job mix formula. The permissible variations of the individual percentages of the various ingredients

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in the actual mix from the job mix formula to be used shall be within the limits as specified in the table – 6 as under:

The various are intended to apply to individual specimens taken for quality control test in accordance with General quality control works on materials attached herewith.

TABLE – 500-18 : PERMISSIBLE VARIATIONS FROM THE JOB MIX FORMULA

| Description | Permissible variation | |
|--|-----------------------|--|
| | Base / binder course | |
| Aggregate passing 19mm size or larger | +/- 7% | |
| Aggregate passing 13.2mm , 9.5mm | +/- 6% | |
| Aggregate passing 4.75mm | +/- 5% | |
| Aggregate passing 2.36mm, 1.8mm, 0.6mm | +/- 4% | |
| Aggregate passing 0.3mm,0.15mm | +/- 3% | |
| Aggregate passing 0.075mm | +/- 1.5% | |
| Binder content | +/- 0.3% | |
| Mixing temperature | +/- 10 C | |

Once the plant trails have demonstrated the capability of the plant, and the trials are approved, the laying operation may commence. Over the period of the first month of production for laying on the work, the Engineer shall require additional testing of the product to establish the reliability and consistency of the plants.

Laying trials :

Once the plant trails have been successfully completed and approved, the contractor shall carry out laying trial to demonstrate the proposed mix can be successfully laid, and compacted all in accordance with MoRTH Clause -501. The laying trial shall be carried out on a suitable area which is not form part of the works, unless specifically approved in writing, by the engineer. The area of the laying trial shall be a minimum of 100 M2 of construction similar to that of the project road and it shall be in all respect particularly compaction, the same as the project construction, on which the bituminous materials is to be laid.

The contractor shall previously inform the Engineer of the proposed method for laying and compacting the materials. The plant trial shall then establish if the proposed laying plant, compaction plant, and methodology is capable of producing satisfactory results. The density of the finished paving layer shall be determined by taking cores, no sooner then 24 hours after lying, or by other approved method. Once the laying trial have been approved, the same plant and methodology shall be applied to the laying of the material on the project, and no various of either shall be acceptable, unless approved in writing by the Engineer, who may at discretion require further laying trials.

KEEPING RECORDS:

The relevant specifications under BOQ-1 ITEM No.8 MENTIONED ABOVE of Schedule – B1 above shall be made applicable.

GENERAL:

The relevant specifications under BOQ-1 ITEM No.8 MENTIONED ABOVE of Schedule – B1 above shall be made applicable.

CONSTRUCTION OPERATIONS: Weather and seasonal limitations:

The relevant specifications under **Item No. 9MENTIONED ABOVE** of Schedule – **B1** above shall be made applicable.

Preparation of base:

The relevant specifications under **Item No. 9MENTIONED ABOVE** of Schedule –**B1** above shall be made applicable.

Tack coat:

The relevant specifications under **Item No. 9MENTIONED ABOVE** of Schedule –**B1** above shall be made applicable.

Mixing & Transportation of mixture:

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The relevant specifications under **Item No. 9MENTIONED ABOVE of Schedule –B1** above shall be made applicable; however, the department reserves the right to change the temperature of mix during transporting.

Spreading:

The relevant specifications under **Item No. 9MENTIONED ABOVE of Schedule –B1** above shall be made applicable; however, the department reserves the right to change the temperature of mix at the time of lying.

Compactions:

The relevant specifications under **Item No. 9MENTIONED ABOVE of Schedule –B1** above shall be made applicable.

General: The relevant specifications under **Item No. 9MENTIONED ABOVE of Schedule –B1** above shall be made applicable.

Opening to traffic:

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

SURFACE FINISHING & QUALITY CONTROL:

The relevant specifications under **Item No. 9MENTIONED ABOVE of Schedule –B1** above shall be made applicable.

ARRANGEMENT AND CONTROLLING TRAFFIC:

The relevant specifications under **Item No. 9MENTIONED ABOVE of Schedule –B1** above shall be made applicable.

2) MODE OF MEASUREMENT & PAYMENTS:

The payment shall be made on the **tonnage basis** of the weight of mix of aggregate and bitumen actually used in the finished work. For this purpose, the contractor shall have to install a weigh bridge of suitable capacity for the purpose of weighting of dumpers at suitable place near Hot mix plant site. Weight of empty dumper and weight of loaded dumper will be recorded in bound and numbered register on plant site. The register shall be maintained by the department and signed by the contractor.

Department will be free to get some loaded dumpers/empty dumpers test checked at other weight bridge. Weigh Bridge will be periodically got calibrated and verified from Weight and Measure Authorities.

The weigh bridge shall be of approved quality and test will have to be given as and when demanded by the Department for its accuracy without any extra cost to the Corporation. Proper gate pass system shall be established for the vehicles coming to the plant and outgoing from the plant site. The location of the K.M. and meter in which individual dumpers are unloaded is recorded carefully.

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, then the reduction in or addition to payment shall have to be effected to the contractor on prorate basis depending upon the area reduced or exceeded respectively.

The contract unit rate for B.C. shall be paid in full for carrying out the required operations including all compensation for:

- 1) Making arrangement of control and safety of traffic.
- 2) Preparation of surface to receive the materials.
- 3) Providing all materials to be incorporated in the works with all lead and lifts, including all royalties, fees, all taxes, rents where necessary.
- 4) Mixing, transporting, laying, & compacting the mix etc.

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- 5) All labour, tools, equipment, plant including installation of Hot drum mix plant, power supply units and all machinery, and incidental to complete the work to the specifications.
- 6) Carrying out the work in part widths where directed.
- 7) Carrying out all tests for control of quality.
- 8) The rate shall cover the provision of bitumen at the purchased rate with the provision that the variation actual percentage of bitumen used will be assessed and paid or adjusted accordingly.
- 9) The rates for premixed materials are to include for all wastage in cutting of joints etc.
- 10) The rate is to include for all necessary testing, Mixture design, Job mix formula, Plant trials, laying trials, transporting and testing of samples and cores. If there is not a project specific laboratory, the contract must arrange to carry out all necessary testing at an outside Govt. approved laboratory approved by the Engineer-in-charge & all costs incurred are deemed included in the rate quoted for the materials.
- 11) The cost of all plants and laying trials as specified to prove the mixing and laying method is deemed to be included in the contractor rates.
- 12) The average consolidated thickness of one layer of the B.C. shall be 40 mm at specified density.

The Payment shall be made on **M.T.**

BOQ ITEM NO. 09

Providing and applying Asphalt painting with bitumen of VG 40 grade on bitumenous surface including clearing of road surface and spraying Bitumen at the rate of 0.60 kg/sqm using mechanical means.

Description: This work shall consist of the application of one coat Bituminous painting, each coat consisting of a layer of bituminous binder sprayed on base prepared previously, followed by a cover of stone chippings properly rolled to form a wearing course to the requirements of these Specifications.

Materials

Binder: The binder shall be straight-run bitumen of a suitable grade appropriate to the region, traffic, rainfall and other environmental conditions as directed by the Engineer and conforming to IS : 73. Guidance in this regard may be obtained from *Appendix-4*.

Stone dust : The stone dust shall conform to Clause 504.2.2.1. The Stone Polishing Value as measured by BS 812 (Part 114), shall not be less than 55. The stone shall also conform to the quality requirements of Table 500-3 except that water absorption shall be restricted to a maximum of 1 per cent. The size of stone dust shall be in accordance with Table 500-12.

Quantities of materials: The quantities of materials used for this work shall be as specified in a Table 500-13.

TABLE 500-12. SIZE REQUIREMENTS OF STONE CHIPPINGS FOR BITUMENOUS PAINTING USING BITUMEN

| Nominal Maximum Particle Size(MM) | Minimum VMA Percent Related to Design Percentage Air Voids | | |
|-----------------------------------|--|------|------|
| | 3.0 | 4.0 | 5.0 |
| 26.5 | 11.0 | 12.0 | 13.0 |

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37.5

10.0

11.0

12.0

TABLE 500-13. QUANTITIES OF MATERIALS REQUIRED FOR 10 sq. m. OF ROAD SURFACE FOR**BITUMENOUS PAINTING USING BITUMEN**

| S. No. | Type of construction | Binder | Stone dust |
|--------|---------------------------------|-------------------|------------|
| 1. | Single coat bituminous painting | 6.0 kg/10sq.mt | 0.013 cu.m |

Construction operations

Weather and seasonal limitations: Clause 504.3.1. shall apply.

Preparation of base: The base on which the Bituminous Painting is to be laid shall be prepared, shaped and conditioned to the specified lines, grade and cross-section in accordance with Clause 501 and as directed by the Engineer. Priming coat, where needed, shall be provided as per Clause 502 and as directed by the Engineer. Where the existing surface shows signs of fatting up, this shall be rectified. The bituminous primed surface to be dressed shall be thoroughly cleaned either by using a mechanical broom or any other approved equipment/method as specified by the Engineer. Dust removed in the process shall be blown off with the help of compressed air.

Application of binder: Bitumen shall be heated to 150°C-163°C and sprayed on the dry surface in a uniform manner with the help of self-propelled mechanical sprayers having self-heating arrangement and bitumen pressure pump and spraying bar with nozzles having constant volume or pressure system capable of spraying bitumen uniformly at the rates specified in Table 500-13 and above mentioned temperature. Excessive deposits of binder caused by stopping or starting of the sprayer or through leakages or any other reason shall be corrected by blotting with sand before the stone chippings are spread.

Application of stone dust : Immediately after the application of binder, stone chippings in a dry and clean state shall be spread uniformly on the surface by means of a self-propelled or towed mechanical grit spreader capable of spraying uniformly at rates specified in Table 500-13 so as to cover the surface completely. If necessary, the surface shall be broomed to ensure uniform spread of chippings.

Rolling: Immediately after the application of the cover material, the entire surface shall be rolled with a 80-100 kN smooth wheeled steel roller, 80-100 kN static weight vibratory roller, or other approved equipment. Rolling shall commence at the edges and progress towards the centre except in superelevated and uni-directional cambered portions where it shall proceed from the lower edge to the higher edge. Each pass of the roller shall uniformly overlap not less than one-third of the track made in the preceding pass. While rolling is in progress, additional chippings shall be spread by hand in necessary quantities required to make up irregularities. Rolling shall continue until all aggregate particles are firmly embedded in the binder and present a uniform closed surface.

Opening to traffic: Traffic shall not be permitted to run on any newly surface dressed area until the following day. In special circumstances, however, the Engineer may open the road to traffic immediately after rolling, but in such cases traffic speed shall be limited to 16 km per hour till the following day.

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.

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

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Measurements for payment: Each coat of Bituminous Painting shall be measured as finished work in square meters.

BOQ ITEM NO. 10

Road marking with hot applied thermoplastic paints with reflectorising glass beads on bitumin surface providing and laying a hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250gms per sqm area, thickness of 2.5mm is excluding of surface applied glass beds as per IRC:35-2015. The finished surface to be level, uniform and free from streaks and holes. zebra patta /bump patta lane/center line/ edge line/cut patta. The white color marking should provide liminance coefficinet on cemend road shalll be min 130 mcd/m2/lux and Asphalt Road shall be min 100 mcd/m2/lux during the service life during the day time. The marking should meet the performance criteria for night time reflectivity, wet reflectivity and skid resistance as mentioned in the section-15 of IRC 35-2015. Warranty for the Retro reflectivity should be two years.

801 ROAD MARKINGS

801.1 Scope

The work shall consist of providing road markings of specified width, layout and design using paint of the required specifications as given in the Contract and as per guidelines contained in from IRC:35-1997.

801.2 Materials

Road markings shall be of ordinary road marking paint hot applied thermoplastic compound, reflectorised paint or cold applied reflective paint as specified in the item and the material shall meet the requirements as specified in these Specifications.

801.3 Hot Applied Thermoplastic Road Marking

801.3.1 Thermoplastic Material

801.3.1.1 General

The thermoplastic material shall be homogeneously composed of aggregate, pigment, resins and glass reflectorizing beads. The colour of the compound shall be white or yellow (IS colour No. 356) as specified in the drawings or as directed by the Engineer.

801.3.1.2 Requirements :

- i) **Composition:** The pigment, beads, and aggregate shall be uniformly dispersed in the resin. The material shall be free from all skins, dirt and foreign objects and shall comply with requirements indicated in Table 800-9.

Table 800-9 : Proportions of Constituents of Marking Material (Percentage by Weight)

| Component | White | Yellow |
|-------------|-----------|-----------|
| Binder | 18.0 min. | 18.0 min. |
| Glass Beads | 30–30 | 30–30 |

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| | | |
|-------------------------------------|-----------|----------------|
| Titanium Dioxide | 10.0 min. | -- |
| Calcium Carbonate and Inert Fillers | 42.0 max. | See Note below |
| Yellow Pigments | -- | See Note below |

Note : Amount of yellow pigment, calcium carbonate and inert fillers shall be at the option of the manufacturer, provided all other requirements of this Specification are met.

ii) **Properties:** The properties of thermoplastic material, when tested in accordance with ASTM D36/BS-3262-(Part I), shall be as below:

a) **Luminance :**

White: Daylight luminance at 45°-65 percent min. as per AASHTO

M 249

Yellow: Daylight luminance at 45°-45 percent min. as per AASHTO M 249

- b) **Drying time :** When applied at a temperature specified by the manufacturer and to the required thickness, the material shall set to bear traffic in not more than 15 minutes.
- c) Skid resistance: not less than 45 as per BS:6044.
- d) Cracking resistance at low temperature: The material shall show no cracks on application to concrete blocks.
- e) Softening point: $102.5^{\circ}\text{C} \pm 9.5^{\circ}\text{C}$ as per ASTM D 36.
- f) Yellowness index (for white thermoplastic paint): not more than 0.12 as per AASHTO M 249

iii) **Storage life:** The material shall meet the requirements of these Specifications for a period of one year. The thermoplastic material must also melt uniformly with no evidence of skins or unmelted particles for the one year storage period. Any material not meeting the above requirements shall be replaced by the manufacturer/supplier/ Contractor.

iv) **Reflectorisation:** Shall be achieved by incorporation of beads, the grading and other properties of the beads shall be as specified in Clause 803.4.2.

v) **Marking :** Each container of the thermoplastic material shall be clearly and indelibly marked with the following information:

- 1) The name, trade mark or other means of identification of manufacturer
- 2) Batch number
- 3) Date of manufacture

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- 4) Colour (white or yellow)
 - 5) Maximum application temperature and maximum safe heating temperature.
- vi) **Sampling and Testing:** The thermoplastic material shall be sampled and tested in accordance with the appropriate ASTM/BS method. The Contractor shall furnish to the Engineer a copy of certified test reports from the manufacturers of the thermoplastic material showing results of all tests specified herein and shall certify that the material meets all requirements of this Specification.

801.3.2 ReflectORIZING Glass Beads

801.3.2.1 General

This Specification covers two types of glass beads to be used for the production of reflectorised pavement markings.

Type 1 beads are those which are a constituent of the basic thermoplastic compound vide Table 800-9 and Type 2 beads are those which are to be sprayed on the surface vide Clause 803.6.4.

801.3.2.2 The glass beads shall be transparent, colourless and free from milkiness, dark particles and excessive air inclusions.

These shall conform to the requirements spelt out in Clause 803.4.2.3.

801.3.2.3 Specific Requirements

- a) **Gradation:** The glass beads shall meet the gradation requirements for the two types as given in Table 800-10.

Table 800-10: Gradation Requirements for Glass Beads

| Sieve Size | Percent Retained | |
|------------------|------------------|----------|
| | Type 1 | Type 2 |
| 1.18 mm | 0 to 3 | |
| 850 micron | 5 to 20 | 0 to 5 |
| 600 micron | - - | 5 to 20 |
| 425 micron | 65 to 95 | - - |
| 300 micron | - - | 30 to 75 |
| 180 micron | 0-10 | 10 to 30 |
| Below 180 micron | - - | 0 to 15 |

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- b) **Roundness:** The glass beads shall have a minimum of 70 percent true spheres.
- c) **Refractive index:** The glass beads shall have a minimum refractive index of 1.50.
- d) **Free flowing properties:** The glass beads shall be free of hard lumps and clusters and shall dispense readily under any conditions suitable for paint striping. They shall pass the free flow-test.

801.3.2.4 Test Methods

The specific requirements shall be tested with the following methods:

- i) Free-flow test: Spread 100 grams of beads evenly in a 100 mm diameter glass dish. Place the dish in a 250 mm inside diameter dessicator which is filled within 25 mm of the top of a dessicator plate with sulphuric acid water solution (specific gravity 1.10). Cover the dessicator and let it stand for 4 hours at 20°C to 29°C. Remove sample from dessicator, transfer beads to a pan and inspect for lumps or clusters. Then pour beads into a clean, dry glass funnel having a 100 mm stem and 6 mm orifice. If necessary, initiate flow by lightly tapping the funnel. The glass spheres shall be free of lumps and clusters and shall flow freely through the funnel.
- ii) The requirements of gradation, roundness and refractive index of glass beads and the amount of glass beads in the compound shall be tested as per BS:6088 and BS:3262 (Part I).
- iii) The Contractor shall furnish to the Engineer a copy of certified test reports from the manufacturer of glass beads obtained from a reputed laboratory showing results of all tests specified herein and shall certify that the material meets all requirements of these Specifications. However, if so required, these tests may be carried out as directed by the Engineer.

801.3.3 Application Properties of Thermoplastic Material

801.3.3.1 The thermoplastic material shall readily get screeded/extruded at temperatures specified by the manufacturers for respective method of application to produce a line of specified thickness which shall be continuous and uniform in shape having clear and sharp edges.

801.3.3.2 The material upon heating to application temperatures shall not exude fumes, which are toxic, obnoxious or injurious to persons or property.

801.3.4 Preparation

- i) The material shall be melted in accordance with the manufacturer's instructions in a heater with a mechanical stirrer to give a smooth consistency to the thermoplastic material to avoid local overheating. The temperature of the mass shall be within the range specified by the

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manufacturer, and shall on no account be allowed to exceed the maximum temperature stated by the manufacturer. The molten material should be used as expeditiously as possible and for thermoplastic material which has natural binders or is otherwise sensitive to prolonged heating, the material shall not be maintained in a molten condition for more than 4 hours.

- ii) After transfer to the laying equipment, the material shall be maintained within the temperature range specified by the manufacturer for achieving the desired consistency for laying.

801.4 Reflectorised Paint

Reflectorised paint, if used, shall conform to the Specification by the manufacturers and approved by the Engineer. Reflectorising glass beads for reflectorising paints where used shall conform to the requirements of Clause 803.4.2.

801.5 Application

801.5.1 Marking shall be done by machine. For locations where painting cannot be done by machine, approved manual methods shall be used with prior approval of the Engineer. The Contractor shall maintain control over traffic while painting operations are in progress so as to cause minimum inconvenience to traffic compatible with protecting the workmen.

801.5.2 Where the compound is to be applied to cement concrete pavement, a sealing primer as recommended by the manufacturer, shall be applied to the pavement in advance of placing of the stripes to ensure proper bonding of the compound. On new concrete surface any laitance and/or curing compound shall be removed before the markings are applied.

801.5.3 The thermoplastic material shall be applied hot either by screeding or extrusion process. After transfer to the laying apparatus, the material shall be laid at a temperature within the range specified by the manufacturer for the particular method of laying being used. The paint shall be applied using a screed or extrusion machine.

801.5.4 The pavement temperature shall not be less than 10°C during application. All surfaces to be marked shall be thoroughly cleaned of all dust, dirt, grease, oil and all other foreign matter before application of the paint.

The material, when formed into traffic stripes, must be readily renewable by placing an overlay of new material directly over an old line. Such new material shall so bond itself to the old line that no splitting or separation takes place.

Thermoplastic paint shall be applied in intermittent or continuous lines of uniform thickness of at least 2.5 mm unless specified otherwise. Where arrows or letters are to be provided, thermoplastic compound may be hand-sprayed. In addition to the beads included in the material, a further quantity of glass beads of Type 2, conforming to the above noted Specification shall be sprayed uniformly into a mono-layer on to the hot paint line in quick succession of the paint spraying operation. The glass beads shall be applied at the rate of 250 grams per square metre area.

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801.5.5 The minimum thickness specified is exclusive of surface applied glass beads. The method of thickness measurement shall be in accordance with Appendices B and C of BS:3262 (Part 3).

801.5.6 The markings shall be done to accuracy within the tolerances given below:

- i) Width of lines and other markings shall not deviate from the specified width by more than 5 percent.
- ii) The position of lines, letters, figures, arrows and other markings shall not deviate from the position specified by more than 20 mm
- iii) The alignment of any edge of a longitudinal line shall not deviate from the specified alignment by more than 10 mm in 15 m.
- iv) The length of segment of broken longitudinal lines shall not deviate from the specified length by more than 150 mm.

In broken lines, the length of segment and the gap between segments shall be as indicated on the drawings; if these lengths are altered by the Engineer, the ratio of the lengths of the painted sections shall remain the same.

801.5.7 Properties of Finished Road Markings

The finished lines shall be free from ruggedness on sides and ends and be parallel to the general alignment of the carriageway. The upper surface of the lines shall be level, uniform and free from streaks.

- a) The stripe shall not be slippery when wet.
- b) The marking shall not lift from the pavement in freezing weather.
- c) After application and proper drying, the stripe shall show no appreciable deformation or discoloration under traffic and under road temperatures upto 60°C.
- d) The marking shall not deteriorate by contact with sodium chloride, calcium chloride or oil dripping from traffic.
- e) The stripe or marking shall maintain its original dimensions and position. Cold ductility of the material shall be such as to permit normal movement with the road surface without chopping or cracking.
- f) The colour of yellow marking shall conform to IS Colour No. 356 as

given in IS:164

801.5.8 Measurements for Payment

801.5.8.1 The painted markings shall be measured in sq. metres of actual area marked (excluding the gaps, if any).

801.5.8.2

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BOQ ITEM NO. 11

Cat Eye : Supplying and fixing cat eye made out from Acrilo beaultile sterine injuction high compressed molding with reflector made of MMc(prismatic type of size 12cm x 6cm x2.5cm) provided with bituminous adhesive 100g. with each unit for fixing with high intensity reflector on both side in desired colour as directed by engineer in charge.- Engineering Grade.

- The applicator of the Cat Eye should be authorized Applicator/ Converter of the original manufacturer of the Cat Eye I road studs and copy of the certificate has to be submitted to authority for source approval.
- For Cat eye with twin moulded Shanks application the anchorage should be provided by drilling with the Drilling machine only and not manually.
- The applicator use the epoxy adhesive or fixing of the Cat eye I RPM as recommended by the original manufacturer only. No other adhesive should be allowed to use on the road.
- Performance Criteria: Material should be confirming to MoRTH specification and Test Certificate should be submitted as per the IRC 35-2015 for the reflectivity and luminance test time to time. The Applicator should submit a letter in original issued by the original manufacturer of the RPM I Cat Eye for the same before commencing the work.
- The applicator should submit warranty for satisfactory in field performance as laid down in IRC 35-2015 for the period of 2 years. The warranty should be in original and jointly signed by the original manufacture and Authorized applicator.

Measure for Payment :-

- The measurement of Cats eye shall be in **Each** of markers supplied and fixed.

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Name of Work :- Construction of Flexible road at Por ramangamdi Notified area GIDC.

| Schedule-B | | | | | |
|-------------------|--|-------------|------------------------|-------------|---------------|
| I. No. | DESCRIPTION OF ITEM | QTY. | Rate Incl 1% LC | UNIT | AMOUNT |
| 1 | 2 | 3 | 5 | 6 | 7 |
| 1 | Box cutting the road surface to proper slope and camber for making a base for road work including removing the excavated stuff and depositing on the road side slope as directed upto 50Mt.lead. | 2590.00 | 212.58 | M3 | 5,50,582.20 |
| 2 | Scrifying gravelled macadam or bitumen macadam surface 6 mm to 10 mm depth including stacking useful materials on road side and disposing off remaining stuff. | 3570.00 | 40.61 | M2 | 1,44,977.70 |
| 3 | Providing, supplying and laying of Minimum 6.5% CBR soil for Embankment including breaking colds, dressing with all lead and lift and including waterering, rolling and consolidation of subgrade in layers at OMC to required dry density including filling the depression which occur during the process using power roller 8T to 10T. | 720.00 | 259.59 | M3 | 1,86,904.80 |
| 4 | Graded Granular sub base (GSB) Providing & laying Closed Graded Granular sub base (GSB) laying in uniform layer(each layer should be less than 200 mm)of graded granular material consisting of black trap machine cut crushed stone aggregate as per grading - V given in table 400-1 of the specification MORT&H and compactor to the required density with 8 - 10 tonne vibratory roller with plain drum or heavy pneumatic tyred roller of minimum 200 to 300 KN weight in all seasons as per MORT&H , maintaining the required slope & grade during the operation as approved by the engineer in charge & watering to the proper moisture content and sprinkled with the help of truck mounted water tank fitted with suitable arrangement. (fully saturated having CBR value minimum 30) | 720.00 | 1980.69 | M3 | 14,26,096.80 |
| 5 | Wet Mix Macadam (WMM) Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam spacification including trimix the materials with water at OMC in mechanical mix plant carriage of mixed materials by tipper to site laying in uniform layers (Layer should not be more than 200 mm)with paver in sub base/base course on well prepared surface and camber with Sensor paver consolidation by vibratory road roller to achieve the desired density by using machine crushed chips as per required gradation mixing with required optimum quantity of water incl | 900.00 | 2261.41 | M3 | 20,35,269.00 |

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| | | | | | |
|---|---|---------|---------|----|--------------|
| | material, labour, plant and machinery and equipment etc. complete. | | | | |
| 6 | Providing and applying primer coat with bitumen emulsion SS1 on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.85 kg/sqm using mechanical means. | 3570.00 | 69.02 | M2 | 2,46,401.40 |
| 7 | DBM Providing & laying compacted 50mm thick dense graded bituminous macadam (DBM) Grade-II in Single layer using 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour, tack coat at the rate of 2.5 kg / 10 m2 (VG10) in each using crushed aggregates of specified grading. premixed with bituminous binder @ 4.5% (VG - 40) Bitumen by weight of total mix and filler, transporting the hot mix to work site laying with a hydrostatic paver finisher with sensor control with minimum road width or as directed by Engineer in charge to the required grade, level and alignment, rolling with smooth wheeled vibratory and tandem rollers and pneumatic tyre roller to achieve the desired compaction as per MORT&H specification etc complete in all respects. The agency shall have to get the mix design done from approved laboratory and submit to the Engineer in charge for approval. (Va=3.5%&Vbe=11.5% must be consider in Mix Design) If the asphalt (bituminous) content is more than above, the agency shall have to bear the cost of additional asphalt. The payment shall be done on the permissible field density achieved on the site instead of density derieved in the mix design. (The density obtained by mix design above 2.40 MT /Cu.m shall be borne by agency) | 420.00 | 6034.14 | MT | 25,34,338.80 |
| 8 | BC Providing and laying 40 mm Thick Bituminous Concrete using crushed stone aggregate BT chips as per required gradation and using emulsion asphalt as a tack coat @ 2.5 kg / 10 sq.m (VG 10) and the VG-40 Bitumen grade asphalt at 5.40 % by total weight of mix hot laid process using 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour incl. transporting the mix and laying by hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory, tandem and pneumatic tyre roller to achieve the desired compaction as per MoRT&H specifications clause 509 complete including cost of material labour machinery equipment and fuel, oil. Lubricant for plant and | 340.00 | 7043.54 | MT | 23,94,803.60 |

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| | | | | | |
|------------------|--|---------|--------|-----|---------------------|
| | machinary using contractor's own plant and machinanes etc complete. The agency shall have to get the mix design done from approved laboratory and submit to the Engineer in charge for approval. (Va=3.5%&Vbe=11.5% must be consider in Mix Design) If the asphalt (bituminous) content is more than above, the agency shall have to bear the cost of additional asphalt. The payment shall be done on the permissible field density achieved on the site instead of density derieved in the mix design. | | | | |
| 9 | Providing and applying Asphalt painting with bitumen of VG 40 grade on bitumenous surface including clearing of road surface and spraying Bitumen at the rate of 0.60 kg/sqm using mechanical means. | 3570.00 | 66.05 | M2 | 2,35,798.60 |
| 10 | Road marking with hot applied thermoplastic paints with reflectorising glass beads on bitumin surface providing and laying a hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250gms per sqm area, thickness of 2.5mm is excluding of surface applied glass beds as per IRC:35-2015. The finished surface to be level, uniform and free from streaks and holes. zebra patta /bump patta lane/center line/ edge line/cut patta. The white color marking should provide liminance coefficinnet on cemend road shall be min 130 mcd/m2/lux and Asphalt Road shall be min 100 mcd/m2/lux during the service life during the day time. The marking should meet the performance criteria for night time reflectivity, wet reflectivity and skid resistance as mentioned in the section-15 of IRC 35-2015. Warranty for the Retro reflectivity should be two years. | 130.00 | 367.72 | M2 | 47,803.60 |
| 11 | Cat Eye : Supplying and fixing cat eye made out from Acrilo beaultile sterine injuction high compressed molding with reflector made of MMc(prismatic type of size 12cm x 6cm x2.5cm) provided with bituminous adhesive 100g. with each unit for fixing with high intensity reflector on both side in desired colour as directed by engineer in charge.- Engineering Grade | 110.00 | 375.72 | Nos | 41,329.20 |
| Total Rs. | | | | | 98,44,305.60 |

*The rates quoted shall be inclusive of all applicable taxes incl. LWC except GST and requirements as per government norms.

GST will be paide extra.

I/ We agree to carry out the above works at _____% above the estimated cost put to tender.

I/ We agree to carry out the above works at _____% below the estimated cost put to tender.

An amount of my tender work out as under: -

Amount put to tender

Rs: 98,44,305.60

Deduct Rs: _____

Total Rs. _____

In words Rs. _____

Amount put to tender

Rs: - 98,44,305.60

Add Rs: _____

Total Rs. _____

In words Rs. _____

Sign of Contractor

Chief Officer
N.A, GIDC, Por Ramangamdi